May 17, 2011

New York City Office of Environmental Remediation
City Brownfield Cleanup Program
c/o Shaminder Chawla
100 Gold Street, 2nd Floor
New York, NY 10038

Re: 11CBCP011M
260 West 26th Street
Remedial Action Work Plan (RAWP)
Stipulation List

Dear Mr. Chawla:

CA RICH Consultants, Inc. (CA RICH) hereby submits this Remedial Action Work Plan (RAWP) Stipulation List for 260 West 26th Street site to the New York City Office of Environmental Remediation (NYCOER) on behalf of Chelsea W26, LLC. This letter serves as an addendum to the RAWP to stipulate additional content, requirements and procedures that will be followed during the site remediation. The contents of this list are added to the RAWP and will supersede the content in the RAWP where there is a conflict in purpose or intent. The additional requirements/procedures include the following:

STIPULATION LIST

Remedial Investigation

1. The anticipated minimum depth of excavation required to install the new building's foundation excavation is approximately 15 feet below grade. Bedrock was located between eight and 20 feet below grade. To achieve Track 1 Soil Cleanup Objectives, the redevelopment team intends to excavate all soil until bedrock is reached. If the excavation does not proceed to bedrock, soil endpoint samples will be collected in accordance with NYSDEC DER-10 and if required, under the oversight of NYCOER personnel. A map indicating the depth to bedrock at the Site and the locations of potential endpoint samples is attached as Addendum 1.

2. If the excavation is not extended to bedrock, the quality assurance/quality control program for collection of end point samples for this remedial action will include the following provisions:
   - New York State ELAP certified labs will be utilized for chemical analysis with report deliverables present in NYSDEC Category B format;
   - Data summary tables will be prepared that include all data entries (including non-detect results) and will be presented in the Remedial Action Report (RAR);
   - Full chain of custody for analytical samples will be maintained and forms will be reported in the RAR;

- One field blank for each day of field activities during the end-point sampling event. The field blank will include all of the parameters included in the sample analysis. One duplicate field sample, one matrix spike and one matrix spike duplicate per every 20 samples will also be collected and submitted for analysis.

- The following QA/QC samples will be collected
  Field Blank
  Field Duplicate
  Matrix Spike
  Matrix Spike Blank
  Trip Blank for Volatile Organics Only (if necessary)

3. The remedial action for Site will apply Track 1 SCOs. A Site Management Plan is not required for Track 1 clean-up. A Site Management Plan will be required if Track 1 is not achieved.

4. The two-story building that currently exists is slated for demolition in preparation for the proposed new building. The new building will cover the entire Site. Excavation for the new building's foundation will extend site-wide from grade down to and partially into bedrock. As part of redevelopment activities, it is currently estimated that 6,200 cubic yards of soil will be excavated. The current zoning designation is C6-2A. The proposed use is consistent with existing zoning for the property.

   The proposed future use of the Site will consist of 204 residential units with a mix of studio as well as one and two bedroom apartments. Forty-one of the 204 units will be rented by lottery to residents earning 40% and 60% of the area median income. The remaining units will be rented at market rate. There will also be approximately 17,000 square feet of retail as well as 600 square feet of community facility.

   The building will be a LEED-certified building and will include many green features including a monitored boiler, low-flow fixtures, energy saving appliances, as well as energy-efficient and LED lighting. The basement will consist of mechanical and storage rooms, a parking garage, and commercial storage rooms. The second floor of the building will host an array of amenities space including a possible play room, gym, media or recreation room. Laundry facilities and an outdoor play area for children will also be located on the second floor. A copy of the proposed development plans are included as Addendum 2 as well as in Appendix F of the Remedial Action Work Plan.

5. A vapor barrier will be installed under the entire building and along the basement walls up to grade. The design of the vapor barrier as well as the cover slab for the new building is included in Addendum 3.

6. All soil/fill removed from Site will be managed as regulated material and will be disposed of at permitted disposal facilities. OER will be notified of the facilities to be used for disposal prior to start of the remedial construction. If there is a change to this plan that will render the use of excavated material in a non-regulated manner, OER will be notified prior to implementation. Excavated bedrock will be disposed of as construction and demolition debris.

7. The protocol attached in Addendum 4 will be utilized if petroleum containing tanks or vessels are identified during the remedial action or subsequent redevelopment excavation activities. All petroleum spills will be reported to the NYSDEC hotline as required by applicable laws and regulations. This contingency plan is designed for heating oil tanks and other small or moderately sized storage vessels. If larger tanks,

such as gasoline storage tanks are identified, OER will be notified before this criterion is utilized.

8. Backfill soil quality limits applicable to the Site, if any, are Track 1 SCOs. Any soils intended for reuse will be segregated, sampled and approved by OER before backfilling. No import of backfill is proposed for this project.

9. Signage for the project will include a sturdy placard mounted on the property line at the primary construction entrance to the property that includes the NYC BCP Fact Sheet announcing the remedial action. The fact sheet will be laminated and permanently affixed to the placard. The Fact Sheet will be visible and legible on the public right-of-way and will be posted in the immediate vicinity of building and other permits.

10. A CD containing the final RAWP including this approved Stipulation List will be placed in the library that provides the primary public repository for project documents.

11. The MSDS for all known contaminants are attached in Addendum 5.

12. Section 5.5 Community Air Monitoring: Continuous VOC and particulate monitoring will be performed during any ground intrusive activities involving contaminated soil/fill. This is required per NYSDOH generic CAMP.

13. Addendum 6 includes copies of the final result tables from the Remedial Investigation Report.

14. The project number for 260 West 26th Street is 11CBCP011M.

15. The vapor barrier planned for this project is a waterproofing membrane manufactured by W.R. Grace and Company. The barrier known as Grace 160R and 300R is an impermeable membrane that is capable of preventing the migration of soil vapor into the new building. Technical specifications for Grace 160R and 300R products are included in Addendum 7.

16. The proposed on-site remedy addresses all on-site sources emergent from this property. Protective measures are also being taken in the event a future off-site soil gas issue shall arise. Currently there are no known off-site soil vapor "problems" but the remedy is protective in the event a future problem should arise.

Sincerely,

CA RICH CONSULTANTS, INC.

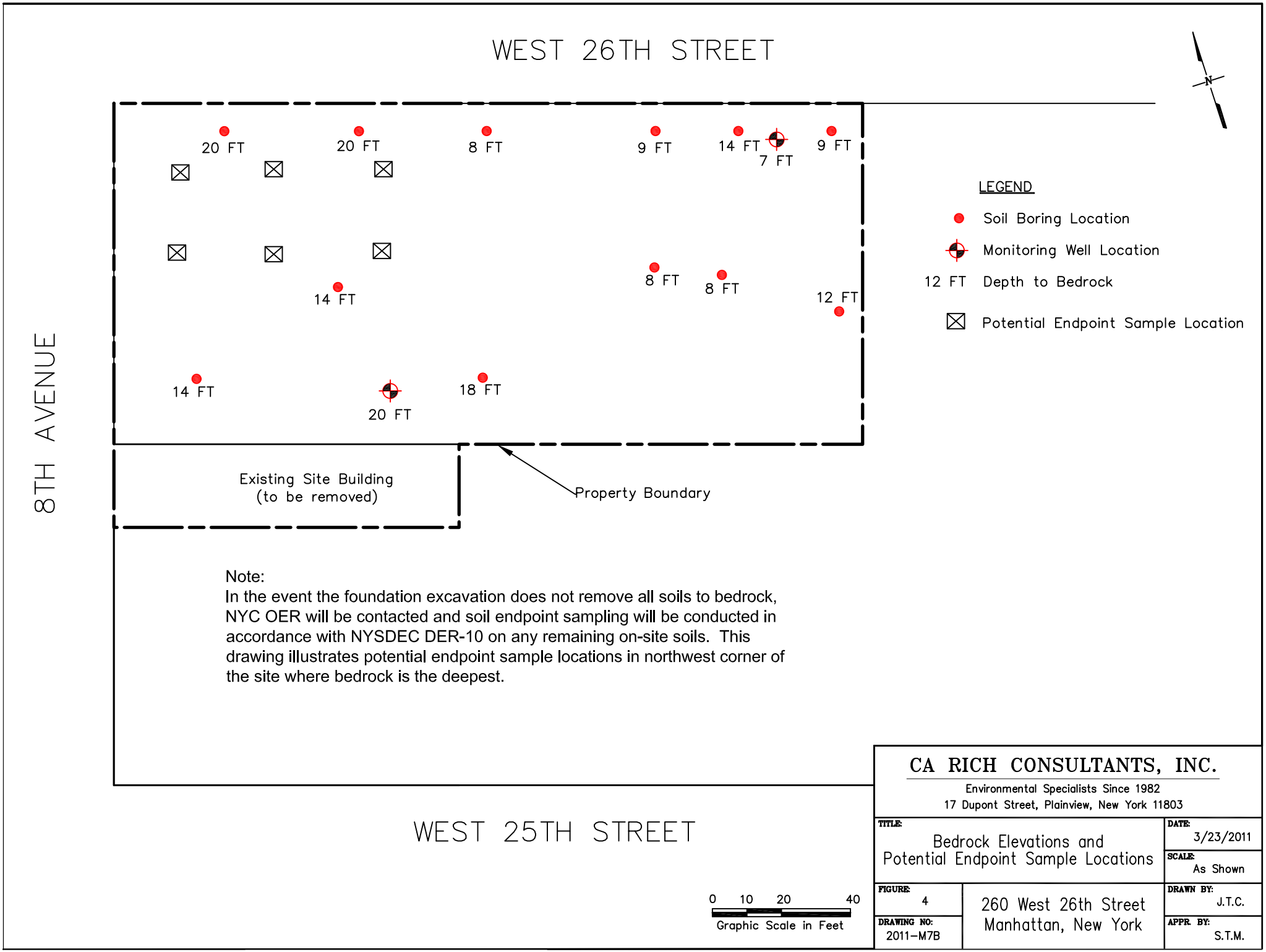
Stephen T. Malinowski

Stephen T. Malinowski
Associate

cc: D. Pisani
M. Mandac

Addendum 1

Bedrock Elevation Map and
End Point Sampling Statement



Note:
In the event the foundation excavation does not remove all soils to bedrock, NYC OER will be contacted and soil endpoint sampling will be conducted in accordance with NYSDEC DER-10 on any remaining on-site soils. This drawing illustrates potential endpoint sample locations in northwest corner of the site where bedrock is the deepest.

CA RICH CONSULTANTS, INC.
Environmental Specialists Since 1982
17 Dupont Street, Plainview, New York 11803

TITLE: Bedrock Elevations and Potential Endpoint Sample Locations	DATE: 3/23/2011
	SCALE: As Shown
FIGURE: 4	DRAWN BY: J.T.C.
DRAWING NO: 2011–M7B	260 West 26th Street Manhattan, New York
	APPR. BY: S.T.M.

Addendum 2

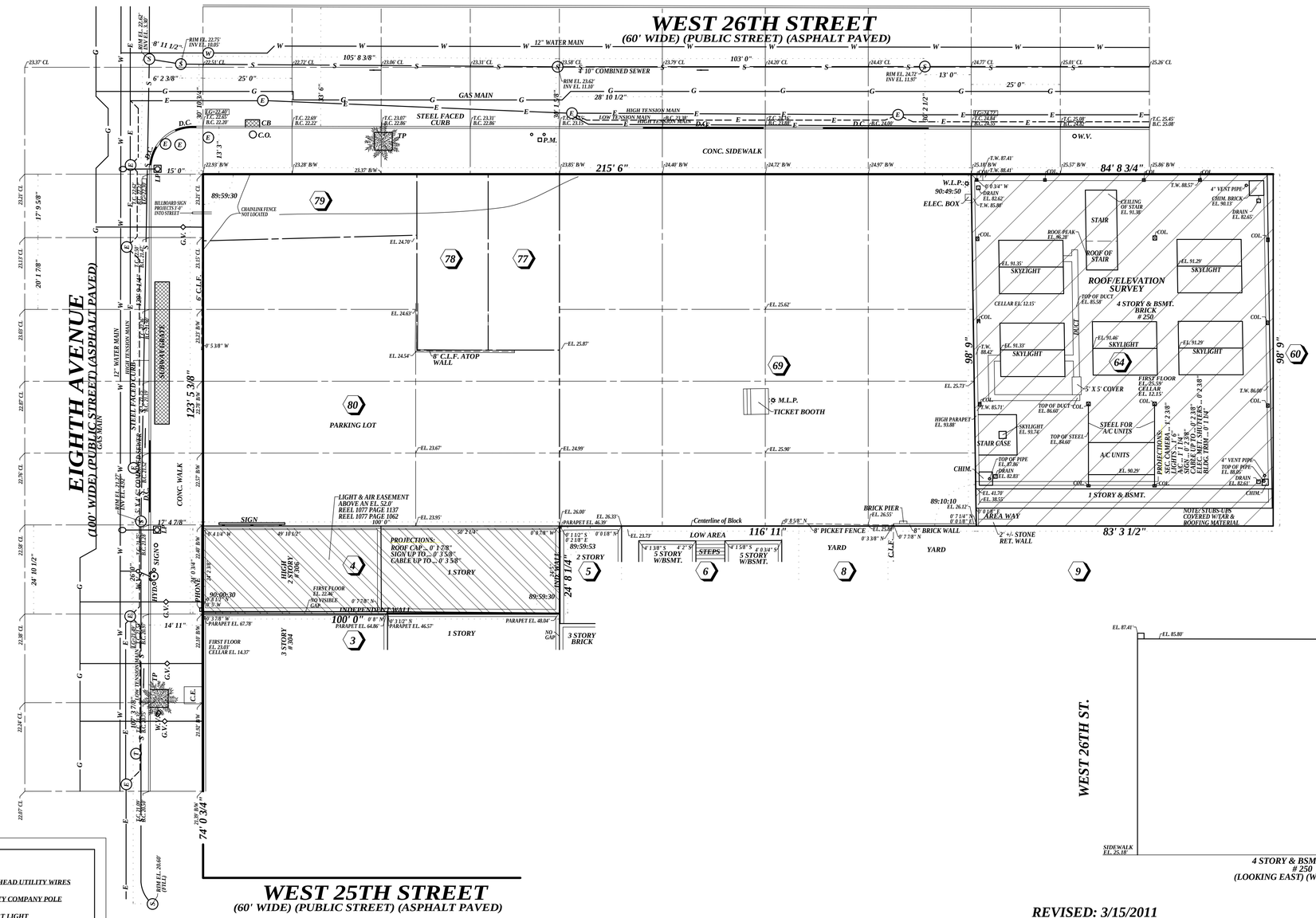
Site Redevelopment Plans

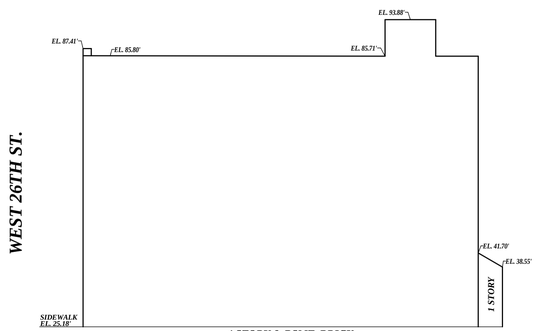
BLOCK: 775
LOTS: 4, 64, 69, 77-79, 80

LOTS 4, 69, 77-79, 80 AREA:
SQ. FT.: 23,819.39
ACRES: 0.5468

LOT 64 AREA:
SQ. FT.: 8,295.99
ACRES: 0.1904

ARCHITECTURAL SURVEY





4 STORY & BSMT. BRICK
250
(LOOKING EAST) (WEST FACE)

REVISED: 3/15/2011
CON ED PLOTTED: 12/19/07
REVISED: 11/26/2007
REVISED: 11/21/2007

FS5

LEGEND

CON ED	CON ED MANHOLE COVER
E	ELECTRIC MANHOLE COVER
E — E	UNDERGROUND ELECTRIC DUCTS
W	DEPARTMENT OF WATER SUPPLY MANHOLE COVER
W — W	WATER MAIN
S	SEWER MANHOLE COVER
S — S	SANITARY SEWER
ST — ST	STEAM MAIN
W.G.	DEPARTMENT OF WATER SUPPLY WATER GATE
W.V.	WATER VALVE
G — G	GAS MAIN
G	GAS CO. MANHOLE
G.V.	GAS VALVE
C.O.	CLEAN OUT MANHOLE COVER
T	TELEPHONE MANHOLE COVER
T	TELEPHONE LINES
OHW	OVERHEAD UTILITY WIRES
U.P.	UTILITY COMPANY POLE
	STREET LIGHT
WLP	WOOD LIGHT POLE
TSP	TRAFFIC SIGN POLE
HYD.	FIRE HYDRANT
PM	PARKING METER
	CATCH BASIN
O.F.	OIL FILL
T.P.	TREE PIT
D.C.	DROP CURB
CLF	CHAIN LINK FENCE
T.W.	TOP OF WALL
T.C.	TOP OF CURB
B.C.	BOTTOM OF CURB
C.L.	CENTER LINE OF ROAD
L.G.	LEGAL GRADE

NOTES:
THIS IS TO CERTIFY THAT THERE ARE NO STREAMS OR NATURAL WATER COURSES IN THE PROPERTY AS SHOWN ON THIS SURVEY.

ALL ELEVATIONS ARE IN MANHATTAN HIGHWAY DATUM, WHICH IS 2.75 FEET ABOVE THE NATIONAL GEODETIC SURVEY DATUM OF 1929, (US COAST AND GEODETIC SURVEY DATUM) MEAN SEA LEVEL, SANDY HOOK, NEW JERSEY.

ALL UNDERGROUND UTILITIES INDICATED HEREON HAVE BEEN PLOTTED FROM MAPS AS PROVIDED BY THE RESPECTIVE UTILITY COMPANIES AND/OR GOVERNMENTAL AGENCIES. WE BEAR NO RESPONSIBILITY FOR THEIR ACCURACY OR COMPLETENESS. IT IS THE OWNERS RESPONSIBILITY TO CONTACT THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY EXCAVATION IN ORDER TO VERIFY ALL UTILITY LOCATIONS.

ALL MANHOLE COVERS PLOTTED FROM ACTUAL FIELD MEASUREMENTS.

INVERT ELEVATIONS FIELD VERIFIED.

CAUTION:
BEFORE DOING ANY DIGGING OR DRILLING ON THIS SITE IT IS REQUIRED THAT SUB-SURFACE SERVICE, INCLUDING THE UNDERGROUND MAINS, DUCTS & CABLES BE MARKED AND IDENTIFIED BY THE UTILITY INVOLVED. THIS SHOULD BE DONE BY PROVIDING THE AFFECTED UTILITY WITH THE NOTICE REFERRED TO IN THE STATE OF NEW YORK INDUSTRIAL CODE 53.

SURVEY UPDATED BY VISUAL EXAMINATION ON JANUARY 14, 2011

8.00' 16.00' 24.00' 48.00'
0 8 24 48 96

SCALE: 1" = 16'

SURVEYED: NOVEMBER 5, 2007

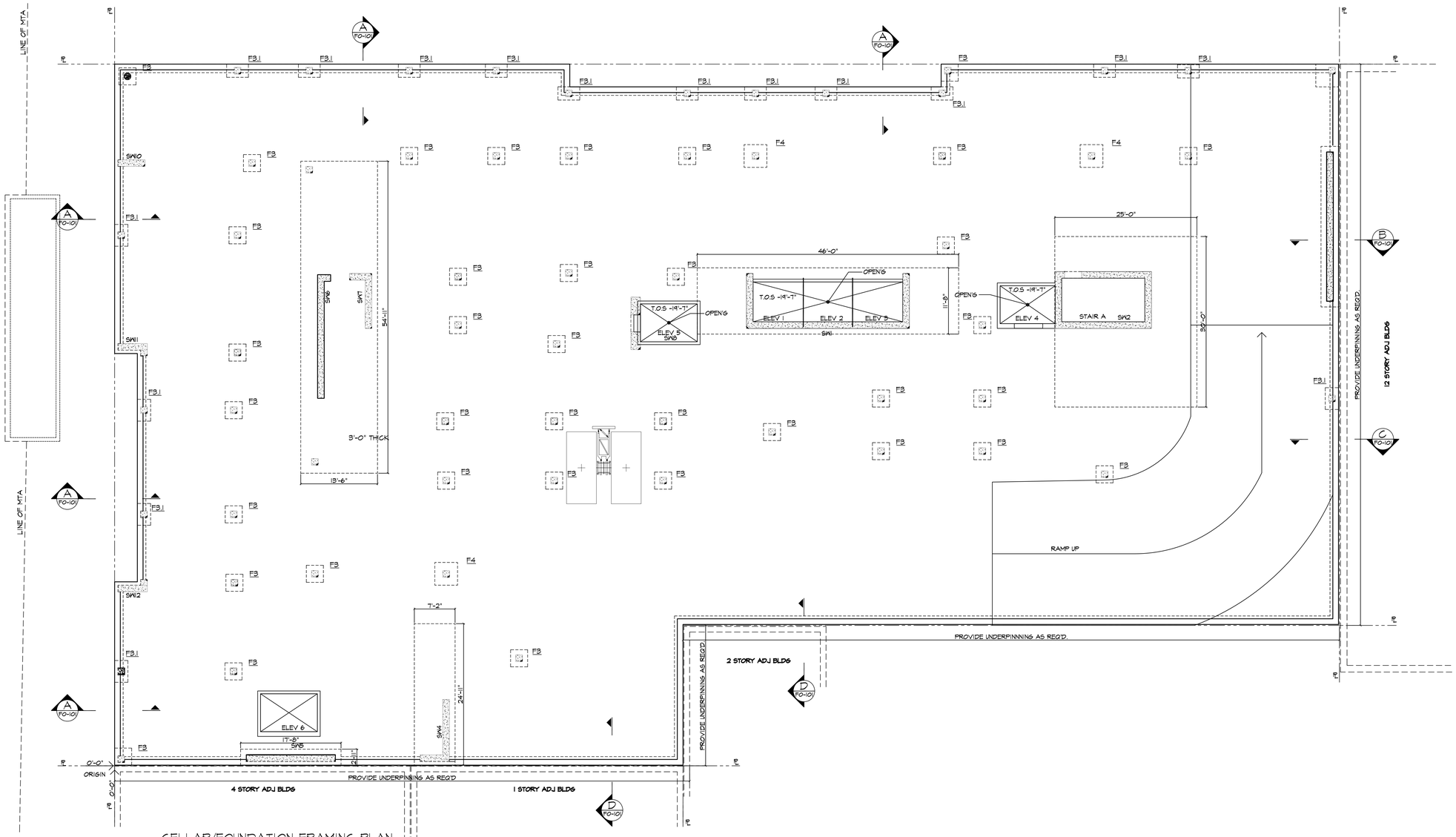
SURVEY OF PROPERTY SITUATED IN:
250-268 WEST 26TH STREET
BOROUGH OF MANHATTAN
COUNTY OF NEW YORK
CITY OF NEW YORK
STATE OF NEW YORK

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.

COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYOR'S INKED SEAL OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID TRUE COPY.

GUARANTEES INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED, AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENT AGENCY, AND/OR LENDING INSTITUTION LISTED HEREON, AND TO THE ASSIGNEES OF THE LENDING INSTITUTION. GUARANTEES ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.

FEHRINGER SURVEYING, P.C.
ROBERT FEHRINGER
LICENSED LAND SURVEYOR
2200 JACKSON AVENUE
SEAFORD, NY 11783
(516) 763 - 5515 FAX NO. (516) 763 - 5525



CELLAR/FOUNDATION FRAMING PLAN
1/8"=1'-0"

NOTES

TOP OF SLAB ELEVATION -14'-7" UNLESS OTHERWISE NOTED THUS [...] ON PLAN.

2. MINIMUM BOTTOM OF FOOTING ELEVATION SHOWN THUS (...) ON PLAN.

3. SLOPE SLAB ON GRADE AS INDICATED ON ARCHITECTURAL DRAWINGS.

3. COORDINATE EQUIPMENT PAD-SIZE AND LOCATION WITH MECHANICAL DRAWINGS.

4. COLUMN REINFORCING FOR ALL COLUMN MARKED THUS (*) SHALL BE EXTEND TO TOP OF THE FOOTING.

FOOTING SCHEDULE

FOOTING MARK	SIZE	DEPTH	REINFORCING EACH WAY	REMARKS
F3	3'-0"x3'-0"	1'-4"	4-#6	-
F3.1	3'-10"x2'-4"	1'-4"	4-#6	-
F4	4'-0"x4'-0"	1'-4"	4-#6	-

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260 WEST 26TH STREET
NEW YORK, NY

BLOCK: 775
LOT: 4, 69, 77, 78, 79, 80

DEVELOPER
ARTIMUS

STRUCTURAL ENGINEER
ENGINEERING GROUP

MECHANICAL ENGINEER
RODKIN CARDINALE ENGINEERS P.C.

OWNER
ARTIMUS

ISSUE
DOB FILING 03.28.2011

SCALE

KEY PLAN

PROJECT
260 WEST 26TH STREET

DRAWING
FOUNDATION/CELLAR FRAMING PLAN

SEAL AND SIGNATURE

DATE: 03.28.2011
PROJECT NO: 1574.00
DRAWING BY: JD
CHK BY:
DWG NO:
FO-100.00
CADO FILE NO: 5 OF 28

2010.163

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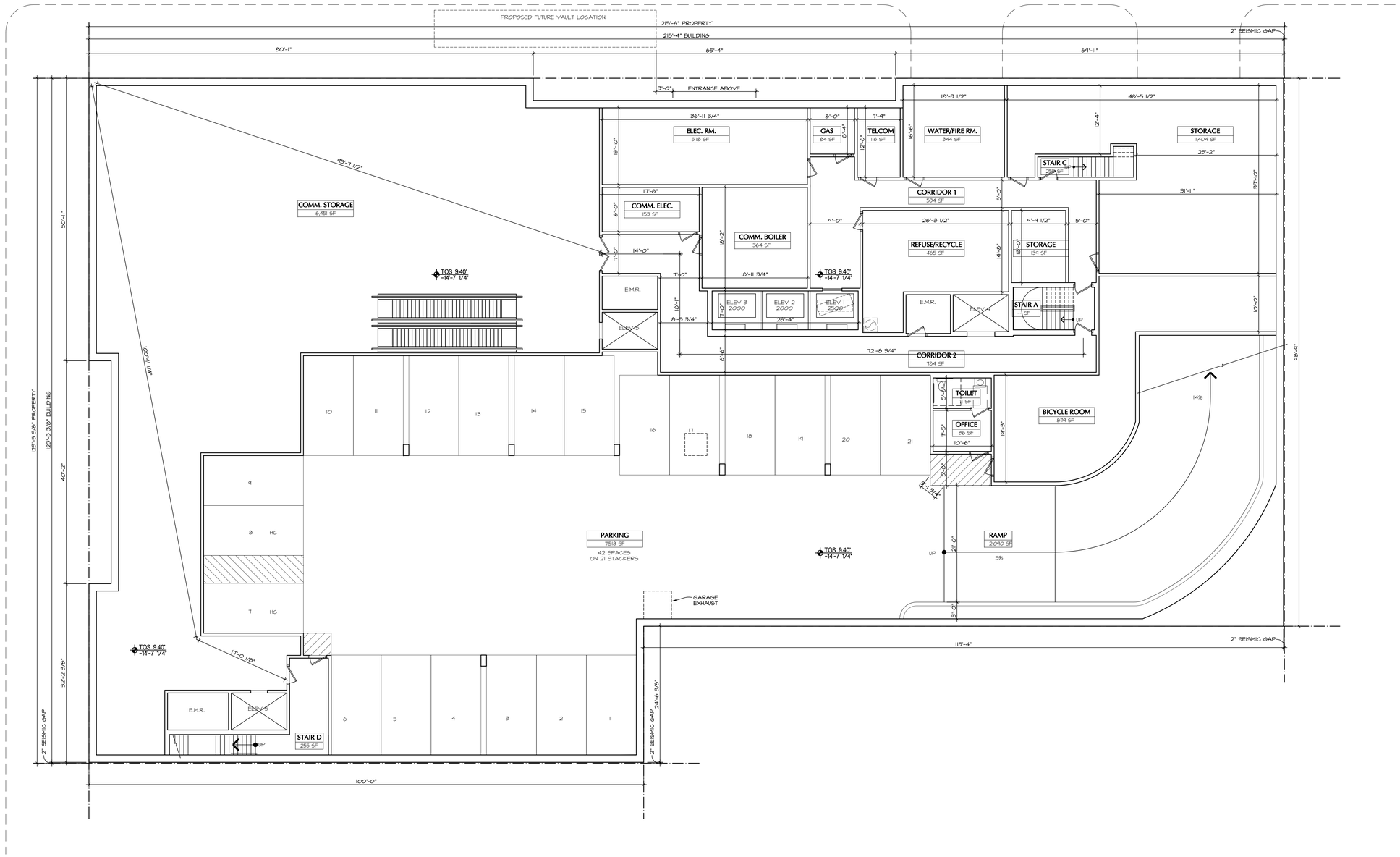

A CELLAR PLAN

1/8"=1'-0"

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FEB 28 2011

SCALE
1/8"=1'-0"

KEY PLAN

PROJECT
260 WEST 26TH STREET

DRAWING
CELLAR PLAN

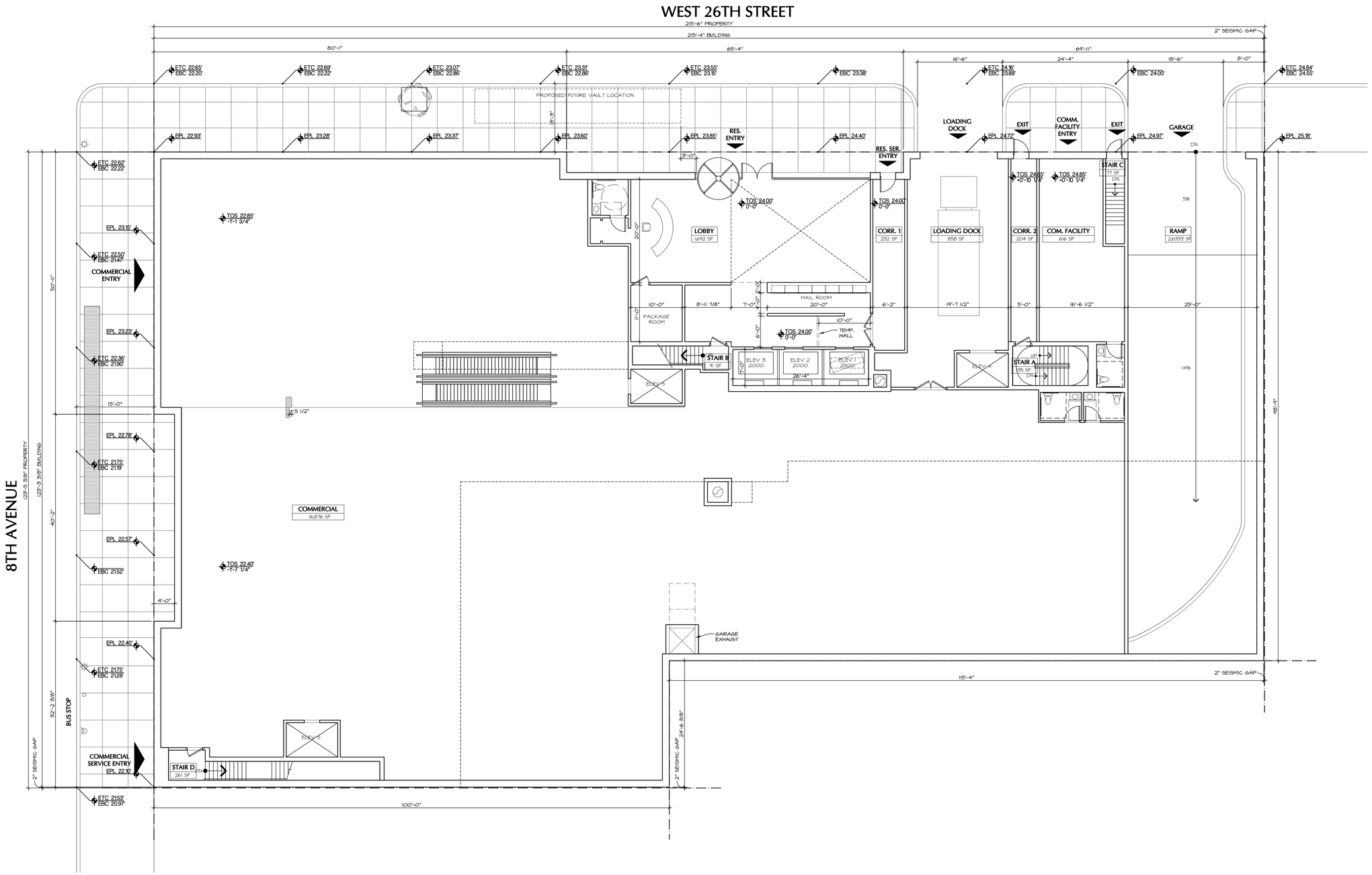
SEAL AND SIGNATURE

DATE: 02.18.11
PROJECT NO: 1574.00
DRAWING BY: JD
CHK BY:
DWG NO:

A-101.00

CADO FILE NO: OF

NOT FOR CONSTRUCTION



A 1ST FLOOR PLAN

1/8"=1'-0"

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FEB 28 2011

SCALE
1/8"=1'-0"

KEY PLAN

PROJECT
260 WEST 26TH STREET

DRAWING
1ST FLOOR PLAN

SEAL AND SIGNATURE

DATE: 02.18.11
PROJECT NO: 1574.00
DRAWING BY: JD
CHK BY:
DWG NO:
A-102.00
CADO FILE NO: OF

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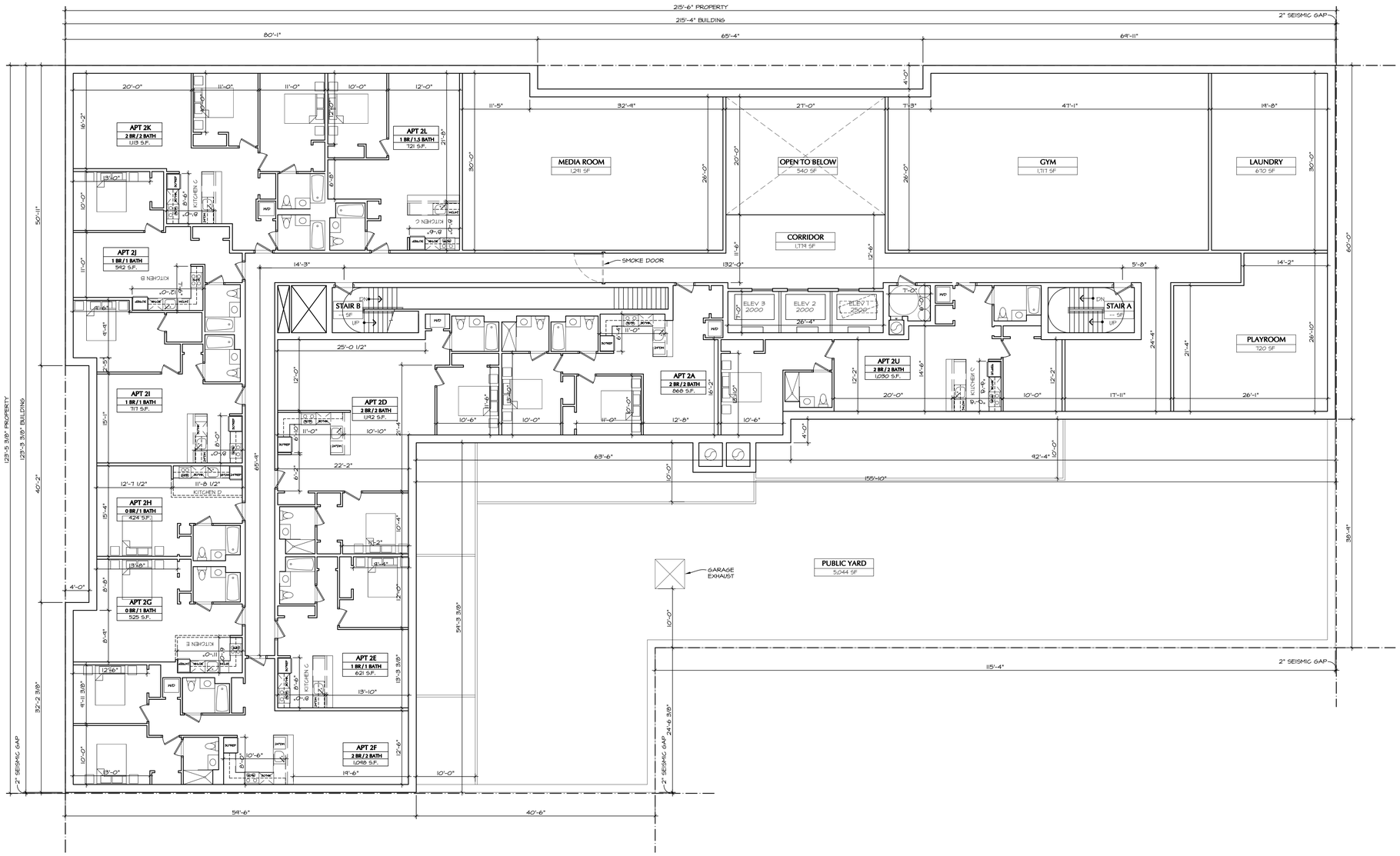

A 2ND FLOOR PLAN

1/8"=1'-0"

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SCALE
1/8"=1'-0"

KEY PLAN

PROJECT
260 WEST 26TH STREET

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2ND FLOOR PLAN

SEAL AND SIGNATURE

DATE: 02.18.11
PROJECT NO: 1574.00
DRAWING BY: JD
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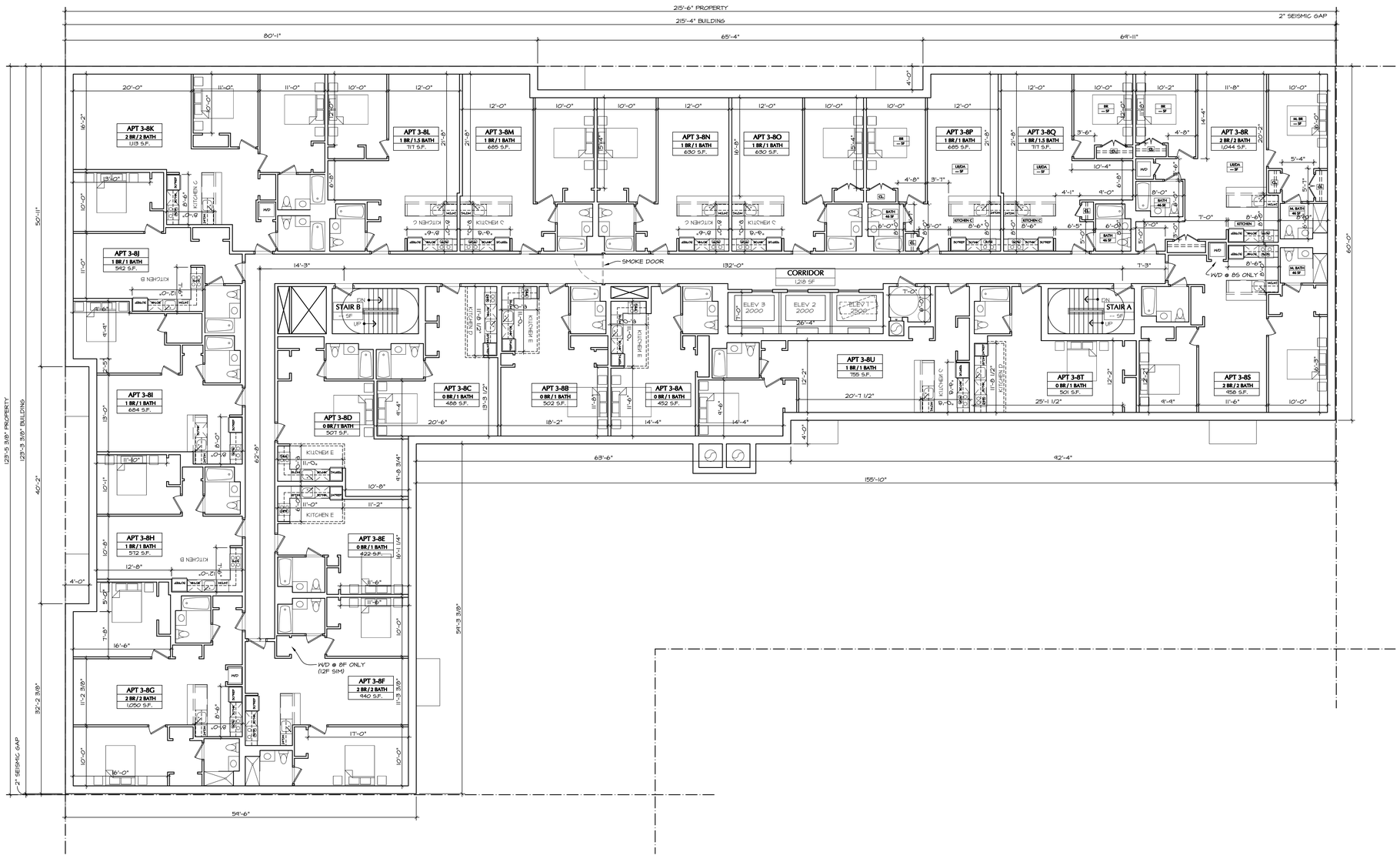

A 3RD - 8TH FLOOR PLAN

1/8"=1'-0"

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SCALE
1/8"=1'-0"

KEY PLAN

PROJECT
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DRAWING
3RD - 8TH FLOOR PLAN

SEAL AND SIGNATURE

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PROJECT NO: 1574.00
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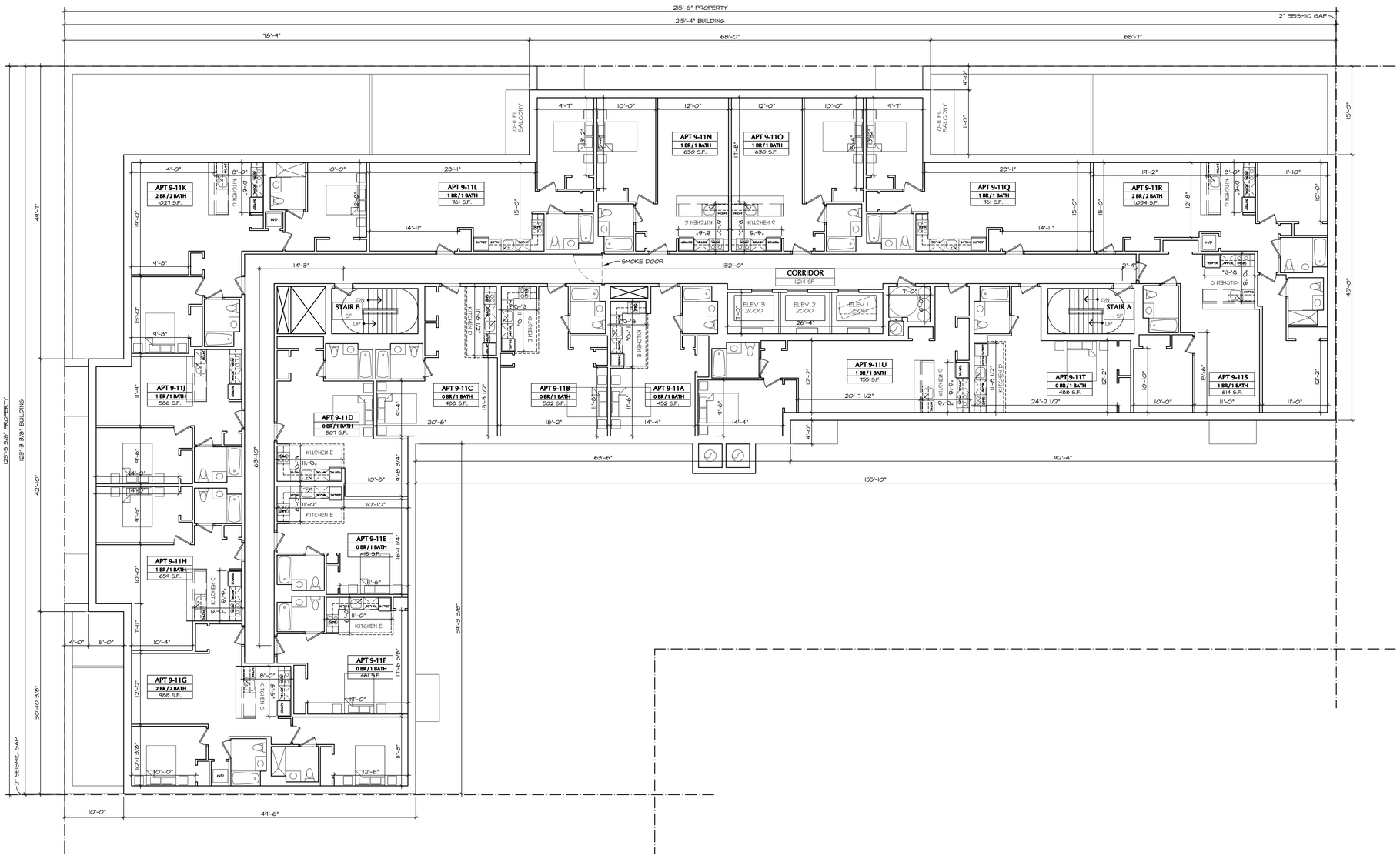

A 9TH - 11TH FLOOR PLAN

1/8"=1'-0"

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SCALE
1/8"=1'-0"

KEY PLAN

PROJECT
260 WEST 26TH STREET

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9TH - 11TH FLOOR PLAN

SEAL AND SIGNATURE

DATE: 02.18.11
PROJECT NO: 1574.00
DRAWING BY: JD
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DWG NO:
A-105.00
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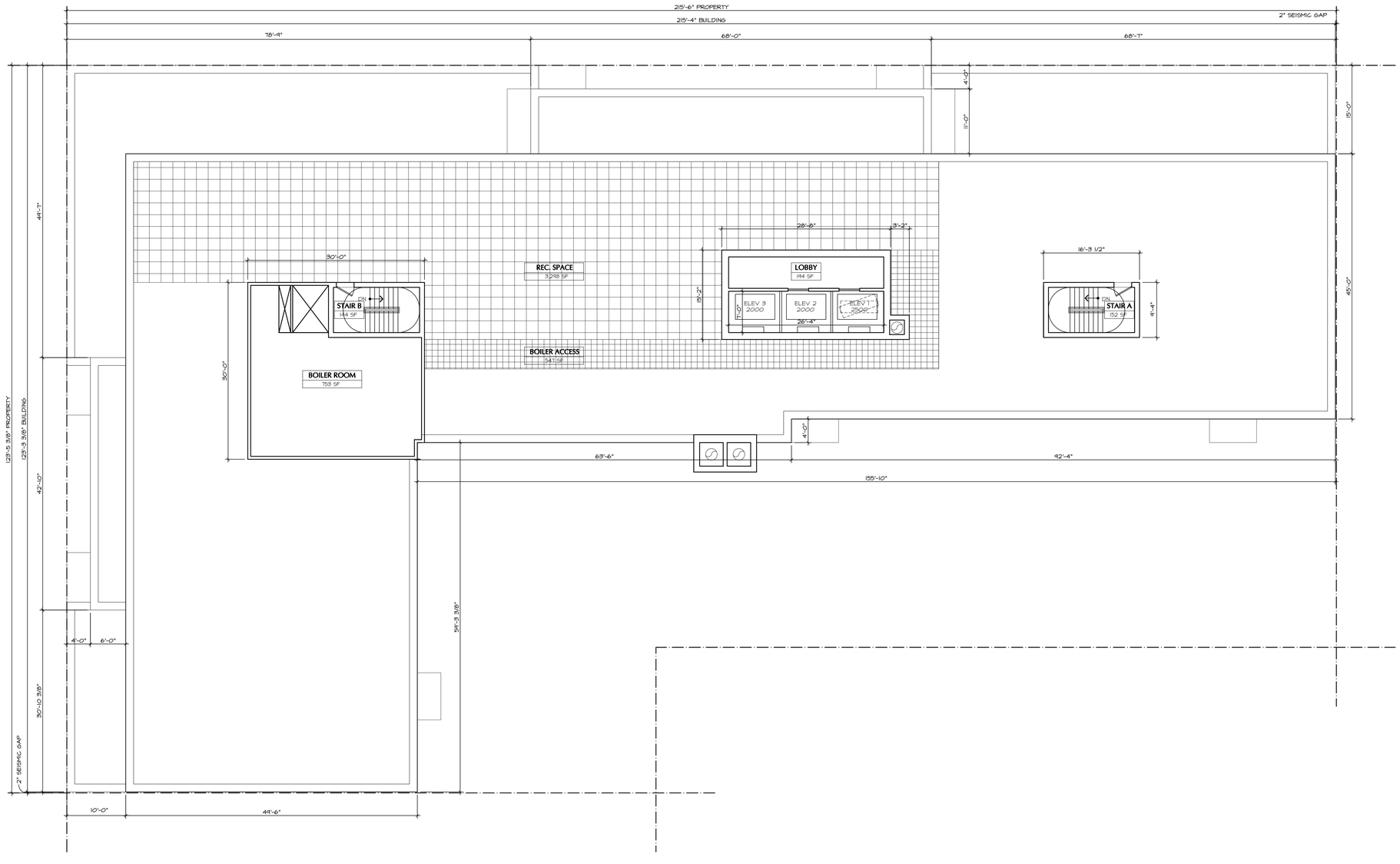

A ROOF PLAN

1/8"=1'-0"

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SCALE
1/8"=1'-0"

KEY PLAN

PROJECT
260 WEST 26TH STREET

DRAWING
ROOF PLAN

SEAL AND SIGNATURE

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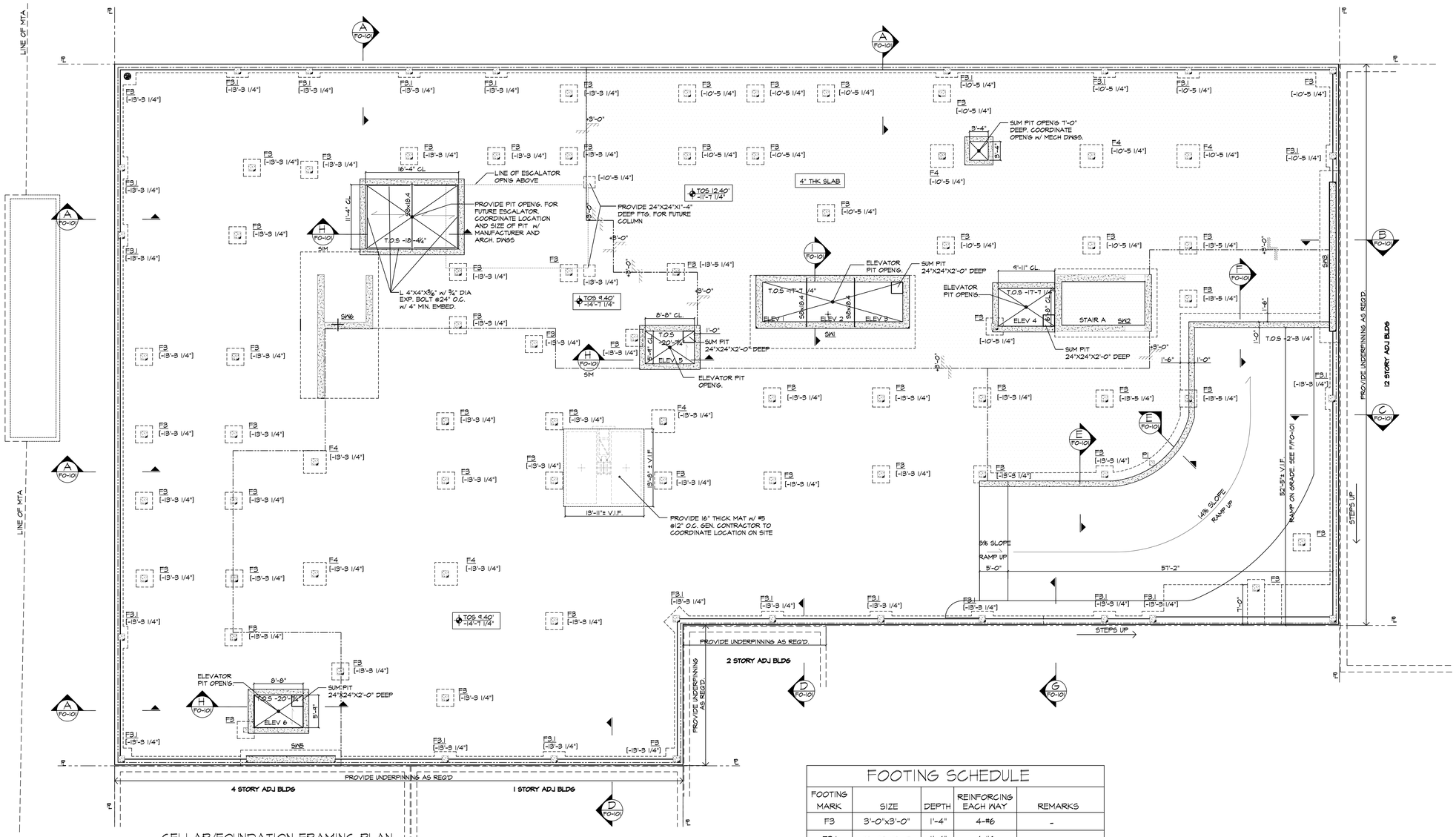
DWG NO:
A-107.00
CADD FILE NO: OF

Addendum 3

Vapor Barrier and Concrete Cover Design



CELLAR/FOUNDATION FRAMING PLAN

1/8"=1'-0"

NOTES

1. TOP OF SLAB ELEVATION:
   PARKING AREA, COMMERCIAL STORAGE = -14'-7 1/4" ALL OTHERS = -11'-7 1/4" UNLESS OTHERWISE NOTED THUS [...] ON PLAN.
   ELEVATOR PITS = SEE PLAN
2. BOTTOM OF FOOTING ELEVATION - 16'-5 1/4" TYP. UNLESS SHOWN THUS [...] ON PLAN.
3. SLOPE SLAB ON GRADE AS INDICATED ON ARCHITECTURAL DRAWINGS.
3. COORDINATE EQUIPMENT PAD-SIZE AND LOCATION WITH MECHANICAL DRAWINGS.
4. COLUMN REINFORCING FOR ALL COLUMN MARKED THUS (*) SHALL BE EXTEND TO TOP OF THE FOOTING.

LEGEND.

- INDICATES AREA w/ 4" THK SLAB w/ DOUBLE MESH.
- INDICATES AREA w/ 6" THK SLAB w/ DOUBLE MESH.
- INDICATES DIRECTION OF 3/8" LT. WT. CONC. w/ ON 2"-18GA MD.

FOOTING SCHEDULE

FOOTING MARK	SIZE	DEPTH	REINFORCING EACH WAY	REMARKS
F3	3'-0"x3'-0"	1'-4"	4-#6	-
F3.1	3'-10"x2'-4"	1'-4"	4-#6	-
F4	4'-0"x4'-0"	1'-4"	4-#6	-

SHEER WALL FOOTING SCHEDULE

FOOTING MARK	SIZE	TOP		BOTTOM		STIRRUPS			DEPTH
		LONG WAY	SHORT WAY	LONG WAY	SHORT WAY	SIZE	TYPE	SPACING	
SW1	SEE PLAN	#8@12"	#8@10"	#8@12"	#8@12"				34"
SW2	SEE PLAN	#8@12"	#8@12"	#8@12"	#8@12"				24"
SW3	SEE PLAN	#8@12"	#8@7"	#8@12"	#8@12"	#4	1	@12	24"
SW4	NOT USED								
SW5	SEE PLAN	#8@12"	#8@12"	#8@12"	#8@12"	#4	1	@12	24"
SW6	SEE PLAN	#10@10"	#8@12"	#8@12"	#8@12"				40"

2010.163

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ENGINEERING GROUP

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RODKIN CARDINALE ENGINEERS P.C.

OWNER
CHELSEA W26 LLC

ISSUE
DOB FILING SET
MARCH 28 2011

MTA FILING SET
APRIL 13 2011

ISSUED FOR PRICING
MAY 6, 2011

SCALE

PROJECT
260 WEST 26TH STREET

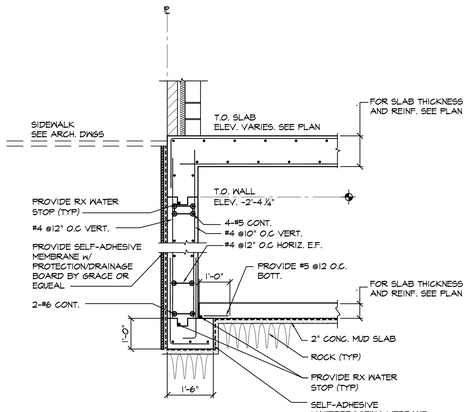
DRAWING
FOUNDATION/CELLAR FRAMING PLAN

SEAL AND SIGNATURE

DATE: 03.28.11
PROJECT NO: 1574.00
DRAWING BY: JD
CHK BY:
DWG NO:

FO-100.00

CADD FILE NO: 5 OF 28



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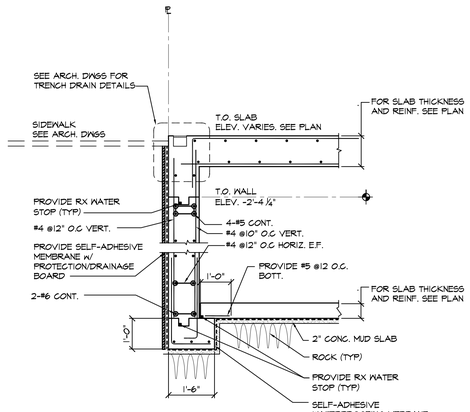

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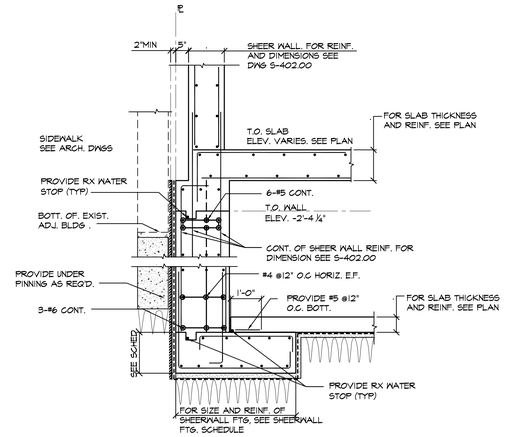
w/ TRENCH DRAIN



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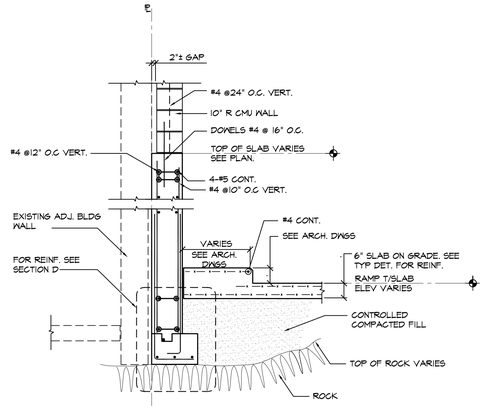

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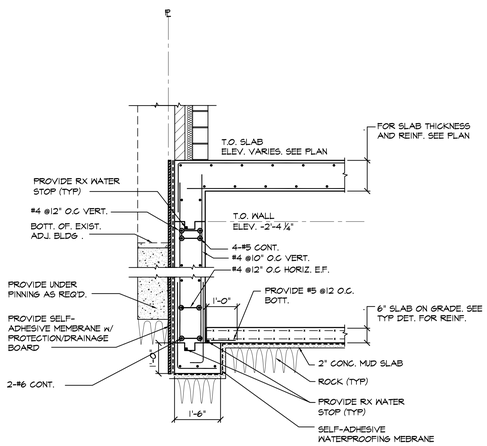

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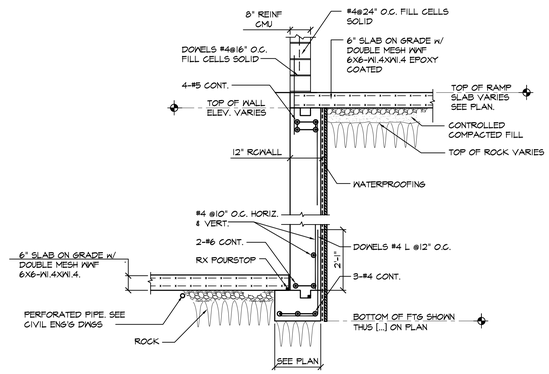

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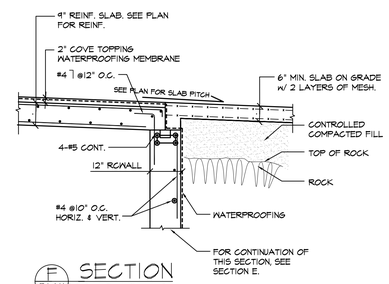

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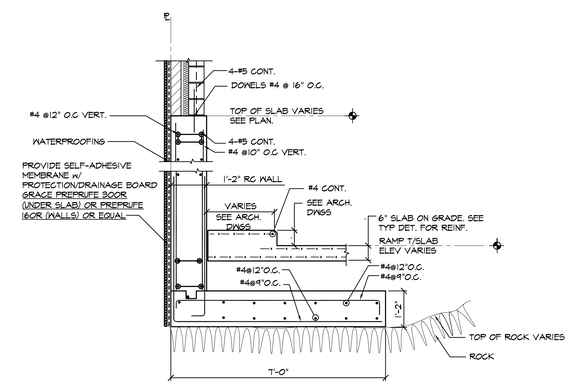

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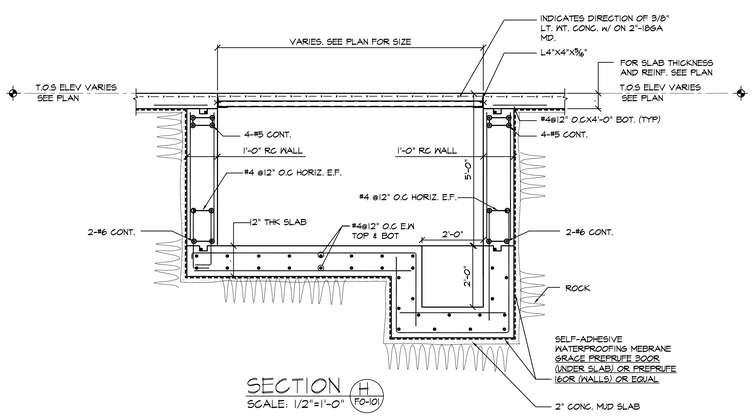

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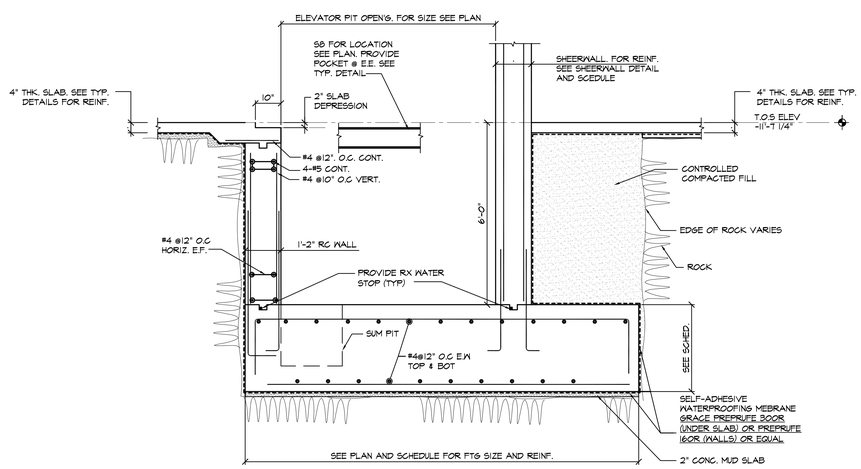

SECTION (I) (F0-101)
SCALE: 1/2"=1'-0"

GF55 PARTNERS

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NEW YORK, N Y 10010
212 352 3099

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260 WEST 26TH STREET
NEW YORK NY 10001

BLOCK: 775
LOT: 4, 69, 77, 78, 79, 80

DEVELOPER
ARTIMUS

STRUCTURAL ENGINEER
ENGINEERING GROUP

MECHANICAL ENGINEER
RODKIN CARDINALE ENGINEERS P.C.

OWNER
CHELSEA W26 LLC

ISSUE
DOB FILING SET
MARCH 28 2011

MTA FILING SET
APRIL 13 2011

ISSUED FOR PRICING
MAY 6, 2011

SCALE

PROJECT
260 WEST 26TH STREET

DRAWING
FOUNDATION DETAILS

SEAL AND SIGNATURE

DATE: 03.28.11
PROJECT NO: 1574.00
DRAWING BY: JD
CHK BY:
DWG NO:
FO-101.00
CADD FILE NO:
6 OF 28

2010163

Addendum 4

Generic Procedures for Management of Underground Storage Tanks identified under the NYC BCP

Prior to Tank removal, the following procedures should be followed:

- Remove all fluid to its lowest draw-off point.
- Drain and flush piping into the tank.
- Vacuum out the “tank bottom” consisting of water product and sludge.
- Dig down to the top of the tank and expose the upper half.
- Remove the fill tube and disconnect the fill, gauge, product, vent lines and pumps. Cap and plug open ends of lines.
- Temporarily plug all tank openings, complete the excavation, remove the tank and place it in a secure location.
- Render the tank safe and check the tank atmosphere to ensure that petroleum vapors have been satisfactorily purged from the tank.
- Clean tank or remove to storage yard for cleaning.
- If the tank is to be moved, it must be transported by licensed waste transporter. Plug and cap all holes prior to transport leaving a 1/8 inch vent hole located at the top of the tank during transport.
- After cleaning, the tank must be made acceptable for disposal at a scrap yard, cleaning the tanks interior with a high pressure rinse and cutting the tank in several pieces.

During the tank and pipe line removal, the following field observations should be made and recorded:

- A description and photographic documentation of the tank and pipe line condition (pitting, holes, staining, leak points, evidence of repairs, etc.).
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with a calibrated Photo -Ionization Detector (PID).

<u>Impacted Soil Excavation Methods</u>

The excavation of the impacted soil will be performed following the removal of the existing tanks. Soil excavation will be performed in accordance with the procedures described under Section 5.5 of Draft DER-10 as follows:

- A description and photographic documentation of the excavation.
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with calibrated PID.

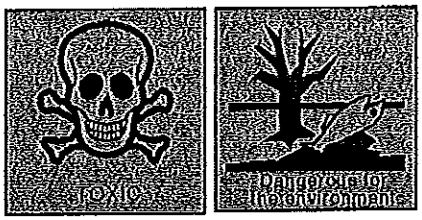
Final excavation depth, length, and width will be determined in the field, and will depend on the horizontal and vertical extent of contaminated soils as indentified through physical examination (PID response, odor, staining, etc.). Collection of verification samples will be performed to evaluate the success of the removal action as specified in this document.

The following procedure will be used for the excavation of impacted soil (as necessary and appropriate):

- Wear appropriate health and safety equipment as outlined in the Health and Safety Plan.
- Prior to excavation, ensure that the area is clear of utility lines or other obstructions. Lay plastic sheeting on the ground next to the area to be excavated.
- Using a rubber-tired backhoe or track mounted excavator, remove overburden soils and stockpile, or dispose of, separate from the impacted soil.
- If additional UST's are discovered, the NYSDEC will be notified and the best course of action to remove the structure should be determined in the field. This may involve the continued trenching around the perimeter to minimize its disturbance.
- If physically contaminated soil is present (e.g., staining, odors, sheen, PID response, etc.) an attempt will be made to remove it, to the extent not limited by the site boundaries or the bedrock surface. If possible, physically impacted soil will be removed using the backhoe or excavator, segregated from clean soils and overburden, and staged on separated dedicated plastic sheeting or live loaded into trucks from the disposal facility. Removal of the impacted soils will continue until visibly clean material is encountered and monitoring instruments indicate that no contaminants are present.
- Excavated soils which are temporarily stockpiled on-site will be covered with tarp material while disposal options are determined. Tarp will be checked on a daily basis and replaced, repaired or adjusted as needed to provide full coverage. The sheeting will be shaped and secured in such a manner as to drain runoff and direct it toward the interior of the property.
- Once the site representative and regulatory personnel are satisfied with the removal effort, verification of confirmatory samples will be collected from the excavation in accordance with DER-10.

ADDENDUM 5
MSDS for all known contaminants

Safety data for benzo(a)pyrene



Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 1,2-benzopyrene, 6,7-benzopyrene, benzo[a]pyrene, B(a)P, BP, 3,4-benzopyrene, benzo[d,e,f]chrysene, 3,4-benzpyrene, benzpyrene, 3,4-benzylpyrene, 3,4-benz[a]pyrene, 3,4-BP, 3,4-benzopyrene
Molecular formula: $C_{20}H_{12}$
CAS No: 50-32-8
EINECS No: 200-028-5
EU Index No: 601-032-00-3

Physical data

Appearance: yellow crystals or powder [found in cigarette smoke, coal tar, fuel exhaust gas and in many other sources]
Melting point: 176 C
Boiling point: 495 C
Vapour density: 8.7 (air = 1)
Vapour pressure:
Density (g cm^{-3}): 1.351
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility: slight

Stability

Stable. Incompatible with strong oxidizing agents.

Toxicology

POISON. This material is an experimental carcinogen, mutagen, tumorigen, neoplastigen and teratogen. It is a probable carcinogen in humans and a known human mutagen. IARC Group 2A carcinogen. It is believed to cause bladder, skin and lung cancer. Exposure to it may damage the developing foetus. May cause reproductive damage. May be transferred to nursing infants through mother's milk. Skin, respiratory and eye irritant. May cause changes to the colour and properties of skin. Exposure to sunlight can increase the skin damage caused by this chemical.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
SCU-RAT LD50 50 mg kg^{-1}
IPR-MUS LDLO 500 mg kg^{-1}
IRN-FRG LDLO 11 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R45 R46 R50 R53 R60 R61.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
Un No 2811. Packing group III. Hazard class 6.1.

Environmental information

Very toxic in the environment - may cause long-term damage.

Personal protection

Restricted material. Only to be used by trained workers. Prepare a full risk assessment before starting work. Safety glasses, gloves, good ventilation. Handle as a carcinogen. Do not dry sweep spills because of the risk of increasing the amount of airborne material.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)

Institute for Reference Materials and Measurements

SAFETY DATA SHEET

Based on Regulation (EC) No. 1907/2006 (REACH) Article 31 and Annex II

BCR-271: benzo[a]anthracene

1. Identification of the substance/preparation and of the company/undertaking

1.1 Identification of the substance or preparation:

Product name: BCR-271: benzo[a]anthracene

CAS number	56-55-3
EC index number	601-033-00-9
EINECS number	200-280-6
RTECS number	CV9275000
Molecular mass	228.30 g/mol
Formula	C18H12

1.2 Use of the substance/preparation:

Certified reference material for laboratory use only

1.3 Company/undertaking identification:

Institute for Reference Materials and Measurements
Retieseweg
B-2440 Geel
Tel: +32 14 57 12 11
Fax: +32 14 59 04 06
JRC-IRMM-RM-Sales@ec.europa.eu

1.4 Emergency telephone:

Poison Centre: +32 70 245 245

2. Hazards identification

NFPA: 1-1-2(*)

DSD/DPD

May cause cancer
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Other hazards
Its dust is explosive with air
Dust cloud can be ignited by a spark
Slightly irritant to skin
Slightly irritant to eyes
Caution! Substance is absorbed through the skin
No certainty about human mutagenic properties
Highly bioaccumulative
Not readily biodegradable in water

CLP

Carc. 1B	May cause cancer. (H350)
Aquatic Acute 1	Very toxic to aquatic life. (H400)
Aquatic Chronic 1	Very toxic to aquatic life with long lasting effects. (H410)

Other hazards
Its dust is explosive with air
Dust cloud can be ignited by a spark
Slightly irritant to skin
Slightly irritant to eyes
Caution! Substance is absorbed through the skin
No certainty about human mutagenic properties
Highly bioaccumulative
Not readily biodegradable in water

BCR-271: benzo[a]anthracene

3. Composition/information on ingredients

Name	CAS No EINECS/ELINCS	Conc.	Classification according to DSD/DPD	Classification according to CLP	Note
benz[a]anthracene	56-55-3 200-280-6		Carc. Cat. 2; R45 N; R50-53	Carc. 1B; H350 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	

4. First aid measures

4.1 After inhalation:
Remove the victim into fresh air
Respiratory problems: consult a doctor/medical service

4.2 Skin contact:
Rinse with water
Take victim to a doctor if irritation persists

4.3 Eye contact:
Rinse with water
Take victim to an ophthalmologist if irritation persists

4.4 After ingestion:
Rinse mouth with water
Immediately after ingestion: give lots of water to drink
Consult a doctor/medical service if you feel unwell

5. Fire-fighting measures

5.1 Suitable extinguishing media:
Water spray
Alcohol-resistant foam
Polymer foam
ABC powder
Carbon dioxide

5.2 Unsuitable extinguishing media:
Solid water jet ineffective as extinguishing medium

5.3 Special exposure hazards:
Heating increases the fire hazard
Dust cloud can be ignited by a spark
Upon combustion CO and CO2 are formed

5.4 Instructions:
Take account of toxic fire-fighting water
Use water moderately and if possible collect or contain it

5.5 Special protective equipment for fire-fighters:
Gloves
Protective clothing
Heat/fire exposure: compressed air/oxygen apparatus

6. Accidental release measures

6.1 Personal precautions:
See heading 8.2

6.2 Environmental precautions:
Dam up the solid spill
Prevent soil and water pollution
Prevent spreading in sewers
See heading 13

6.3 Methods for cleaning up:

Scoop solid spill into closing containers
Carefully collect the spill/leftovers
Clean contaminated surfaces with an excess of water
Take collected spill to manufacturer/competent authority
Wash clothing and equipment after handling

7. Handling and storage

7.1 Handling:

Avoid raising dust
Warning! Avoid exposure
Keep away from naked flames/heat
Obtain special instructions before use
Observe strict hygiene
Keep container tightly closed
Do not discharge the waste into the drain

7.2 Storage:

Safe storage requirements:
- Store in a cool area
- Store in a dry area
- Store in a dark area
- Keep container in a well-ventilated place
- Keep locked up
- Unauthorized persons are not admitted
- Meet the legal requirements

Keep away from:
- oxidizing agents
- (strong) acids

7.3 Specific use(s):

See information supplied by the manufacturer for the identified use(s).

8. Exposure controls/Personal protection

8.1 Exposure limit values:

8.1.1 Occupational exposure:

If limit values are applicable and available these will be listed below.

TLV (USA)

Benz(a)anthracene	Short time value	- ppm
	Time-weighted average exposure limit	- ppm

8.1.2 Sampling methods:

Product name	Test	Number	Sampling method	Remarks
Benz(a)Anthracene	OSHA	CSI		
Benz(a)Anthracene (Polynuclear aromatic hydrocarbons)	NIOSH	5506	adsorption tubes	
Benz(a)Anthracene (Polynuclear aromatic hydrocarbons)	NIOSH	5515	adsorption tubes	

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Measure the concentration in the air regularly
Carry operations in the open/under local exhaust/ventilation or with respiratory protection
Personal protective equipment:

a) Respiratory protection:
Dust production: dust mask with filter type P3

b) Hand protection:
Gloves

c) Eye protection:

Safety glasses
In case of dust production: protective goggles
d) Skin protection:
Protective clothing
8.2.2 Environmental exposure controls:
See headings 6.2, 6.3 and 13

9. Physical and chemical properties

9.1 General information:

Physical form	Crystalline solid
	Scales
Odour	Odourless
Colour	Fluorescent yellow-green to colourless

9.2 Important health, safety and environmental information:

Boiling point	Not applicable
Vapour pressure (20°C)	0,00007 hPa
Relative density	1,3
Solubility in water	0,00001 g/100 ml
Solubility in solvents	Soluble in ether
	Soluble in acetone
	Soluble in oils/fats
Log Pow	5,61 - 5,79

9.3 Other information:

Melting point	160 °C

10. Stability and reactivity

10.1 Conditions to avoid:

Possible fire hazard
heat sources
ignition sources

Stability
Unstable on exposure to light
Unstable on exposure to air

Reactions
Reacts violently with (strong) oxidizers
Decomposes on exposure to (strong) acids

10.2 Materials to avoid:
oxidizing agents
(strong) acids

10.3 Hazardous decomposition products:
Upon combustion CO and CO2 are formed

11. Toxicological information

11.1 Acute toxicity:
No (test)data available.

11.2 Chronic toxicity:
Probably human carcinogenic
Mutagenicity: AMES test positive
No certainty about human mutagenic properties
Not classified as toxic to reproduction (EC)

BCR-271: benzo[a]anthracene

EC carc cat	2
Listed in SZW - List of carcinogenic substances	yes
IARC - classification	2A

BCR-271: benzo[a]anthracene

TLV - Carcinogen	A2
MAK - Krebserzeugend Kategorie	2
MAK - Keimzellmutagen Kategorie	3A
MAK - Schwangerschaft Gruppe	-
CLP carc cat	category 1B

11.3 Acute effects/symptoms:

Inhalation:
No data available

Skin contact:
Slight irritation

Eye contact:
Slight irritation

Ingestion:
No data available

11.4 Chronic effects:
ON CONTINUOUS/REPEATED EXPOSURE/CONTACT:
No specific information available
SIMILAR PRODUCTS CAUSE FOLLOWING SYMPTOMS:
Feeling of weakness
Photoallergy
Skin rash/inflammation
Cracking of the skin
Skin cancer
Lung tissue affection/degeneration
Enlargement/affection of the liver
Affection of the renal tissue

12. Ecological information

12.1 Ecotoxicity:

BCR-271: benzo[a]anthracene

LC50 fishes

species	value	duration (h)	remarks
PIMEPHALES PROMELAS	0.0018 mg/l	65 h	LETHAL

EC50 Daphnia

species	value	duration (h)	remarks
DAPHNIA PULEX	0,01 mg/l	96 h	STATIC SYSTEM

EC50 other aquatic organisms

species	value	duration (h)	remarks
CYANOPHYTA	0.018 mg/l	336 h	

12.2 Mobility:

Volatile organic compounds (VOC)	0 %
Solubility in/reaction with water	Insoluble in water Substance sinks in water
Water physicochemical processes	Forming sediments in water
Soil physicochemical processes	Adsorbs into the soil

12.3 Persistence and degradability:

Water abiotic degradation processes	Photolysis in water Ozonation in water
Half-life soil	> 100 days

Not readily biodegradable in water

12.4 Bioaccumulative potential:

Log Pow	5.61 - 5.79

Highly bioaccumulative

12.5 Results of PBT assessment:

Not applicable, based on available data

12.6 Other adverse effects:

Not dangerous for the ozone layer (Council Regulation (EC) no 1005/2009)

13. Disposal considerations

13.1 Provisions relating to waste:

Waste material code (Directive 2008/98/EC, decision 2001/118/EC)

16 05 06* : laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals

Depending on branch of industry and production process, also other EURAL codes may be applicable

Hazardous waste according to Directive 2008/98/EC

13.2 Disposal methods:

Dissolve or mix with a combustible solvent

Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery

Remove waste in accordance with local and/or national regulations

Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001)

13.3 Packaging/Container:

Waste material code packaging (Directive 2008/98/EC)

15 01 10* : packaging containing residues of or contaminated by dangerous substances

14. Transport information

ADR

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ADR	benzo[a]anthracene
UN number	3077
Class	9
Packing group	III
Hazard identification number	90
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

RID

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name RID	benzo[a]anthracene
UN number	3077
Class	9
Packing group	III
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

ADNR

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ADNR	benzo[a]anthracene
UN number	3077
Class	9
Packing group	III
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

IMO

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name IMO	benzo[a]anthracene
UN number	3077
Class	9
Packing group	III
Labels	9
Marine pollutant	P
Environmentally hazardous substance mark	yes

ICAO

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ICAO	benzo[a]anthracene
UN number	3077
Class	9
Packing group	III
Labels	9
Environmentally hazardous substance mark	yes

15. Regulatory information

15.1 EU Legislation:

DSD/DPD

Labelling according to Directive 2008/58/EC (30th adaptation of Directive 67/548/EEC)

Dangerous for the environment

R-phrases

45	May cause cancer
50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

S-phrases

53	Avoid exposure - obtain special instructions before use
45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
60	This material and its container must be disposed of as hazardous waste
61	Avoid release to the environment. Refer to special instructions/safety data sheets.

Additional recommendations

	Restricted to professional users.

CLP

Classification and labelling according to Regulation (EC) No 790/2009, 1st adaptation of Regulation (EC) No 1272/2008 – Annex VI and after evaluation of available test data

Signal word

Dgr	Danger

H-statements

H350	May cause cancer.
H410	Very toxic to aquatic life with long lasting effects.

P-statements

P202	Do not handle until all safety precautions have been read and understood.
P281	Use personal protective equipment as required.
P273	Avoid release to the environment.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P391	Collect spillage.
P405	Store locked up.

Supplemental information

	Restricted to professional users.

15.2 National provisions:

15.3 Specific community rules:

Enumerated in Annex XVII of Regulation (EC) No. 1907/2006: Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

Legislation	Reference legislation
EG/552/2009	See column 1: 28.
EG/552/2009	See column 1: 50. b)

16. Other information

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question.

Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult your BIG licence agreement for details.

(*) = INTERNAL CLASSIFICATION (NFPA)

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive
DPD Dangerous Preparation Directive
CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

Full text of any R-phrases referred to under headings 2 and 3:

R45	May cause cancer
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Full text of any H-statements referred to under headings 2 and 3:

H350	May cause cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Full text of any classes referred to under headings 2 and 3:

Aquatic Acute	Hazardous to the aquatic environment - acute
Aquatic Chronic	Hazardous to the aquatic environment - chronic
Carc.	Carcinogenicity

Institute for Reference Materials and Measurements

SAFETY DATA SHEET

Based on Regulation (EC) No. 1907/2006 (REACH) Article 31 and Annex II

BCR-048R: benzo[k]fluoranthene

1. Identification of the substance/preparation and of the company/undertaking

1.1 Identification of the substance or preparation:

Product name: BCR-048R: benzo[k]fluoranthene

CAS number	207-08-9
EC index number	601-036-00-5
EINECS number	205-916-6
RTECS number	DF6350000
Molecular mass	252.32 g/mol
Formula	C20H12

1.2 Use of the substance/preparation:

Certified reference material for laboratory use only

1.3 Company/undertaking identification:

Institute for Reference Materials and Measurements
Retieseweg
B-2440 Geel
Tel: +32 14 57 12 11
Fax: +32 14 59 04 06
JRC-IRMM-RM-Sales@ec.europa.eu

1.4 Emergency telephone:

Poison Centre: +32 70 245 245

2. Hazards identification

NFPA: 1-1-2(*)

DSD/DPD

May cause cancer
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Other hazards

Its dust is explosive with air
Dust cloud can be ignited by a spark
Slightly irritant to skin
Slightly irritant to eyes
Caution! Substance is absorbed through the skin
No certainty about human mutagenic properties
Highly bioaccumulative
Not readily biodegradable in water

CLP

Carc. 1B	May cause cancer. (H350)
Aquatic Acute 1	Very toxic to aquatic life. (H400)
Aquatic Chronic 1	Very toxic to aquatic life with long lasting effects. (H410)

Other hazards

Its dust is explosive with air
Dust cloud can be ignited by a spark
Slightly irritant to skin
Slightly irritant to eyes
Caution! Substance is absorbed through the skin
No certainty about human mutagenic properties
Highly bioaccumulative
Not readily biodegradable in water

3. Composition/information on ingredients

Name	CAS No EINECS/ELINCS	Conc.	Classification according to DSD/DPD	Classification according to CLP	Note
benzo[k]fluoranthene	207-08-9 205-916-6		Carc. Cat. 2; R45 N; R50-53	Carc. 1B; H350 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	

4. First aid measures

4.1 After inhalation:
Remove the victim into fresh air
Respiratory problems: consult a doctor/medical service

4.2 Skin contact:
Rinse with water
Do not apply (chemical) neutralizing agents
Take victim to a doctor if irritation persists

4.3 Eye contact:
Rinse with water
Do not apply neutralizing agents
Take victim to an ophthalmologist if irritation persists

4.4 After ingestion:
Rinse mouth with water
Immediately after ingestion: give lots of water to drink
Do not induce vomiting
Consult a doctor/medical service if you feel unwell

5. Fire-fighting measures

5.1 Suitable extinguishing media:
Water spray
Polyvalent foam
ABC powder
Carbon dioxide

5.2 Unsuitable extinguishing media:
No unsuitable extinguishing media known

5.3 Special exposure hazards:
Heating increases the fire hazard
Dust cloud can be ignited by a spark
Upon combustion CO and CO2 are formed

5.4 Instructions:
Take account of toxic fire-fighting water
Use water moderately and if possible collect or contain it

5.5 Special protective equipment for fire-fighters:
Gloves
Protective clothing
Heat/fire exposure: compressed air/oxygen apparatus

6. Accidental release measures

6.1 Personal precautions:
See heading 8.2

6.2 Environmental precautions:
Dam up the solid spill
Prevent soil and water pollution
Prevent spreading in sewers

See heading 13

6.3 Methods for cleaning up:

Scoop solid spill into closing containers
Carefully collect the spill/leftovers
Clean contaminated surfaces with an excess of water
Take collected spill to manufacturer/competent authority
Wash clothing and equipment after handling

7. Handling and storage

7.1 Handling:

Avoid raising dust
Warning! Avoid exposure
Keep away from naked flames/heat
Obtain special instructions before use
Observe strict hygiene
Keep container tightly closed
Do not discharge the waste into the drain

7.2 Storage:

Safe storage requirements:
- Store in a cool area
- Store in a dry area
- Keep container in a well-ventilated place
- Keep locked up
- Unauthorized persons are not admitted
- Meet the legal requirements

Keep away from:
- oxidizing agents
- (strong) acids

7.3 Specific use(s):

See information supplied by the manufacturer for the identified use(s)

8. Exposure controls/Personal protection

8.1 Exposure limit values:

8.1.1 Occupational exposure:

If limit values are applicable and available these will be listed below.

8.1.2 Sampling methods:

Product name	Test	Number	Sampling method	Remarks
Benz(a)Anthracene	OSHA	CSI		
Benz(a)Anthracene (Polynuclear aromatic hydrocarbons)	NIOSH	5506	adsorption tubes	
Benz(a)Anthracene (Polynuclear aromatic hydrocarbons)	NIOSH	5515	adsorption tubes	

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Measure the concentration in the air regularly
Carry operations in the open/under local exhaust/ventilation or with respiratory protection
Personal protective equipment:
- a) Respiratory protection:
  - Dust production: dust mask with filter type P3
- b) Hand protection:
  - Gloves
- c) Eye protection:
  - Safety glasses
  - In case of dust production: protective goggles
- d) Skin protection:
  - Protective clothing

8.2.2 Environmental exposure controls:

BCR-048R: benzo[k]fluoranthene

See headings 6.2, 6.3 and 13

9. Physical and chemical properties

9.1 General information:

Physical form	Crystalline solid
	Needles
Colour	Light yellow

9.2 Important health, safety and environmental information:

Boiling point	480 °C
Vapour pressure (20°C)	< 0.00001 hPa
Solubility in water	< 0.00001 g/100 ml
Solubility in solvents	Soluble in ethanol
	Soluble in acetic acid
	Soluble in oils/fats
Log Pow	6.84

9.3 Other information:

Melting point	217 °C

10. Stability and reactivity

10.1 Conditions to avoid:

Possible fire hazard
heat sources
ignition sources

Stability
No data available

Reactions
Reacts violently with (strong) oxidizers

10.2 Materials to avoid:
oxidizing agents
(strong) acids

10.3 Hazardous decomposition products:
Upon combustion CO and CO2 are formed

11. Toxicological information

11.1 Acute toxicity:
No (test)data available.

11.2 Chronic toxicity:
Probably human carcinogenic
No certainty about human mutagenic properties
Not classified as toxic to reproduction (EC)

BCR-048R: benzo[k]fluoranthene

EC carc cat	2
Listed in SZW - List of carcinogenic substances	yes
IARC - classification	2B
MAK - Krebserzeugend Kategorie	2
MAK - Keimzellmutagen Kategorie	3B
MAK - Schwangerschaft Gruppe	-
CLP carc cat	category 1B

11.3 Acute effects/symptoms:

Inhalation:
No data available

Skin contact:

Slight irritation

Eye contact:
Slight irritation

Ingestion:
No data available

11.4 Chronic effects:
ON CONTINUOUS/REPEATED EXPOSURE/CONTACT:
No specific information available
SIMILAR PRODUCTS CAUSE FOLLOWING SYMPTOMS:
Feeling of weakness
Cracking of the skin
Skin rash/inflammation
Photoallergy
Skin cancer
Lung tissue affection/degeneration
Enlargement/affection of the liver
Affection of the renal tissue

12. Ecological information

12.1 Ecotoxicity:
No (test)data available.

12.2 Mobility:

Volatile organic compounds (VOC)	0 %
Solubility in/reaction with water	Insoluble in water
Water physicochemical processes	Forming sediments in water
Soil physicochemical processes	Adsorbs into the soil

12.3 Persistence and degradability:

Water abiotic degradation processes	Ozonation in water
Half-life soil	65 - 1400 days
Not readily biodegradable in water	

12.4 Bioaccumulative potential:

Log Pow	6.84
Highly bioaccumulative	

12.5 Results of PBT assessment:
Not applicable, based on available data

12.6 Other adverse effects:
Not dangerous for the ozone layer (Council Regulation (EC) no 1005/2009)

13. Disposal considerations

13.1 Provisions relating to waste:
Waste material code (Directive 2008/98/EC, decision 2001/118/EC)
16 05 06* : laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals
Depending on branch of industry and production process, also other EURAL codes may be applicable
Hazardous waste according to Directive 2008/98/EC

13.2 Disposal methods:
Dissolve or mix with a combustible solvent
Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery
Remove waste in accordance with local and/or national regulations
Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001)

13.3 Packaging/Container:
Waste material code packaging (Directive 2008/98/EC)
15 01 10* : packaging containing residues of or contaminated by dangerous substances

(13.4 Entsorgung verschmutzter Gebinde:)

14. Transport information

ADR

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ADR	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Hazard identification number	90
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

RID

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name RID	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

ADNR

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ADNR	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

IMO

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name IMO	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Labels	9
Marine pollutant	P
Environmentally hazardous substance mark	yes

ICAO

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ICAO	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Labels	9
Environmentally hazardous substance mark	yes

15. Regulatory information

15.1 EU Legislation:

DSD/DPD

Enumerated in substance list Annex I of directive 67/548/EEC et sequens

Dangerous for the environment

R-phrases

45	May cause cancer
50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

S-phrases

53	Avoid exposure - obtain special instructions before use
45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
60	This material and its container must be disposed of as hazardous waste
61	Avoid release to the environment. Refer to special instructions/safety data sheets.

Additional recommendations

	Restricted to professional users.

CLP

Classification and labelling according to Regulation (EC) No 1272/2008 – Annex VI and after evaluation of available test data

Signal word

Dgr	Danger

H-statements

H350	May cause cancer.
H410	Very toxic to aquatic life with long lasting effects.

P-statements

P202	Do not handle until all safety precautions have been read and understood.
P281	Use personal protective equipment as required.
P273	Avoid release to the environment.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P391	Collect spillage.
P405	Store locked up.

Supplemental information

	Restricted to professional users.

15.2 National provisions:

15.3 Specific community rules:

Enumerated in Annex XVII of Regulation (EC) No. 1907/2006: Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

Legislation	Reference legislation
EG/552/2009	See column 1: 28.
EG/552/2009	See column 1: 50. g)

16. Other information

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question.

Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult your BIG licence agreement for details.

(*) = INTERNAL CLASSIFICATION (NFPA)

PBT-substances = persistent, bioaccumulative and toxic substances

DSD	Dangerous Substance Directive
DPD	Dangerous Preparation Directive
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)

Full text of any R-phrases referred to under headings 2 and 3:

R45	May cause cancer
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Full text of any H-statements referred to under headings 2 and 3:

H350	May cause cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Full text of any classes referred to under headings 2 and 3:

Aquatic Acute	Hazardous to the aquatic environment - acute
Aquatic Chronic	Hazardous to the aquatic environment - chronic
Carc.	Carcinogenicity

Safety data for benzo[b]fluoranthene

Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 3,4-benzofluoranthene, benz[e]acenaphthanthrylene, 3,4-benz[e]acenaphthanthrylane, 2,3-benzofluoranthene, benzofluoranthrene, benzo[e]fluoranthene
Use:
Molecular formula: $C_{20}H_{12}$
CAS No: 205-99-2
EINECS No: 205-911-9
EC Index No: 601-024-00-4

Physical data

Appearance: off-white to tan powder
Melting point: 163 - 165 C
Boiling point:
Vapour density:
Vapour pressure:
Density (g cm^{-3}):
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility:

Stability

Stable. Incompatible with strong oxidizing agents.

Toxicology

Toxic. Probable human carcinogen. May act as an irritant.

Toxicity data
(The meaning of any toxicological abbreviations which appear in this section is given here.)

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R45 R50 R53.

Environmental information

Very harmful to aquatic organisms - may cause long-term damage to the environment.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

Personal protection

Safety glasses, good ventilation, disposable gloves. Treat as a possible carcinogen.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S45 S53 S60 S61.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

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Safety data for chrysene

Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 1,2-benzophenanthrene, benzo(a)phenanthrene, 1,2-benzphenanthrene, coal tar pitch, benz(a)phenanthrene, 1,2,5,6-dibenzonaphthalene
Molecular formula: $C_{18}H_{12}$
CAS No: 218-01-9
EC No: 205-923-4

Physical data

Appearance: crystalline powder
Melting point: 253 C
Boiling point: 448 C
Vapour density:
Vapour pressure:
Density (g cm^{-3}): 1.27
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility: insoluble

Stability

Stable. Combustible. Incompatible with strong oxidizing agents.

Toxicology

Toxic. Confirmed animal carcinogen, possible human carcinogen. Harmful if swallowed, inhaled or absorbed through the skin.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
IPR-MUS LD50 >320 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R20 R21 R22 R45 R46.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 2811. Packing group I. Hazard class 6.1. CDG UK Transport category 1. EMS No 6.1-04.

Personal protection

Safety glasses, good ventilation, gloves. Handle as a carcinogen. A COSHH assessment is required.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S3 S7 S9 S36 S37 S39 S45.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

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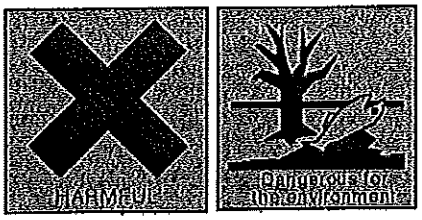
Safety data for dibenz(a,h)anthracene



Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 1,2:5,6-benzanthracene, 1,2:5,6-dibenzanthracene, dibenzo(a,h) anthracene, DBA, 1,2,5,6-DBA
Use: a common pollutant in smoke and used oils
Molecular formula: $C_{22}H_{14}$
CAS No: 53-70-3
EINECS No: 200-181-8
Annex I Index. No: 601-041-00-2

Physical data

Appearance: white to light yellow crystalline solid
Melting point: 266 - 267 C
Boiling point: 524 C
Vapour density:
Vapour pressure:
Density (g cm^{-3}): 1.28
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility:

Stability

Stable. Combustible. Incompatible with strong oxidizing agents.

Toxicology

Harmful if swallowed or inhaled. Experimental carcinogen, tumorigen and neoplastigen. IARC probable human carcinogen.

Toxicity data
(The meaning of any toxicological abbreviations which appear in this section is given here.)
IVN-MUS LDLO 10 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R45 R50 R53.

Environmental information

Harmful in the environment - may cause long-term damage.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
Non-hazardous for air, sea and road freight.

Personal protection

Safety glasses, gloves, good ventilation. Handle as a possible carcinogen.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S45 S53 S60 S61.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

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Safety data for indeno[1,2,3-cd]pyrene

Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 1,10-(1,2-phenylene)pyrene, 1,10-(o-phenylene)pyrene, o-phenylenepyrene, 2,3-phenylenepyrene, 2,3,o-phenylenepyrene, IP
Use:
Molecular formula: $C_{22}H_{12}$
CAS No: 193-39-5
EINECS No: 205-893-2

Physical data

Appearance: solid
Melting point: 161 - 163 C
Boiling point: 536 C
Vapour density:
Vapour pressure:
Density (g cm^{-3}):
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility:

Stability

Stable. Incompatible with strong oxidizing agents.

Toxicology

Limited evidence that this material may be carcinogenic.

Toxicity data
(The meaning of any toxicological abbreviations which appear in this section is given here.)

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R40.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
Non-hazardous for air, sea and road freight.

Personal protection

Treat as potentially hazardous - many multi-ring aromatic compounds are suspected carcinogens.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S36 S37 S45.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

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NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Lead	**CAS** 7439-92-1
Pb	**RTECS** OF7525000
Synonyms & Trade Names Lead metal, Plumbum	**DOT ID & Guide**

Exposure Limits	NIOSH REL*: TWA 0.050 mg/m^3 See Appendix C [*Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.]
	OSHA PEL*: [1910.1025] TWA 0.050 mg/m^3 See Appendix C [*Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.]
IDLH 100 mg/m^3 (as Pb) See: 7439921	**Conversion**

Physical Description
A heavy, ductile, soft, gray solid.

MW: 207.2	BP: 3164°F	MLT: 621°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 11.34
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Solid in bulk form.

Incompatibilities & Reactivities
Strong oxidizers, hydrogen peroxide, acids

Measurement Methods
NIOSH 7082, 7105, 7300, 7301, 7303, 7700, 7701, 7702, 9100, 9102, 9105; OSHA ID121, ID125G, ID206
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: Daily
Remove: When wet or contaminated
Change: Daily

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap flush promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations (See Appendix E) NIOSH/OSHA

Up to 0.5 mg/m^3:
(APF = 10) Any air-purifying respirator with an N100, R100, or P100 filter (including N100, R100, and P100 filtering facepieces) except quarter-mask respirators. Click here for information on selection of N, R, or P filters.
(APF = 10) Any supplied-air respirator

Up to 1.25 mg/m^3:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter

Up to 2.5 mg/m^3:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters.
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter

Up to 500 mg/m^3:
(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, ingestion

Symptoms Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage

Target Organs respiratory system, central nervous system, blood, kidneys

See also: INTRODUCTION See ICSC CARD: 0174 See MEDICAL TESTS: 0131

NIOSH Pocket Guide to Chemical Hazards

Mercury compounds [except (organo) alkyls] (as Hg)	CAS 7439-97-6 (metal)
Hg (metal)	RTECS OV4550000 (metal)
Synonyms & Trade Names Mercury metal; Colloidal mercury, Metallic mercury, Quicksilver Synonyms of "other" Hg compounds vary depending upon the specific compound.	DOT ID & Guide 2809 172 (metal)

Exposure Limits	NIOSH REL: Hg Vapor: TWA 0.05 mg/m^3 [skin] Other: C 0.1 mg/m^3 [skin]
	OSHA PEL†: C 0.1 mg/m^3
IDLH 10 mg/m^3 (as Hg) See: 7439976	Conversion

Physical Description
Metal: Silver-white, heavy, odorless liquid. (Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.)

MW: 200.6	BP: 674°F	FRZ: -38°F	Sol: Insoluble
VP: 0.0012 mmHg	IP: ?		Sp.Gr: 13.6 (metal)
Fl.P: NA	UEL: NA	LEL: NA	

Metal: Noncombustible Liquid

Incompatibilities & Reactivities
Acetylene, ammonia, chlorine dioxide, azides, calcium (amalgam formation), sodium carbide, lithium, rubidium, copper

Measurement Methods
NIOSH 6009; OSHA ID140
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: Prevent skin contact Eyes: No recommendation Wash skin: When contaminated Remove: When wet or contaminated Change: Daily	**First Aid (See procedures)** Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations Mercury vapor
NIOSH

Up to 0.5 mg/m^3: (APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against the compound of concern†/(APF = 10) Any supplied-air respirator

Up to 1.25 mg/m^3: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern†(canister)

Up to 2.5 mg/m^3: (APF = 50) Any chemical cartridge respirator with a full facepiece and cartridge(s) providing protection against the compound of concern†/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern†/(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode/PAPRTS(canister)/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece

Up to 10 mg/m^3: (APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure- demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus

Other mercury compounds: NIOSH/OSHA Up to 1 mg/m^3: (APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against the compound of concern†/(APF = 10) Any supplied-air respirator Up to 2.5 mg/m^3: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern†(canister) Up to 5 mg/m^3: (APF = 50) Any chemical cartridge respirator with a full facepiece and cartridge(s) providing protection against the compound of concern†/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern†/(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode/PAPRTS(canister)/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece Up to 10 mg/m^3: (APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact
Symptoms irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria
Target Organs Eyes, skin, respiratory system, central nervous system, kidneys
See also: INTRODUCTION See ICSC CARD: 0056 See MEDICAL TESTS: 0190

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Chemicals & Laboratory Equipment

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Material Safety Data Sheet
Zinc Metal MSDS

Section 1: Chemical Product and Company Identification

Product Name: Zinc Metal

Catalog Codes: SLZ1054, SLZ1159, SLZ1267, SLZ1099, SLZ1204

CAS#: 7440-66-6

RTECS: ZG8600000

TSCA: TSCA 8(b) Inventory: Zinc Metal

CI#: Not applicable.

Synonym: Zinc Metal Sheets; Zinc Metal Shot; Zinc Metal Strips

Chemical Name: Zinc Metal

Chemical Formula: Zn

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: 1-800-901-7247
International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Zinc Metal	7440-66-6	100

Toxicological Data on Ingredients: Zinc Metal LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 480°C (896°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances:
Slightly flammable to flammable in presence of open flames and sparks, of heat, of oxidizing materials, of acids, of alkalis, of moisture.
Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable solid.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards:
Zinc + NaOH causes ignition.
Oxidation of zinc by potassium proceeds with incandescence.
Residues from zinc dust /acetic acid reduction operations may ignite after long delay if discarded into waste bins with paper.
Incandescent reaction when Zinc and Arsenic or Tellurium, or Selenium are combined.
When hydrazine mononitrate is heated in contact with zinc, a flamming decomposition occurs at temperatures a little above its melting point.
Contact with acids and alkali hydroxides (sodium hydroxide, postasium hydroxide, calcium hydroxide, etc.) results in evolution of hydrogen with sufficient heat of reaction to ignite the hydrogen gas.
Zinc foil ignites if traces of moisture are present.
It is water reactive and produces flammable gases on contact with water. It may ignite on contact with water or

moist air.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Flammable solid that, in contact with water, emits flammable gases.
Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Cover with dry earth, sand or other non-combustible material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust. Keep away from incompatibles such as oxidizing agents, acids, alkalis, moisture.

Storage:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Keep from any possible contact with water. Do not allow water to get into container because of violent reaction.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid. Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 65.39 g/mole

Color: Bluish-grey

pH (1% soln/water): Not applicable.

Boiling Point: 907°C (1664.6°F)

Melting Point: 419°C (786.2°F)

Critical Temperature: Not available.

Specific Gravity: Not available.

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (In Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.

Section 10 - Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials, moisture

Incompatibility with various substances:
Reactive with oxidizing agents, acids, alkalis.
Slightly reactive to reactive with moisture.
The product may react violently with water to emit flammable but non toxic gases.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with acids, halogenated hydrocarbons, NH_4NO_3, barium oxide, $Ba(NO_3)_2$, Cadmium, CS_2, chlorates, Cl_2, CrO_3, F_2, Hydroxylamine, $Pb(N_3)_2$, $MnCl_2$, HNO_3, performic acid, $KClO_3$, KNO_3, N_2O_2, Selenium, $NaClO_3$, Na_2O_2, Sulfur, Te, water, $(NH_4)_2S$, As_2O_3, CS_2, $CaCl_2$, chlorinated rubber, catalytic metals, halocarbons, o-nitroanisole, nitrobenzene, nonmetals, oxidants, paint primer base, pentacarbonoyliron, transition metal halides, seleninyl bromide, HCl, H_2SO_4, (Mg +$Ba(NO_3)_2$ +BaO_2), (ethyl acetoacetate +tribromoneopentyl alcohol.
Contact with Alkali Hydroxides(Sodium Hydroxide, Potassium Hydroxide, Calcium Hydroxide, etc) results in evolution of hydrogen.
Ammonium nitrate + zinc + water causes a violent reaction with evolution of steam and zinc oxide.
May react with water.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11 - Toxicological Information

Routes of Entry: Inhalation, Ingestion.

Toxicity to Animals:

LD50: Not available.
LC50: Not available.

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects:
Skin: May cause skin irritation. Dermal exposure to zinc may produce leg pains, fatigue, anorexia and weight loss.
Eyes: May cause eye irritation.
Ingestion: May be harmful if swallowed. May cause digestive tract irritation with tightness in throat, nausea, vomiting, diarrhea, loss of appetite, malaise, abdominal pain, fever, and chills. May affect behavior/central nervous system and autonomic nervous system with ataxia, lethargy, staggering gait, mild derrangement in cerebellar function, lightheadness, dizzness, irritability, muscular stiffness, and pain. May also affect blood.
Inhalation: Inhalation of zinc dust or fumes may cause respiratory tract and mucous membrane irritation with cough and chest pain. It can also cause "metal fume fever", a flu-like condition characterized appearance of chills, headached fever, malaise, fatigue, sweating, extreme thirst, aches in the legs and chest, and difficulty in breathing. A sweet taste may also be be present in metal fume fever, as well as a dry throat, aches, nausea, and vomiting, and pale grey cyanosis.
The toxicological properties of this substance have not been fully investigated.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: Not available.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:

New York release reporting list: Zinc Metal
Rhode Island RTK hazardous substances: Zinc Metal
Pennsylvania RTK: Zinc Metal
Florida: Zinc Metal
Michigan critical material: Zinc Metal
Massachusetts RTK: Zinc Metal
New Jersey: Zinc Metal
California Director's List of Hazardous Substances: Zinc Metal
TSCA 8(b) inventory: Zinc Metal
TSCA 12(b) one time export: Zinc Metal
SARA 313 toxic chemical notification and release reporting: Zinc Metal
CERCLA: Hazardous substances.: Zinc Metal: 1000 lbs. (453.6 kg)

Other Regulations: EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not Available

DSCL (EEC):
R15- Contact with water liberates extremely flammable gases.
R17- Spontaneously flammable in air.
S7/8- Keep container tightly closed and dry.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 1

Reactivity: 1

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 0

Flammability: 1

Reactivity: 1

Specific hazard:

Protective Equipment:
Gloves.
Lab coat.
Dust respirator. Be sure to use an approved/certified respirator or equivalent.
Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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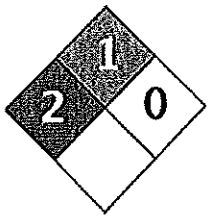

Health	2
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Copper MSDS

Section 1: Chemical Product and Company Identification

Product Name: Copper

Catalog Codes: SLC4939, SLC2152, SLC3943, SLC1150, SLC2941, SLC4729, SLC1936, SLC3727, SLC5515

CAS#: 7440-50-8

RTECS: GL5325000

TSCA: TSCA 8(b) inventory: Copper

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: Cu

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Copper	7440-50-8	100

Toxicological Data on Ingredients: Copper LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion. Hazardous in case of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
The substance is toxic to lungs, mucous membranes.
Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact: Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

Ingestion:
Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Avoid contact with eyes Wear suitable protective clothing in case of insufficient ventilation, wear suitable respiratory equipment If you feel unwell, seek medical attention and show the label when possible.

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 1 (mg/m3) from ACGIH [1990]
Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 63.54 g/mole

Color: Not available.

pH (1% soln/water): Not applicable.

Boiling Point: 2595°C (4703°F)

Melting Point: 1083°C (1981.4°F)

Critical Temperature: Not available.

Specific Gravity: 8.94 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (In Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available.
LC50: Not available.

Chronic Effects on Humans: The substance is toxic to lungs, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion.
Hazardous in case of inhalation.
Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Human: passes through the placenta, excreted in maternal milk.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
Pennsylvania RTK: Copper
Massachusetts RTK: Copper
TSCA 8(b) inventory: Copper
CERCLA: Hazardous substances.: Copper

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC): R36- Irritating to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves.
Lab coat.
Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator

when ventilation is inadequate.
Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 11/06/2008 12:00 PM

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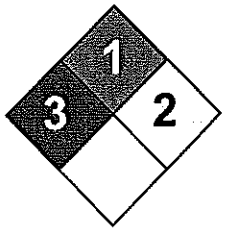

Health	3
Fire	1
Reactivity	2
Personal Protection	E

Material Safety Data Sheet
Arsenic MSDS

Section 1: Chemical Product and Company Identification

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Arsenic	7440-38-2	100

Toxicological Data on Ingredients: Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat, of oxidizing materials.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: Not available.

Melting Point: Sublimation temperature: 615°C (1139°F)

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 145 mg/kg [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs: kidneys, lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R22- Harmful if swallowed. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

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Last Updated: 11/01/2010 12:00 PM

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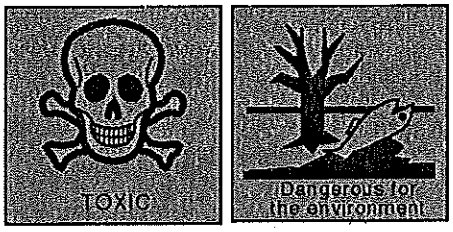
Safety data for DDT



Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 2,2-bis(p-chlorophenyl)-1,1,1-trichloroethane, alpha,alpha-bis(p-chlorophenyl)-beta,beta,beta-trichloroethane, dichlorodiphenyltrichloroethane, chlorophenothane, p,p'-dichlorodiphenyltrichloroethane, 4,4'-DDT, 4,4'-dichlorodiphenyltrichloroethane, 1,1-bis(p-chlorophenyl)-2,2,2-trichloroethane, 1,1-bis(4-chlorophenyl)-2,2,2-trichloroethane, diphenyltrichloroethane, 1,1,1-trichloro-2,2-di(4-chlorophenyl)ethane, numerous trade and other non-systematic names, including those given below. (Note: The use of DDT has been largely discontinued, so most - perhaps all - of these trade names are no longer used.) anofex, p,p'-DDT, dicophane, didigam, didimac, ENT 1,506, estonate, genitox, gesafid, gesarol, gyron, ixodex, NCI-C00464, neocid, pentachlorin, santobane, trichlorobis(4-chlorophenyl)ethane, 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane, zeidane, zerdane, agritan, arkotine, azotox, 1,1'-(2,2,2-trichloroethylidene)bis(4-chlorobenzene), bosan, supra, boviderm, chlorphenothan, chlorophenotoxum, citox, clofenotane, dedlo, deoval, detox, detoxan, dibovan, dodat, dykol, gesafid, gesapon, gesarex, guesapon, havero-extra, hildit, ivoran, kopsol, micro, DDT 75, mutoxin, NA 2761, OMS 16, parachlorocium, peb1, pentech, ppzeidan
Use: insecticide, formerly one of the most widely used insecticides in the world; now used in only limited areas because of environmental concerns
Molecular formula: $C_{14}H_9Cl_5$

CAS No: 50-29-3
EINECS No:

Physical data

Appearance: colourless to white crystalline powder
Melting point: 108 - 109 C
Boiling point: 260 C
Vapour density:
Vapour pressure:
Density (g cm^{-3}): 1.56
Flash point: 165 C
Explosion limits:
Autoignition temperature:
Water solubility: very slight

Stability

Stable. Combustible. Incompatible with strong oxidizing agents, iron and aluminium and their salts, alkalies.

Toxicology

Poison if swallowed. May be harmful if inhaled or absorbed through the skin. Absorption is considerably enhanced by the presence of oils. Possible human carcinogen. Human mutagenic effects. May cause reproductive damage. May act as a systemic poison. Unlikely to be fatal on its own, but the toxic effects of this chemical appear to be enhanced when exposure simultaneously includes other chemicals.

DDT and its degradation products, particularly DDE, are stored in fat in the body, and this can lead to a total body load of chemical which is potentially much greater than the fatal dose. This stored material is removed only gradually from the body.

Toxicity data
(The meaning of any toxicological abbreviations which appear in this section is given here.)
ORL-RAT LD50 87 mg kg^{-1}
SKN-RAT LD50 1931 mg kg^{-1}
ORL-HMN LDLO 500 mg kg^{-1} (though far lower figures are also quoted)
SCU-RAT LD50 1500 mg kg^{-1}
ORL-MUS LD50 135 mg kg^{-1}
ORL-RBT LD50 250 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 2761. Hazard class 6.1. Packing group III.

Environmental information

A serious environmental hazard due to bioaccumulation and transport up the food chain. Concentrations in animals near the top of the food chain (such as predatory birds) may become high enough in areas in which DDT has been heavily used, to have devastating effects upon reproductive ability. Degrades extremely slowly in the environment and is removed very slowly from animal tissue.

Personal protection

Safety glasses, gloves, good ventilation. Treat as a possible carcinogen. Note that use of DDT as an insecticide is banned in most countries.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)

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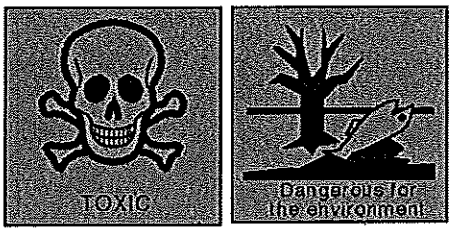
Safety data for dieldrin



Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a7,7a-octahydro-2,7:3,6-Dimethanonaphth[2,3-b]oxirene; 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-exo-1,4-endo-5,8-dimethanonaphthalene; 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-2,7:3,6-dimethanonaphth(2,3-b)oxirene, alvit, compound 497, dieldrix, diledrite, HEOD, illoxol, quintox, octalox, numerous further trade names, especially for mixtures containing dieldrin.
Molecular formula: $C_{12}H_8Cl_6O$
CAS No: 60-57-1
EC No:

Physical data

Appearance: white or light brown powder or crystals
Melting point: 176 C
Boiling point: 385 C
Vapour density:
Vapour pressure:
Specific gravity: 1.75
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility: slight

Stability

Stable. Breakdown product of aldrin in the environment. Incompatible with acids, active metals and strong oxidizing agents.

Toxicology

Toxic. May act as a mutagen. Harmful by ingestion or inhalation. Ingestion of large quantities may be fatal. May accumulate in the body. Toxic if absorbed through the skin. Possible risk of irreversible effects. Typical TWA 0.25 mg/m3.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
ORL-MAN LDLO 65 mg kg^{-1}
ORL-RAT LD50 38 mg kg^{-1}
IHL-RAT LC50 13 mg/m3/4h
SKN-RAT LD50 56 mg kg^{-1}
SCU-RAT LD50 49 mg kg^{-1}
IVN-RAT LD50 9 mg kg^{-1}
ORL-MKY LD50 3 mg kg^{-1}
ORL-BWD LD50 13 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R25 R27 R40 R48.

Transport information

Environmental information

Harmful to wildlife. Removed only slowly from the environment by natural processes.

Personal protection

Safety glasses, gloves, good ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S22 S36 S37 S45.

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Safety data for endrin

Glossary of terms on this data sheet.

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General

Synonyms: 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4A,5,6,7,8,8A-octahydro-1,4-endo,endo-5,8-dimethanonaphthalene
Molecular formula: $C_{12}H_8Cl_6O$ [stereoisomer of dieldrin.]
CAS No: 72-20-8
EC No:

Physical data

Appearance: white or beige crystalline solid
Melting point: ca. 200 C (decomposes)
Boiling point:
Vapour density:
Vapour pressure: negligible at 20 C
Density (g cm^{-3}): 1.7
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility: negligible

Stability

Stable. Incompatible with strong acids, strong oxidizers. Corrodes some metals.

Toxicology

Highly toxic to humans and other species of animal. Suspected human carcinogen. Exprimental teratogen. Experimental reproductive hazard.

Ingestion of 1 mg kg^{-1} may cause harmful effects. Note low LD50s below. CNS stimulant.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
ORL-RAT LD50 3 mg kg^{-1}
SKN-RAT LD50 12 mg kg^{-1}
ORL-MKY LD50 3 mg kg^{-1}
ORL-CAT LDLO 5 mg kg^{-1}
ORL-RBT LD50 7 mg kg^{-1}
ORL-GPG LD50 16 mg kg^{-1}
ORL-MAN LDLO 171 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R26 R27 R28 R45.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
Hazard class 6.1. Packing group I. UN No 2761.

Personal protection

Use and manufacture of this compound have been phased out in many countries. It accumulates in the environment and has been found in human milk. It should not be used unless no alternative is available, and then only after a full risk assessment has been prepared.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)

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Chemical BooK

4,4'-DDE Search

Hot Keywords: 18162-48-6,872-50-4,Methylene Chloride,naphthalene,THF,Titanium Dioxide

4,4'-DDE(72-55-9)

4,4'-DDE Suppliers list

Company Name: J & K SCIENTIFIC LTD.
Tel: 400-666-7788 +86-10-82848833
Email: jkinfo@jkchemical.com
WebSite: www.jkchemical.com

Company Name: A Meryer Chemical Technology Shanghai Company
Tel: +86-(0)21-61259100(Shanghai) +86-(0)755-86170099(ShenZhen) +86-(0)10-62670440(Beijing)
Email: sh@meryer.com; sz@meryer.com
WebSite: www.meryer.com & www.abcr.de

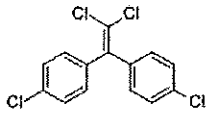
Company Name: TCI (Shanghai) Development Co., Ltd.
Tel: 800-988-0390
Email: sales@tcishanghai.com.cn
WebSite: www.tcishanghai.com.cn

Company Name: Energy Chemical
Tel: 021-58432009/58433103/58432861
Email: info@energy-chemical.com
WebSite: www.energy-chemical.com

Company Name: Shenzhen Sungening Bio-Tech Co., Ltd
Tel: +86-0755-89668383
Email: info@sungening.com
WebSite: www.sungening.com

4,4'-DDE Basic information

Product Name:	4,4'-DDE
Synonyms:	P,P'-DDE;1,1'-(Dichloroethenylidene)bis(4-chlorobenzene);1,1'-(dichloroethenylidene)bis(4-chloro-benzen;1,1'-(dichloroethenylidene)bis(4-chloro-Benzene;1,1'-(dichloroethenylidene)bis(4-chlorobenzene);1,1'-(dichloroethylidene)bis(4-chlorobenzene);1,1'-dichloroethenylidene)bis(4-chlorobenzene);1,1-Bis(p-chlorophenyl)-2,2-dichloroethylene
CAS:	**72-55-9**
MF:	C14H8Cl4
MW:	318.03
EINECS:	200-784-6
Product Categories:	Analytical Chemistry;Chlorinated Compounds (Environmental Endocrine Disruptors);Environmental Endocrine Disruptors;Alphabetic;D;DA - DHMethod Specific;Oeko-Tex Standard 100;Pesticides
Mol File:	72-55-9.mol



4,4'-DDE Chemical Properties

mp	88-90 °C(lit.)
Fp	11 °C
storage temp.	APPROX 4°C
Stability:	Stable, but light-sensitive. Incompatible with strong bases, strong oxidizing agents.

Safety Information

Hazard Codes	Xn,N,T,F
Risk Statements	22-40-50/53-52/53-39/23/24/25-23/24/25-11-67-65-38
Safety Statements	36/37-60-61-45-16-7-62
RIDADR	UN 3077 9/PG 3
WGK Germany	3
RTECS	KV9450000

MSDS Information

Provider	Language
SigmaAldrich	English
ACROS	English

4,4'-DDE Usage And Synthesis

Chemical Properties	white crystalline powder
General Description	White crystalline solid or white powder.
Air & Water Reactions	Insoluble in water.
Reactivity Profile	4,4'-DDE is sensitive to exposure to light. 4,4'-DDE is incompatible with strong oxidizing agents and strong bases. Oxidation is catalyzed by UV radiation.
Fire Hazard	Flash point data for 4,4'-DDE are not available. 4,4'-DDE is probably combustible.

4,4'-DDE Preparation Products And Raw materials

Tag:**4,4'-DDE(72-55-9)** Related Product Information

4-Chloro-alpha-methylstyrene 4,4'-DDMU 1-CHLORO-2-METHYL-1-PROPENE ISOBUTYLENE VINYLIDENE CHLORIDE BETA-CHLOROSTYRENE VINYL CHLORIDE Dichloromethane 1-CHLORO-1-PROPENE 4-Chlorotoluene 1-(1-(4-CHLOROPHENYL)VINYL)BENZENE 4,4'-DDE (13C12),4,4'-DDE (RING-13C12) 4,4'-DDE CIS-1-CHLOROPROPENE 4-CHLORODIPHENYLMETHANE Styrene 4,4'-DDE D8 4-Chlorostyrene

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MATERIAL SAFETY DATA SHEET

MANUFACTURER	Varian Instruments – Middelburg		
ADDRESS	Herculesweg 8 4338 PL Middelburg, Netherlands		
PHONE	31.118.67100	MSDS Number:	1002-017 Rev. 0
EMERGENCY PHONE	1.800.424.9300 – CHEMTREC USA	Date:	May 1, 2002
FAX	31.118.633118	Prepared by:	Corporate EH&S

VARIAN

SECTION 1: MATERIAL IDENTIFICATION

Product Name: Testmix CP0017

Synonyms: Hexachlorocyclohexane, Hexachlorobenzene, Aldrine, DDE, Endrine, Endosulfan, DDD, and DDT in Hexane. Hexane is also known as Hexyl hydride and Dipropyl.

SECTION 2: COMPOSITION

An ampoule/vial containing the following:

Component	CAS Number	Approximate Concentration	NTP Carcinogen Status	IARC Carcinogen Status
Alpha-Hexachlorocyclohexane	319-84-6	0.10 mg/l	listed*	listed*
Hexachlorobenzene	118-74-1	0.05 mg/l	not listed	not listed
Beta- Hexachlorocyclohexane	319-85-7	0.10 mg/l	listed*	listed*
Gamma- Hexachlorocyclohexane	58-89-9	0.05 mg/l	listed*	listed*
Aldrine	309-00-2	0.05 mg/l	not listed	listed*
o,p'-DDE	3424-82-6	0.25 mg/l	not listed	not listed
Alpha-Endosulfan	959-98-8	0.25 mg/l	not listed	not listed
p,p'-DDE	72-55-9	0.50 mg/l	not listed	listed**
Dieldrin	60-57-1	0.10 mg/l	not listed	not listed
o,p'-DDD	53-19-0	0.25 mg/l	not listed	not listed
Endrine	72-20-8	0.50 mg/l	not listed	not listed
Beta-Endosulfan	33213-65-9	0.25 mg/l	not listed	not listed
p,p'-DDD	72-54-8	0.50 mg/l	not listed	not listed
o,p'-DDT	789-02-6	0.25 mg/l	not listed	not listed
p,p'-DDT	50-29-3	0.50 mg/l	listed*	listed*
n-Hexane	110-54-3	balance	not listed	not listed

*Anticipated to be a human carcinogen.
**Group 2B - Possibly carcinogenic to humans

WARNING: This product contains Hexachlorocyclohexane, Hexachlorobenzene, DDE, Dieldrin, DDD and DDT, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

NOTE: Unless otherwise noted, the information below pertains only to the n-Hexane solvent in the ampoule/vial.

SECTION 3: HAZARD IDENTIFICATION

Emergency Overview: Colorless liquid. Flash Point: -22 deg C. Flammable liquid and vapor. Vapor may cause a flash fire. Harmful or fatal if swallowed. Aspiration hazard if swallowed. Causes irritation to skin, eyes, and respiratory tract. May cause respiratory and digestive tract irritation. May cause eye and skin irritation. May affect central nervous system. Target Organs: Central nervous system, respiratory system, eyes, and skin

Potential Health Effects

Inhalation: Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma.

Ingestion: Aspiration hazard. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Symptoms expected to parallel inhalation.

Skin Contact: May cause skin irritation with itching and redness. Prolonged or repeated skin contact may cause defatting and dermatitis.

Eye Contact: May cause irritation, redness, and pain.

Carcinogen Status: NTP: Not listed IARC: Not listed

SECTION 4: FIRST AID INFORMATION

Inhalation: Get medical attention immediately. Remove to fresh air. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Ingestion: If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately. Never give anything by mouth to an unconscious person.
Skin Contact: In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical aid if irritation develops or persists.
Eye Contact: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid. Do NOT allow victim to rub or keep eyes closed.

SECTION 5: FIRE-FIGHTING INFORMATION

Fire: Flash point (closed cup): -22C (10F)
Autoignition temperature: 224C (435F)
Flammable limits in air % by volume: Lower = 1.1 Upper = 7.7
NFPA Rating: health-1; flammability-3; reactivity-0

Explosion: Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Sealed containers may rupture when heated. Contact with strong oxidizers may cause fire. Sensitive to static discharge.

Fire Extinguishing Media: Dry chemical, foam or carbon dioxide. Water may be ineffective. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Use proper personal protective equipment as indicated in Section 8. Ventilate area of leak or spill. Remove all sources of ignition. Absorb spill with inert material (e.g. vermiculite, sand or earth), scoop up with a nonsparking tool, then place into a suitable container for disposal. Do not flush to sewer!

SECTION 7: HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Keep container tightly closed. Avoid contact with heat, sparks and flame. Do not get on skin or in eyes. Avoid ingestion and inhalation.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTIVE EQUIPMENT

Airborne Exposure Limits: United States - OSHA Permissible Exposure Limit (PEL): 500 ppm (TWA)
United States - ACGIH Threshold Limit Value (TLV): 50 ppm (TWA) (skin)
Australia: Time-weighted average 50 ppm (180 mg/m3), 1993
The Netherlands: MAC-TGG 25 ppm (90 mg/m3), JAN1999

Personal Protective Equipment
Eye Protection: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Maintain eye wash fountain and quick-drench facilities in work area.
Skin Protection: Wear impervious gloves, apron, and/or clothing.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Use a NIOSH or European Standard EN 149 approved respirator when necessary.

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid
Odor: Gasoline-like odor
Solubility: Insoluble
Specific Gravity: 0.66 (Water = 1)
pH: Not available.
Molecular Formula: C6H14
Molecular Weight: 86.2

Boiling Point: 68C (154F)
Melting Point: -195C (-139F)
Vapor Density: 3.8 (Air=1)
Vapor Pressure (mm Hg): 130 @ 20C (68F)
Evaporation Rate: 9 (Butyl Acetate = 1)
% Volatiles by Volume: 100

SECTION 10: STABILITY AND REACTIVITY DATA

Stability: Stable at room temperature in sealed containers.
Hazardous Decomposition Products: Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization: Will not occur.
Incompatibilities: Strong oxidizers, heat, and sources of ignition.
Conditions to Avoid: Incompatibles.

SECTION 11: TOXICOLOGICAL INFORMATION

RTECS#: MN9275000 for CAS# 110-54-3 (Hexane)
LD50/LC50:
Oral, rat: LD50 = 25 gm/kg
Carcinogenicity: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Mutagenicity: Tests on laboratory animals for mutagenic effects are cited in Registry of Toxic Effects of Chemical Substances (RTECS).

SECTION 12: ECOLOGICAL INFORMATION

Environmental Fate: When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released to water, this material is expected to quickly evaporate. This material may bioaccumulate to some extent. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.
Environmental Toxicity: Not available

SECTION 13: DISPOSAL GUIDELINES

Dispose in compliance with federal, state, and local regulations. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

USEPA RCRA waste number D001.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

SECTION 14: TRANSPORT INFORMATION

Ship in accordance with all applicable local, State, Federal, and International transportation regulations.
The following is a summary only. Check regulations for complete information:

United States (Land, D.O.T.)
Proper Shipping Name: Hexanes
Hazard Class: 3
UN/NA: : UN1208
Packing Group: II

International (Air, I.C.A.O.)
Proper Shipping Name: : Hexanes
Hazard Class: 3
UN/NA: UN1208
Packing Group: II

SECTION 15: REGULATORY INFORMATION

US Federal
TSCA: CAS# 110-54-3 is listed on the TSCA inventory.
OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No Reactivity: No

US State
CAS# 110-54-3 can be found on the following state right to know lists: New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
California Proposition 65: Not regulated.

Other Regulations
EC Classification: F – Highly Flammable, Xi - Irritant
EC Risk and Safety Phrases:
Risk Phrases:
R 11 Highly flammable.
R 38 Irritating to skin.
R 48/20 Harmful:danger of serious damage to health by prolonged exposure through inhalation.
R 62 Possible risk of impaired fertility.
R 65 May cause lung damage is swallowed.
R 67 Vapors may cause drowsiness and dizziness.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 29 Do not empty into drains.
S 33 Take precautionary measures against static discharges.
S 36/37 Wear suitable protective clothing and gloves.
S 9 Keep container in a well-ventilated place.
S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.
S 62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

WHMIS Classification: B2, D2B

Inventory Status: Listed on EINECS and Canadian DSL

SECTION 16: OTHER INFORMATION

NOTE: Unless otherwise noted, the information above pertains only to the Hexane solvent in the ampoule/vial.

This MSDS was prepared in accordance with ANSI Z400.1-1993 and 91/155/EEC recommended formats.

The information contained herein is believed to be accurate, but does not purport to be all-inclusive and shall be used only as a guide. Varian, Inc., does not guarantee said information is accurate or complete, nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. It is the user's responsibility to determine the suitability of this information and to assure the adoption of necessary precautions. Varian, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product, nor for the results obtained, or for incidental or consequential damage arising from the use of these data. No freedom from infringement of any patent, copyright or trademark is to be inferred.

Monsanto
Material Safety Data

POLYCHLORINATED BIPHENYLS (PCBs)

Emergency Phone No.
(Call Collect)
314-694-1000

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: POLYCHLORINATED BIPHENYLS (PCBs)
Aroclor® Series 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268
Therminol® FR Series

MSDS Number: M00018515 Date: 12/95

Chemical Family: Chlorinated Hydrocarbons
Chemical Name: Polychlorinated biphenyls
Synonyms: PCBs, Chlorodiphenyls, Chlorinated biphenyls

Trade Names/Common Names:

PYRANOL® and INERTEEN® are trade names for commonly used dielectric fluids that may have contained varying amounts of PCBs as well as other components including chlorinated benzenes.

ASKAREL is the generic name for a broad class of fire resistant synthetic chlorinated hydrocarbons and mixtures used as dielectric fluids that commonly contained about 30 - 70% PCBs. Some ASKAREL fluids contained 99% or greater PCBs and some contained no PCBs.

PYDRAUL® is the trade name for hydraulic fluids that, prior to 1972, may have contained varying amounts of PCBs and other components including phosphate esters.

The product names/trade names are representative of several commonly used Monsanto products (or products formulated with Monsanto products). Other trademarked PCB products were marketed by Monsanto and other manufacturers. PCBs were also manufactured and sold by several European and Japanese companies. Contact the manufacturer of the trademarked product, if not in this listing, to determine if the formulation contained PCBs.

In 1972, Monsanto restricted sales of PCBs to applications involving only closed electrical systems, (transformers and capacitors). In 1977, all manufacturing and sales were voluntarily terminated. In 1979, EPA restricted the manufacture, processing, use, and distribution of PCBs to specifically exempted and authorized activities.

MONSANTO COMPANY, 800 N. LINDBERGH BLVD., ST. LOUIS, MO 63167

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT
Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska, or Virgin Islands. For calls originating elsewhere: 202-483-7616 (collect calls accepted)

For additional nonemergency information, call: 314-694-3344.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemically, commercial PCBs are defined as a series of technical mixtures, consisting of many isomers and compounds that vary from mobile, oily liquids to white crystalline solids and hard noncrystalline resins. Technical products vary in composition, in the degree of chlorination, and possibly according to batch.

The mixtures generally used contain an average of 3 atoms of chlorine per molecule (42% chlorine) to 5 atoms of chlorine per module (54% chlorine). They were used as components of dielectric fluids in transformers and capacitors. Prior to 1972, PCB applications included heat transfer media, hydraulic, and other industrial fluids, plasticizers, carbonless copy paper, paints, inks, and adhesives.

Component	CAS No.
chlorinated biphenyl	1336-36-3
Aroclor 1016	12674-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5
Aroclor 1262	37324-23-5
Aroclor 1268	11100-14-4

There are also CAS Numbers for individual PCB congeners and for mixtures of Aroclor® products.

PCBs are identified as hazardous chemicals under criteria of the OSHA Hazard Communication Standard (29 CFR Part 1910.1200). PCBs have been listed in the International Agency for Research on Cancer (IARC) Monographs (1987)-Group 2A and in the National Toxicology Program (NTP) Annual Report on Carcinogens (Seventh).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance and Odor: PCB mixtures range in form and color from clear to amber liquids to white crystalline solids. They have a mild, distinctive odor and are not volatile at room temperature. Refer to Section 9 for details.

WARNING!
CAUSES EYE IRRITATION
MAY CAUSE SKIN IRRITATION

PROCESSING AT ELEVATED TEMPERATURES MAY RELEASE VAPORS OR FUMES WHICH MAY CAUSE RESPIRATORY TRACT IRRITATION

POTENTIAL HEALTH EFFECTS

Likely Routes of Exposure: Skin contact and inhalation of heated vapors

Eye Contact: Causes moderate irritation based on worker experience.

Skin Contact: Prolonged or repeated contact may result in redness, dry skin and defatting based on human experience. A potential exists for developing chloracne. PCBs can be absorbed through intact skin.

Inhalation: Due to the low volatility of PCBs, exposure to this material in ambient conditions is not expected to produce adverse health effects. However, at elevated processing temperatures, PCBs may produce a vapor that may cause respiratory tract irritation if inhaled based on human experience.

Ingestion: No more than slightly toxic based on acute animal toxicity studies. Coughing, choking and shortness of breath may occur if liquid material is accidentally drawn into the lungs during swallowing or vomiting.

Other: Numerous epidemiological studies of humans, both occupationally exposed and nonworker environmentally exposed populations, have not demonstrated any causal relationship between PCB exposure and chronic human illnesses such as cancer or neurological or cardiovascular effects. PCBs at high dosage can cause skin symptoms; however, these subside upon removal of the exposure source.

Refer to Section 11 for toxicological information.

4. FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. If easy to do, remove any contact lenses. Get medical attention. Remove material from skin and clothing.

IF ON SKIN, immediately flush the area with plenty of water. Wash skin gently with soap as soon as it is available. Get medical attention if irritation persists.

IF INHALED, remove person to fresh air. If breathing is difficult, get medical attention.

IF SWALLOWED, do NOT induce vomiting. Rinse mouth with water. Get medical attention. Contact a Poison Control Center. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTE TO PHYSICIANS: Hot PCBs may cause thermal burn. If electrical equipment arcs between conductors, PCBs or other chlorinated hydrocarbon dielectric fluids may decompose to produce hydrochloric acid (HCl), a respiratory irritant. If large amounts are swallowed, gastric lavage may be considered.

5. FIRE FIGHTING MEASURES

Flash Point: 284 degrees F (140 degrees C) or higher depending on the chlorination level of the Aroclor product

Fire Point: 349 degrees F (176 degrees C) or higher depending on the chlorination level of the Aroclor product

NOTE: Refer to Section 9 for individual flash points and fire points.

Extinguishing Media: Extinguish fire using agent suitable for surrounding fire. Use dry chemical, foam, carbon dioxide or water spray. Water may be ineffective. Use water spray to keep fire-exposed containers or transformer cool.

PCBs are fire-resistant compounds. They may decompose to form CO, CO2, HCl, phenolics, aldehydes, and other toxic combustion products under severe conditions such as exposure to flame or hot surfaces.

Dielectric fluids having PCBs and chlorinated benzenes as components have been reported to produce polychlorinated dibenzo-p-dioxins (PCDDs) and furans (PCDFs) during fire situations involving electrical equipment. At temperatures in the range of 600-650 degrees C in the presence of excess oxygen, PCBs may form polychlorinated dibenzofurans (PCDFs). Laboratory studies under similar conditions have demonstrated that PCBs do not produce polychlorinated dibenzo-p-dioxins (PCDDs).

Federal regulations require all PCB transformers to be registered with fire response personnel.

If a PCB transformer is involved in a fire-related incident, the owner of the transformer may be required to report the incident. Consult and follow appropriate federal, state and local regulations.

Fire Fighting Equipment: Fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Cleanup and disposal of liquid PCBs and other PCB items are strictly regulated by the federal government. The regulations are found at 40 CFR Part 761. Consult these regulations as well as applicable state and local regulations prior to any cleanup or disposal of PCBs, PCB items, or PCB contaminated items.

If PCBs leak or are spilled, the following steps should be taken immediately:

All nonessential personnel should leave the leak or spill area.

The area should be adequately ventilated to prevent the accumulation of vapors.

The spill/leak should be contained. Loss to sewer systems, navigable waterways, and streams should be prevented. Spills/leaks should be removed promptly by means of absorptive material, such as sawdust, vermiculite, dry sand, clay, dirt or other similar materials, or trapped and removed by pumping or other suitable means (traps, drip-pans, trays, etc.).

Personnel entering the spill or leak area should be furnished with appropriate personal protective equipment and clothing as needed. Refer to Section 8 for personal protection equipment and clothing.

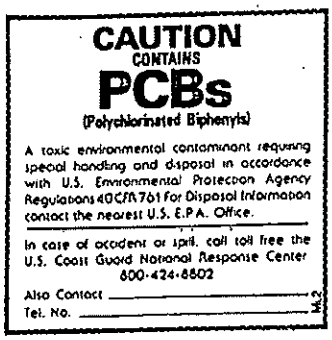
Personnel trained in emergency procedures and protected against attendant hazards should shut off sources of PCBs, clean up spills, control and repair leaks, and fight fires in PCB areas.

Refer to Section 13 for disposal information and Sections 14 and 15 for information regarding reportable quantity, and Section 7 for marking information.

7. HANDLING AND STORAGE

Care should be taken to prevent entry into the environment through spills, leakage, use vaporization, or disposal of liquid or containers. Avoid prolonged breathing of vapors or mists. Avoid contact with eyes or prolonged contact with skin. If skin contact occurs, remove by washing with soap and water. Following eye contact, flush with water. In case of spillage onto clothing, the clothing should be removed as soon as practical, skin washed, and clothing laundered. Comply with all federal, state, and local regulations.

Federal regulations under the Toxic Substances Control Act require PCBs, PCB items, storage areas, transformer vaults, and transport vehicles to be marked (check regulations, 40 CFR 761, for details).



Storage: The storage of PCB items or equipment (those containing 50 ppm or greater PCBs) and PCB waste is strictly regulated by 40 CFR Part 761. The storage time is limited, the storage area must meet physical requirements, and the area must be labeled.

Avoid contact with eyes.
Wash thoroughly after handling.
Avoid breathing processing fumes or vapors.
Process using adequate ventilation.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection: Wear chemical splash goggles and have eye baths available where there is significant potential for eye contact.

Skin Protection: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine the appropriate type glove for a given application. Wear chemical goggles, face shield, and chemical resistant clothing such as a rubber apron when splashing is likely. Wash immediately if skin is contacted. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

ATTENTION! Repeated or prolonged skin contact may cause chloracne in some people.

Respiratory Protection: Avoid breathing vapor, mist, or dust. Use NIOSH/MSHA approved equipment when airborne exposure limits are exceeded. Full facepiece equipment is recommended when airborne exposure limits are exceeded and, if used, replaces the need for face shield and/or chemical splash goggles. Consult respirator manufacturer to determine the type of equipment for a given application. The respirator use limitations specified by NIOSH/MSHA or the manufacturer must be observed. High airborne concentrations may require use of self-contained breathing apparatus or supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR Part 1910.134.

ATTENTION! Repeated or prolonged inhalation may cause chloracne in some people.

Ventilation: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of vapor or mist, such as open process equipment.

Airborne Exposure Limits:

Product: Chlorodiphenyl (42% chlorine)

OSHA PEL: 1 mg/m^3 8-hour time-weighted average - Skin*
ACGIH TLV: 1 mg/m^3 8-hour time-weighted average - Skin*

Product: Chlorodiphenyl (54% chlorine)

OSHA PEL: 0.5 mg/m^3 8-hour time-weighted average - Skin*
ACGIH TLV: 0.5 mg/m^3 8-hour time-weighted average - Skin*

*For Skin notation see Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Government Industrial Hygienists, 1995-1996.

9. PHYSICAL AND CHEMICAL PROPERTIES

PROPERTIES OF SELECTED AROCLORS[3]							
PROPERTY	1016	1221	1232	1242	1248	1254	1260
Color (APHA)	40	100	100	100	100	100	150
Physical state	mobile oil	mobile oil	mobile oil	mobile oil	mobile oil	viscous liquid	sticky resin
Stability	inert	inert	inert	inert	inert	inert	inert
Density (lb/gal 25°C)	11.40	9.85	10.55	11.50	12.04	12.82	13.50
Specific gravity x/15.5°C	1.36-1.37 x-25°	1.18-1.19 x-25°	1.27-1.28 x-25°	1.30-1.39 x-25°	1.40-1.41 x-65°	1.49-1.50 x-65°	1.55-1.56 x-90°
Distillation range (°C)	323-356	275-320	290-325	325-366	340-375	365-390	385-420
Acidity mg KOH/g, maximum	.010	.014	.014	.015	.010	.010	.014
Fire point (°C)	none to boiling point	176	238	none to boiling point	none to boiling point	none to boiling point	none to boiling point
Flash point (°C)	170	141-150	152-154	176-180	193-196	none	none
Vapor pressure (mm Hg @ 100°F)	NA	NA	0.005	0.001	0.00037	0.00006	NA
Viscosity (Saybolt Univ. Sec. @ 100°F) (centistokes)	71-81 13-16	38-41 3.6-4.6	44-51 5.5-7.7	82-92 16-19	185-240 42-52	1800-2500 390-540	— —

[3]NA—*Not Available*

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

Stability: PCBs are very stable, fire-resistant compounds.
Materials to Avoid: None
Hazardous Decomposition
Products: PCBs may decompose to form CO, CO_2, HCl, phenolics, aldehydes, and other toxic combustion products under severe conditions such as exposure to flame or hot surface.
Hazardous Polymerization: Does not occur.

11. TOXICOLOGICAL INFORMATION

Data from laboratory studies conducted by Monsanto and from the available scientific literature are summarized below.
Single exposure (acute) studies indicate:
Oral - Slightly Toxic (Rat LD50 - 8.65 g/kg for 42% chlorinated; 11.9 g/kg for 54% chlorinated)

The liquid products and their vapors are moderately irritating to eye tissues. Animal experiments of varying duration and at different air concentrations show that for similar exposure conditions, the 54% chlorinated material produces more liver injury than the 42% chlorinated material.

There are literature reports that PCBs can impair reproductive functions in monkeys. The National Cancer Institute (NCI) performed a study in 1977 using Aroclor 1254 with both sexes of rats. NCI stated that the PCB, Aroclor 1254, was not carcinogenic under the conditions of their bioassay. There is sufficient evidence in the scientific literature to conclude that Aroclor 1260 can cause liver cancer when fed to rodents at high doses. Similar experiments with less chlorinated PCB products have produced negative or equivocal results.

The consistent finding in animal studies is that PCBs produce liver injury following prolonged and repeated exposure by any route, if the exposure is of sufficient degree and duration. Liver injury is produced first, and by exposures that are less than those reported to cause cancer in rodents. Therefore, exposure by all routes should be kept sufficiently low to prevent liver injury.

Numerous epidemiological studies of humans, both occupationally exposed and nonworker environmentally exposed population, have not demonstrated any causal relationship between PCB exposure and chronic human illnesses such as cancer or neurological or cardiovascular effects. PCBs at high dosage can cause skin symptoms; however, these subside upon removal of the exposure source.

PCBs have been listed in the International Agency for Research on Cancer (IARC) Monographs (1987)-Group 2A and in the National Toxicology Program (NTP) Seventh Annual Report on Carcinogens.

12. ECOLOGICAL INFORMATION

Care should be taken to prevent entry of PCBs into the environment through spills, leakage, use, vaporization or disposal of liquid or solids. PCBs can accumulate in the environment and can adversely affect some animals and aquatic life. In general, PCBs have low solubility in water, are strongly bound to soils and sediments, and are slowly degraded by natural processes in the environment.

13. DISPOSAL CONSIDERATIONS

The disposal of PCB items or equipment (those containing 50 ppm or greater PCBs) and PCB wastes is strictly regulated by 40 CFR Part 761. For example, all wastes and residues containing PCBs (wiping cloths, absorbent material, used disposable protective gloves and clothing, etc.) should be collected, placed in proper containers, marked and disposed of in the manner prescribed by EPA regulations (40 CFR Part 761) and applicable state and local regulations.

14. TRANSPORT INFORMATION

The data provided in this section are for information only. Please apply the appropriate regulations to properly classify a shipment for transportation.

DOT Classification:	IF WEIGHT OF PCBs TO BE SHIPPED IS OVER ONE POUND, THE FOLLOWING CLASSIFICATION AND LABEL APPLY.	
DOT Label:	LIQUID:	Environmentally Hazardous Substance, liquid, n.o.s. (Contains PCB), 9, UN 3082, III
	SOLID:	Environmentally Hazardous Substance, solid, n.o.s. (Contains PCB), 9, UN 3077, III
DOT Label:	Class: 9	
DOT Reportable Quantity:	One Pound	
IMO Classification:	Polychlorinated Biphenyls, IMO Class 9, UN 2315, II IMO Page 9034, EMS 6.1-02	
IATA/ICAO Classification:	Polychlorinated Biphenyls, 9, UN2315, II	

15. REGULATORY INFORMATION

For regulatory purposes, under the Toxic Substances Control Act, the term "PCBs" refers to a chemical substance limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contain such a substance (40 CFR Part 761).

TSCA Inventory: not listed.

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): Immediate, Delayed.
SARA Section 313 Toxic Chemical(s): Listed-1993 (De Minimis concentration 0.1%.)

Reportable Quantity (RQ) under DOT (49 CFR) and CERCLA Regulations: 1 lb. (polychlorinated biphenyls) PCBs.

Release of more than 1 (one) pound of PCBs to the environment requires notification to the National Response Center (800-424-8802 or 202-426-2675).

Various state and local regulations may require immediate reporting of PCB spills and may also define spill cleanup levels. Consult your attorney or appropriate regulatory officials for information relating to spill reporting and spill cleanup.

16. OTHER INFORMATION

Reason for revision: Conversion to the 16 section format. Supersedes MSDS dated 10/88.

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Pyranol® is a registered trademark of General Electric Company
Inerteen® is a registered trademark of Westinghouse Electric Corporation

FOR ADDITIONAL NONEMERGENCY INFORMATION, CONTACT:

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Safety data for heptachlor

Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 1,4,5,6,7,8,8-heptachloro-3A,4,7,7A-tetrahydro-4,7-methanoindene, 3,4,5,6,7,8,8A-heptachlorodicyclopentadiene, agroceres, drinox, GPKH, heptagran, hepta, heptachlorane, heptox, heptamul, rhodiachlor, velsicol heptachlor
Use: organochlorine pesticide (use restricted or no longer permitted in some countries)
Molecular formula: $C_{10}H_5Cl_7$
CAS No: 76-44-8
EINECS No: 200-962-3
Annex I Index No: 602-046-00-2

Physical data

Appearance: white crystalline solid
Melting point: 95 - 96 C
Boiling point: decomposes
Vapour density:
Vapour pressure:
Density (g cm^{-3}): 1.58
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility:

Stability

Stable. Non-combustible. Incompatible with strong alkali, oxidizing agents. Corrodes many metals.

Toxicology

Toxic if inhaled, swallowed or absorbed through the skin. Readily absorbed through the skin. Possible carcinogen. May cause systemic effects.

Toxicity data
(The meaning of any toxicological abbreviations which appear in this section is given here.)
ORL-RAT LD50 40 mg kg^{-1}
SKN-RAT LD50 119 mg kg^{-1}
IPR-RAT LD50 27 mg kg^{-1}
ORL-MUS LD50 68 mg kg^{-1}
IVN-MUS LD50 20 mg kg^{-1}
SKN-GPG LDLO 1000 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R24 R25 R33 R40 R50 R53.

Environmental information

Toxic in the environment - very harmful to aquatic systems. May cause long-term damage.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 2761. Hazard class 6.1. Packing group II.

Personal protection

Safety glasses and gloves. Use only in a well-ventilated area.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S36 S37 S45 S60 S61.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

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APG

Analytical Products Group, Inc.

2730 Washington Blvd., Belpre, OH 45714
740-423-4200 800-272-4442 Fax 740-423-5588

Material Safety Data Sheet

Date prepared on: 12/5/95

Last revised on: 1/20/08

Page 1

Section I: Product Identification

CATALOG NUMBER: 5370/5372	PRODUCT NAME: Chlordane (Total)

Section II - Hazardous Ingredients/Identity Information

Chemical Name	CAS Reg. No.	OSHA PEL (TWA)	% Composition*
Acetone	67-64-1	750 ppm750 ppm	99.995%
Technical Chlordane	57-74-9	0.5 mg/m3	0.005%

* Components are calculated on a weight/weight basis.

Section III - Physical/Chemical Characteristics

BOILING POINT: 56°C (132°F) @ 760 mm Hg	SPECIFIC GRAVITY: 0.79 (water = 1)	
VAPOR PRESSURE: 181 mm Hg @ 20°C	SOLUBILITY IN WATER: Complete	APPEARANCE/ODOR: Clear, colorless liquid, sweet odor (acetone)

Section IV - Fire and Explosion Hazard Data

FLASH POINT (Method used): -18°C (-2°F) closed cup	AUTO IGNITION TEMPERATURE: 464°C (869°F)	FLAMMABLE LIMITS	LEL 2.5%	UEL 13%

EXTINGUISHING MEDIA: Use alcohol foam, dry chemical or carbon dioxide (water may be ineffective). Use extinguisher media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if it can be done without risk. Use water to keep fire exposed containers cool.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Vapors may flow along surfaces to distant ignition sources and flash back. Closed containers exposed to heat may explode. Contact with strong oxidizers may cause a fire.

Section V - Reactivity Data

STABILITY:	Unstable ☐	Stable ☒	Conditions to Avoid: Heat, sparks, and contact with ignition source.

INCOMPATIBILITY (Materials to avoid):
Strong oxidizing agents, strong bases, halogen acids and halogen compounds, caustics, amines and ammonia, chlorine and chlorine compounds, strong acids, esp. sulfuric and nitric.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, toxic fumes of chlorine.

HAZARDOUS POLYMERIZATION:	May Occur ☐	Will Not Occur ☒	Conditions to Avoid: N/A

Section VI - Health Hazard Data

ROUTES OF ENTRY	Inhalation? YES	Skin? YES	Ingestion? YES
HEALTH HAZARDS (Acute and Chronic): Acute: Irritation of the nose and throat. Chronic: Kidney and liver damage. CANCER HAZARD			
COMPONENTS LISTED AS CARCINOGENS OR POTENTIAL CARCINOGENS: Technical Chlordane 57-74-9 (IARC) RTECS #PB9800000 Consult RTECS for complete information on the effects of this compound.			
SIGNS AND SYMPTOMS OF EXPOSURE: Irritation of skin, eyes, nose and throat. Headache, dizziness, vomiting, nausea, central nervous system depression, low blood pressure and respiratory failure. Prolonged contact may cause dermatitis.			
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Skin disorders, eye disorders, and chronic respiratory disease.			
EMERGENCY AND FIRST AID PROCEDURES: EYES: Remove contact lenses if present. Hold eyelids open and irrigate with large volumes of water for 15 min. Seek medical treatment. SKIN: Immediately wash with soap and water. Continue rinsing with large volumes of water for 15 min. Remove contaminated clothing. Seek medical treatment. INHALATION: If inhaled, remove to fresh air. Have a trained person administer oxygen and CPR if needed. Contact a physician immediately. INGESTION: If conscious, give large amounts of water and induce vomiting. Contact a physician immediately.			

Section VII - Precautions for Safe Handling and Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Diluted standard can be absorbed with sand or other non-combustible absorbent material and placed into a container for later disposal. Sample solutions should be absorbed with charcoal or other organic absorbent and incinerated. Flush are with water.
WASTE DISPOSAL METHOD: Dispose in accordance with all applicable federal, state, and local regulations.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Contains a CARCINOGEN or SUSPECTED CARCINOGEN. Avoid all inhalation and contact. Keep in a tightly closed container at all times. Protect from temperature extremes and direct sunlight. Handle with the utmost care. Store in an explosion proof refrigerator at 4C.
OTHER PRECAUTIONS* This product contains a chemical(s) known to the State of California to cause cancer.

Section VIII - Control Measures

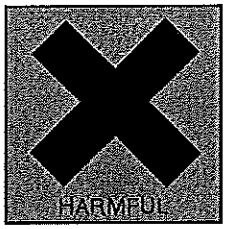
RESPIRATORY PROTECTION (Please specify): Respiratory protection required if airborne concentration exceeds PEL 750 ppm. At concentrations up to 5000 ppm a chemical cartridge respirator with organic vapor cartridge is recommended. Above this level, a self-contained breathing apparatus is recommended. (20,000 ppm is immediately dangerous to life or health).	
VENTILATION: Use in an area provided with general and local exhaust ventilation meeting OSHA requirements	
PROTECTIVE GLOVES: Solvent resistant: neoprene, nitrile, or rubber.	EYE PROTECTION: Safety glasses or goggles.
OTHER PROTECTIVE EQUIPMENT: Protective clothing meeting laboratory safety requirements.	
EMERGENCY WASH FACILITIES: Maintain eye wash and quick drench showers in work area.	

The information stated in this Material Safety Data Sheet (MSDS) is believed to be correct on the date of publication and must not be considered all conclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. Persons not specifically and properly trained should not handle this chemical or its container. This MSDS is provided without any warranty expressed or implied, including merchantability or fitness for any particular purpose.

This product is furnished for laboratory use ONLY! Our standards may not be used as drugs, cosmetics, agricultural or pesticidal products, food additives or as house hold chemicals.

* Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Environmental Protection Agency, and others) may have specific regulations concerning the transportation, handling, storage or use of this product which may not be contained herein. The customer or user of this product should be familiar with these regulations.

Safety data for barium



Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms:
Molecular formula: Ba
CAS No: 7440-39-3
EC No:

Physical data

Appearance: yellow-white, slightly lustrous solid
Melting point: 725 C
Boiling point: 1640 C
Vapour density:
Vapour pressure: 10 mm Hg at 1049 C
Density (g cm^{-3}): 3.51
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility: reacts

Stability

Reacts vigorously or violently with acids, water, tetrachloromethane, small halogenated hydrocarbons. Should be stored under an inert material such as petroleum ether to exclude air. Flammable.

Toxicology

Poisonous if swallowed. (Note that water or acid soluble barium salts are all poisonous, but that the insoluble salts, as used in a "barium meal" are much less so.)

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R22.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
Hazard class 4.3. Packing group II. UN No 1400.

Personal protection

Safety glasses, gloves, good ventilation. Moisture-free working environment, such as a glove-box.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)

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Material Safety Data Sheet (MSDS)

Revision Date: 12 July 2005

Section 1 .... Product Identification

Used In: 225-9023, -9023A, and -9050
Tradename: Toluene
Synonyms: Methylbenzene; Toluol; Phenylmethane
CAS No.: 108-88-3
Molecular Weight: 92.14
Chemical Formula: C6H5-CH3, C_7H_8

Section 2 .... Composition/Information of Ingredients

CAS #: 108-88-3 **Percent:** 100% **Hazardous:** Yes

Section 3 .... Hazards Identification

Emergency Overview

POISON! DANGER! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR HARMFUL. FLAMMABLE LIQUID AND VAPOR. MAY AFFECT LIVER, KIDNEYS, BLOOD SYSTEM, OR CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

SAF-T-DATA™ Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)
Flammability Rating: 3 - Severe (Flammable)
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation: Inhalation may cause irritation of the upper respiratory tract. Symptoms of overexposure may include fatigue, confusion, headache, dizziness and drowsiness. Peculiar skin sensations (e. g. pins and needles) or numbness may be produced. Very high concentrations may cause unconsciousness and death.

Ingestion: Swallowing may cause abdominal spasms and other symptoms that parallel over-exposure from inhalation. Aspiration of material into the lungs can cause chemical pneumonitis, which may be fatal.

Skin Contact: Causes irritation. May be absorbed through skin.

Eye Contact: Causes severe eye irritation with redness and pain.

Chronic Exposure: Reports of chronic poisoning describe anemia, decreased blood cell count and bone marrow hypoplasia. Liver and kidney damage may occur. Repeated or prolonged contact has a defatting action, causing drying, redness, dermatitis. Exposure to toluene may affect the developing fetus.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or impaired liver or kidney function may be more susceptible to the effects of this substance. Alcoholic beverage consumption can enhance the toxic effects of this substance.

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Material Safety Data Sheet (MSDS)

Tradename: Toluene

Section 4 .... First-aid Measures

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. CALL A PHYSICIAN IMMEDIATELY.

Ingestion: Aspiration hazard. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. If vomiting occurs, keep head below hips to prevent aspiration into lungs.

Skin Contact: In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Section 5 .... Fire Fighting Measures

Fire:

Flash point: 7C (45F) CC

Autoignition temperature: 422C (792F)

Flammable limits in air % by volume: lel: 3.3; uel: 19

Flammable liquid and vapor!

Dangerous fire hazard when exposed to heat or flame. Vapors can flow along surfaces to distant ignition source and flash back.

Explosion: Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Contact with strong oxidizers may cause fire or explosion. Sensitive to static discharge.

Fire Extinguishing Media:

Dry chemical, foam or carbon dioxide. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water spray may be used to keep fire exposed containers cool.

Section 6 .... Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

Section 7 .... Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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Material Safety Data Sheet (MSDS)

Tradename: Toluene

Section 8 .... Exposure Controls/Personal Protection

Airborne Exposure Limits:

Toluene:

- **OSHA Permissible Exposure Limit (PEL):**
  200 ppm (TWA); 300 ppm (acceptable ceiling conc.); 500 ppm (maximum conc.).
- **ACGIH Threshold Limit Value (TLV):**
  50 ppm (TWA) skin, A4 - Not Classifiable as a Human Carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half-face organic vapor respirator may be worn for up to ten times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Section 9 .... Physical and Chemical Properties

Appearance:	Clear, colorless liquid.	**Melting Point:**	-95C (-139F)
Odor:	Aromatic benzene-like.	**Vapor Density (Air=1):**	3.14
Solubility:	0.05 gm/100gm water @ 20C (68F).	**Vapor Pressure (mm Hg):**	22 @ 20C (68F)
Specific Gravity:	0.86 @ 20C / 4 C	**Evaporation Rate (BuAc=1):**	2.24
pH:	No information found.		
% Volatiles by vol. @ 21C (70F):	100		
Boiling Point:	111C (232F)		

Section 10 .. Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage. Containers may burst when heated.

Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization: Will not occur.

Incompatibilities: Heat, flame, strong oxidizers, nitric and sulfuric acids, chlorine, nitrogen tetraoxide; will attack some forms of plastics, rubber, coatings.

Conditions to Avoid: Heat, flames, ignition sources and incompatibles.

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Material Safety Data Sheet (MSDS)

Tradename: Toluene

Section 11 .. Toxicological Information

Toxicological Data:

Oral rat LD50: 636 mg/kg; skin rabbit LD50: 14100 uL/kg; inhalation rat LC50: 49 gm/m3/4H; Irritation data: skin rabbit, 500 mg, Moderate; eye rabbit, 2 mg/24H, Severe. Investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity:

Has shown some evidence of reproductive effects in laboratory animals.

Cancer Lists

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Toluene (108-88-3)	No	No	3

Section 12 .. Ecological Considerations

Environmental Fate: When released into the soil, this material may evaporate to a moderate extent. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released into water, this material may evaporate to a moderate extent. When released into water, this material may biodegrade to a moderate extent. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient of less than 3.0. Bioconcentration factor = 13.2 (eels).

Environmental Toxicity: This material is expected to be toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l.

Section 13 .. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14 .. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: TOLUENE
Hazard Class: 3
UN/NA: UN1294
Packing Group: II
Information reported for product/size: 390LB

International (Water, I.M.O.)

Proper Shipping Name: TOLUENE
Hazard Class: 3
UN/NA: UN1294
Packing Group: II
Information reported for product/size: 390LB

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Material Safety Data Sheet (MSDS)

Tradename: Toluene

Section 15 .. Regulatory Information

Chemical Inventory Status - Part 1

Ingredient	TSCA	EC	Japan	Australia
Toluene (108-88-3)	Yes	Yes	Yes	Yes

Chemical Inventory Status - Part 2

Ingredient	Korea	DSL	NDSL	Phil.
Toluene (108-88-3)	Yes	Yes	No	Yes

Federal, State & International Regulations - Part 1

	--SARA 302--		---------SARA 313---------	
Ingredient	RQ	TPQ	List	Chemical Catg.
Toluene (108-88-3)	No	No	Yes	No

Federal, State & International Regulations - Part 2

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Toluene (108-88-3)	1000	U220	No

Chemical Weapons Convention: No **TSCA 12(b):** No **CDTA:** Yes
SARA 311/312: Acute: Yes **Chronic:** Yes **Fire:** Yes **Pressure:** No
Reactivity: No (Pure / Liquid)

WARNING:
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Australian Hazchem Code: 3[Y]E
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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Material Safety Data Sheet (MSDS)

Tradename: Toluene

Section 16 .. Other Information

NFPA Ratings: Health: 2 **Flammability:** 3 **Reactivity:** 0

Label Hazard Warning:

POISON! DANGER! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR HARMFUL. FLAMMABLE LIQUID AND VAPOR. MAY AFFECT LIVER, KIDNEYS, BLOOD SYSTEM, OR CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Label Precautions:

- Keep away from heat, sparks and flame.
- Keep container closed.
- Use only with adequate ventilation.
- Wash thoroughly after handling.
- Avoid breathing vapor.
- Avoid contact with eyes, skin and clothing.

Label First Aid:

- Aspiration hazard. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head below hips to prevent aspiration into lungs.
- If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
- In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes.
- Wash clothing before reuse.
- In all cases call a physician immediately.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 3.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Addendum 6

Results Tables from Remedial Investigation Report

TABLE 1
Analytical Results for Volatile Organic Compounds in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-1		SB-1		SB-2		SB-2		SB-3		SB-3		SB-4		SB-4		SB-5		SB-5		SB-6		SB-6		*Part 375
Sample Depth	0'-2'		10'-12'		0'-2'		6'-8'		0'-2'		6'-8'		0'-2'		16'-18'		0'-2'		12'-14'		0'-2'		12'-14'		SCOs
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Unrestricted
Date Sampled	2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		Use
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Volatile Organics																									
1,1,1,2-Tetrachloroethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,1,1-Trichloroethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	680
1,1,2,2-Tetrachloroethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,1,2-Trichloroethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,1-Dichloroethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	270
1,1-Dichloroethene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	330
1,1-Dichloropropene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,2,3-Trichlorobenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,2,3-Trichloropropane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,2,4,5-Tetramethylbenzene	**0.53**	J	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,2,4-Trichlorobenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,2,4-Trimethylbenzene	**0.56**	J	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	**0.45**	J	**0.39**	J	**0.34**	J	3600
1,2-Dibromo-3-chloropropane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,2-Dibromoethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,2-Dichlorobenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	1100
1,2-Dichloroethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	20
1,2-Dichloropropane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,3,5-Trimethylbenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	8400
1,3-Dichlorobenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	2400
1,3-dichloropropane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
1,4-Dichlorobenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	1800
1,4-Dioxane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	100
2,2-Dichloropropane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
2-Butanone	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	120
2-Chloroethyl vinyl ether	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
2-Chlorotoluene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
2-Hexanone	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
2-Propanol	56	U	54	U	60	U	5.7	U	57	U	58	U	52	U	59	U	59	U	59	U	56	U	57	U	NA
4-Chlorotoluene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
4-Isopropyltoluene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
4-Methyl-2-pentanone	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Acetone	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	50
Acrolein	28	U	27	U	30	U	11	U	29	U	29	U	26	U	30	U	29	U	30	U	28	U	28	U	NA
Acrylonitrile	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Benzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	60
Bromobenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Bromochloromethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Bromodichloromethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Bromoform	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Bromomethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Carbon disulfide	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Carbon tetrachloride	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	760

Notes:
All concentrations are reported in micrograms per kilogram (µg/kg) or parts per billion.
ND=Indicates the compound was analyzed for but not detected.
NA=Not Applicable
J=Analyte detected below quantitation limits
NVG=No value given
U=compound was analyzed for but not detected.
B=analyte was detected in associated method blank.
Bold indicates a detection.
Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 1
Analytical Results for Volatile Organic Compounds in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-1		SB-1		SB-2		SB-2		SB-3		SB-3		SB-4		SB-4		SB-5		SB-5		SB-6		SB-6		*Part 375 SCOs Unrestricted Use
Sample Depth	0'-2'		10'-12'		0'-2'		6'-8'		0'-2'		6'-8'		0'-2'		16'-18'		0'-2'		12'-14'		0'-2'		12'-14'		
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		
Date Sampled	2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Volatile Organics																									
Chlorobenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	1100
Chlorodifluoromethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Chloroethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Chloroform	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	370
Chloromethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
cis-1,2-Dichloroethene	**1.4**	J	5.4	U	**0.89**	J	5.7	U	**0.43**	J	5.8	U	5.2	U	5.9	U	5.9	U	**1.1**	J	**1.4**	J	**2.1**	J	250
cis-1,3-Dichloropropene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Dibromochloromethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Dibromomethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Dichlorodifluoromethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Diisopropyl ether	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Ethanol	28	U	27	U	30	U	11	U	29	U	29	U	26	U	30	U	29	U	30	U	28	U	28	U	NA
Ethyl acetate	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Ethylbenzene	**0.46**	J	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	**0.35**	J	5.7	U	1000
Freon-114	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Hexachlorobutadiene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Isopropyl acetate	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Isopropylbenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
m,p-Xylene	**1.7**	J	11	U	**1.1**	J	11	U	**0.85**	J	12	U	10	U	12	U	**0.79**	J	**1.1**	J	**1.1**	J	**0.81**	J	260
Methyl Acetate	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Methyl tert-butyl ether	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	930
Methylene chloride	**9.1**	B	**5.7**	B	**7.7**	B	**7.2**	B	**6.2**	B	**6.1**	B	**4.9**	J	**6.5**	B	**6.9**	B	**8.6**	B	**8.5**	B	**12**	B	50
n-Amyl acetate	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Naphthalene	**1.4**	J	5.4	U	6	U	5.7	U	**0.51**	J	5.8	U	5.2	U	**2.8**	J	5.9	U	**4.3**	J	**0.55**	J	**0.72**	J	12000
n-Butyl acetate	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
n-Butylbenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	12000
n-Propyl acetate	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
n-Propylbenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	3900
o-Xylene	**0.93**	J	**0.34**	J	**0.59**	J	5.7	U	**0.53**	J	**0.37**	J	5.2	U	**0.4**	J	**0.6**	J	**0.72**	J	**0.64**	J	**0.54**	J	260
p-Diethylbenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
p-Ethyltoluene	**0.51**	J	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	**0.4**	J	**0.36**	J	5.7	U	NA
sec-Butylbenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	11000
Styrene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
t-Butyl alcohol	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
tert-Butylbenzene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	5900
Tetrachloroethene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	**1.1**	J	1300
Toluene	**1.3**	J	5.4	U	**0.84**	J	5.7	U	**0.64**	J	5.8	U	5.2	U	5.9	U	**0.53**	J	**0.77**	J	**1.2**	J	**1.4**	J	700
trans-1,2-Dichloroethene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	190
trans-1,3-Dichloropropene	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Trichloroethene	**1.8**	J	5.4	U	**1.3**	J	5.7	U	**0.73**	J	5.8	U	5.2	U	5.9	U	**0.68**	J	**1.1**	J	**1.6**	J	**1.9**	J	470
Trichlorofluoromethane	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Vinyl acetate	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	NA
Vinyl chloride	5.6	U	5.4	U	6	U	5.7	U	5.7	U	5.8	U	5.2	U	5.9	U	5.9	U	5.9	U	5.6	U	5.7	U	20

Notes:
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Bold indicates a detection.
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**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 1
Analytical Results for Volatile Organic Compounds in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-7		SB-7		SB-8		SB-8		SB-9		SB-9		SB-10		SB-10		SB-11		SB-11		SB-12		SB-12		*Part 375 SCOs Unrestricted Use
Sample Depth	0'-2'		18'-20'		0'-2'		18'-20'		0'-2'		6'-8'		0'-2'		7'-9'		0'-2'		12'-14'		0'-2'		7'-9'		
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		
Date Sampled	2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Volatile Organics																									
1,1,1,2-Tetrachloroethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,1,1-Trichloroethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	680
1,1,2,2-Tetrachloroethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,1,2-Trichloroethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,1-Dichloroethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	270
1,1-Dichloroethene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	330
1,1-Dichloropropene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,2,3-Trichlorobenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,2,3-Trichloropropane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,2,4,5-Tetramethylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	**1.1**	J	5.8	U	5.4	U	5.3	U	5.5	U	**33**		**0.99**	J	NA
1,2,4-Trichlorobenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,2,4-Trimethylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	**0.65**	J	5.8	U	5.4	U	5.3	U	5.5	U	**17**		5.5	U	3600
1,2-Dibromo-3-chloropropane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,2-Dibromoethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,2-Dichlorobenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	1100
1,2-Dichloroethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	20
1,2-Dichloropropane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,3,5-Trimethylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**7.7**		5.5	U	8400
1,3-Dichlorobenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	2400
1,3-dichloropropane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
1,4-Dichlorobenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	1800
1,4-Dioxane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	100
2,2-Dichloropropane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
2-Butanone	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	120
2-Chloroethyl vinyl ether	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
2-Chlorotoluene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
2-Hexanone	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
2-Propanol	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
4-Chlorotoluene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
4-Isopropyltoluene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**4**	J	5.5	U	NA
4-Methyl-2-pentanone	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Acetone	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	50
Acrolein	11	U	11	U	11	U	11	U	12	U	12	U	12	U	11	U	11	U	11	U	11	U	11	U	NA
Acrylonitrile	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Benzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	60
Bromobenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Bromochloromethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Bromodichloromethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Bromoform	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Bromomethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Carbon disulfide	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Carbon tetrachloride	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	760

Notes:
All concentrations are reported in micrograms per kilogram (µg/kg) or parts per billion.
ND=Indicates the compound was analyzed for but not detected.
NA=Not Applicable
J=Analyte detected below quantitation limits
NVG=No value given
U=compound was analyzed for but not detected.
B=analyte was detected in associated method blank.
Bold indicates a detection.
Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 1
Analytical Results for Volatile Organic Compounds in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-7		SB-7		SB-8		SB-8		SB-9		SB-9		SB-10		SB-10		SB-11		SB-11		SB-12		SB-12		*Part 375 SCOs Unrestricted Use
Sample Depth	0'-2'		18'-20'		0'-2'		18'-20'		0'-2'		6'-8'		0'-2'		7'-9'		0'-2'		12'-14'		0'-2'		7'-9'		
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		
Date Sampled	2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Volatile Organics																									
Chlorobenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	1100
Chlorodifluoromethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Chloroethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Chloroform	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	370
Chloromethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
cis-1,2-Dichloroethene	5.4	U	5.4	U	5.4	U	5.4	U	**0.65**	J	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	250
cis-1,3-Dichloropropene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Dibromochloromethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Dibromomethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Dichlorodifluoromethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Diisopropyl ether	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Ethanol	11	U	11	U	11	U	11	U	12	U	12	U	12	U	11	U	11	U	11	U	11	U	11	U	NA
Ethyl acetate	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Ethylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**0.99**	J	5.5	U	1000
Freon-114	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Hexachlorobutadiene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Isopropyl acetate	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Isopropylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
m,p-Xylene	11	U	11	U	11	U	11	U	12	U	12	U	12	U	11	U	11	U	11	U	**3.2**	J	11	U	260
Methyl Acetate	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Methyl tert-butyl ether	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	930
Methylene chloride	**7.7**	B	**7.3**	B	**7.8**	B	**7.6**	B	**10**	B	**9.5**	B	**8.4**	B	**6.7**	B	**10**	B	**7.7**	B	**9.5**	B	**10**	B	50
n-Amyl acetate	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Naphthalene	5.4	U	5.4	U	**0.91**	J	5.4	U	5.8	U	**24**		**3.4**	J	5.4	U	5.3	U	5.5	U	**15**		**1.9**	J	12000
n-Butyl acetate	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
n-Butylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**2.5**	J	5.5	U	12000
n-Propyl acetate	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
n-Propylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**1.3**	J	5.5	U	3900
o-Xylene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	**0.62**	J	5.8	U	5.4	U	5.3	U	5.5	U	**2.3**	J	5.5	U	260
p-Diethylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**17**		5.5	U	NA
p-Ethyltoluene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**8.1**		5.5	U	NA
sec-Butylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**1**	J	5.5	U	11000
Styrene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
t-Butyl alcohol	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
tert-Butylbenzene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	5900
Tetrachloroethene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	**0.91**	J	5.5	U	1300
Toluene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	700
trans-1,2-Dichloroethene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	190
trans-1,3-Dichloropropene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Trichloroethene	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	470
Trichlorofluoromethane	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Vinyl acetate	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	NA
Vinyl chloride	5.4	U	5.4	U	5.4	U	5.4	U	5.8	U	5.8	U	5.8	U	5.4	U	5.3	U	5.5	U	5.7	U	5.5	U	20

Notes:
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**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 2
Analytical Results for Semi Volatile Organic Compounds in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-1		SB-1		SB-2		SB-2		SB-3		SB-3		SB-4		SB-4		SB-5		SB-5		SB-6		SB-6		*Part 375
Sample Depth	0'-2'		10'-12'		0'-2'		6'-8'		0'-2'		6'-8'		0'-2'		16'-18'		0'-2'		12'-14'		0'-2'		12'-14'		SCOs
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Unrestricted
Date Sampled	2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		Use
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Semi Volatile Organics																									
1,2,4-Trichlorobenzene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
1,2-Dichlorobenzene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	1,100
1,3-Dichlorobenzene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	2,400
1,4-Dichlorobenzene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	1,800
2,4,5-Trichlorophenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2,4,6-Trichlorophenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2,4-Dichlorophenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2,4-Dimethylphenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2,4-Dinitrophenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2,4-Dinitrotoluene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2,6-Dinitrotoluene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2-Chloronaphthalene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2-Chlorophenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2-Methylnaphthalene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	46	J	110	J	290	U	290	U	41	J	NA
2-Methylphenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	330
2-Nitroaniline	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
2-Nitrophenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
3,3´-Dichlorobenzidine	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
3+4-Methylphenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	330
3-Nitroaniline	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
4,6-Dinitro-2-methylphenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
4-Bromophenyl phenyl ether	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
4-Chloro-3-methylphenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
4-Chloroaniline	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
4-Chlorophenyl phenyl ether	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
4-Nitroaniline	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
4-Nitrophenol	280	U	270	U	300	U	290	U	290	U	290	U	69	J	300	U	290	U	290	U	290	U	290	U	NA
Acenaphthene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	49	J	140	J	290	U	49	J	130	J	20,000
Acenaphthylene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	32	J	82	J	290	U	240	J	290	U	100,000
Acetophenone	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Aniline	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Anthracene	160	J	270	U	170	J	98	J	290	U	290	U	260	U	1100		3000		100	J	410		1200		100,000
Atrazine	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Azobenzene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Benzaldehyde	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Benzidine	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Benzo(a)anthracene	81	J	270	U	170	J	90	J	290	U	290	U	140	J	440		**1300**		44	J	**1600**		480		1,000
Benzo(a)pyrene	69	J	270	U	150	J	95	J	290	U	290	U	170	J	370		**1100**		46	J	**1400**		520		1,000
Benzo(b)fluoranthene	66	J	270	U	200	J	130	J	290	U	290	U	300		640		**1800**		74	J	**2700**		850		1,000
Benzo(g,h,i)perylene	280	U	270	U	98	J	290	U	290	U	290	U	150	J	230	J	980		410		1400		440		100,000
Benzo(k)fluoranthene	140	J	270	U	320		190	J	290	U	290	U	340		700		**2000**		79	J	**2900**		**890**		800
Benzoic acid	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Benzyl alcohol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Biphenyl	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA

Notes:
All concentrations are reported in micrograms per kilogram (μg/kg) or parts per billion.
NA=Not Applicable
J=Analyte detected below quantitation limits
U=compound was analyzed for but not detected.
B=analyte was detected in associated method blank.
Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

TABLE 2
Analytical Results for Semi Volatile Organic Compounds in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-1		SB-1		SB-2		SB-2		SB-3		SB-3		SB-4		SB-4		SB-5		SB-5		SB-6		SB-6		*Part 375 SCOs Unrestricted Use
Sample Depth	0'-2'		10'-12'		0'-2'		6'-8'		0'-2'		6'-8'		0'-2'		16'-18'		0'-2'		12'-14'		0'-2'		12'-14'		
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		
Date Sampled	2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Semi Volatile Organics																									
Bis(2-chloroethoxy)methane	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Bis(2-chloroethyl)ether	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Bis(2-chloroisopropyl)ether	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Bis(2-ethylhexyl)phthalate	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Butyl benzyl phthalate	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Caprolactam	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Carbazole	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Chrysene	85	J	270	U	190	J	100	J	290	U	290	U	190	J	450		**1200**		46	J	**1900**		480		1,000
Dibenzo(a,h)anthracene	280	U	270	U	300	U	290	U	290	U	290	U	29	J	96	J	200	J	62	J	**350**		90	J	330
Dibenzofuran	280	U	270	U	300	U	290	U	290	U	290	U	260	U	89	J	240	J	290	U	160	J	84	J	7,000
Diethyl phthalate	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Dimethyl phthalate	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Di-n-butyl phthalate	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Di-n-octyl phthalate	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Fluoranthene	160	J	270	U	210	J	120	J	290	U	290	U	360		1200		3200		98	J	4300		1200		100,000
Fluorene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	98	J	210	J	290	U	240	J	110	J	30,000
Hexachlorobenzene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	330
Hexachlorobutadiene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Hexachlorocyclopentadiene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Hexachloroethane	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Indeno(1,2,3-c,d)pyrene	29	J	270	U	75	J	290	U	290	U	290	U	120	J	220	J	**660**		71	J	**960**		340		500
Isophorone	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Naphthalene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	100	J	210	J	290	U	290	U	53	J	12,000
Nitrobenzene	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
N-Nitrosodimethylamine	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
N-Nitrosodi-n-propylamine	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
N-Nitrosodiphenylamine	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA
Parathion	280	U	270	U	300	U	290	U	290	U	140	J	260	U	300	U	290	U	290	U	290	U	290	U	NA
Pentachlorophenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	800
Phenanthrene	160	J	270	U	170	J	100	J	290	U	290	U	180	J	1100		3000		100	J	3300		1200		100,000
Phenol	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	330
Pyrene	210	J	270	U	410		170	J	290	U	290	U	340		1000		2800		94	J	3600		1300		100,000
Pyridine	280	U	270	U	300	U	290	U	290	U	290	U	260	U	300	U	290	U	290	U	290	U	290	U	NA

Notes:
All concentrations are reported in micrograms per kilogram (μg/kg) or parts per billion.
NA=Not Applicable
J=Analyte detected below quantitation limits
U=compound was analyzed for but not detected.
B=analyte was detected in associated method blank.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

TABLE 2
Analytical Results for Semi Volatile Organic Compounds in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-7		SB-7		SB-8		SB-8		SB-9		SB-9		SB-10		SB-10		SB-11		SB-11		SB-12		SB-12		*Part 375
Sample Depth	0'-2'		18'-20'		0'-2'		18'-20'		0'-2'		6'-8'		0'-2'		7'-9'		0'-2'		12'-14'		0'-2'		7'-9'		SCOs
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Unrestricted
Date Sampled	2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		Use
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Semi Volatile Organics																									
1,2,4-Trichlorobenzene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
1,2-Dichlorobenzene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	1,100
1,3-Dichlorobenzene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	2,400
1,4-Dichlorobenzene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	1,800
2,4,5-Trichlorophenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2,4,6-Trichlorophenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2,4-Dichlorophenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2,4-Dimethylphenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2,4-Dinitrophenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2,4-Dinitrotoluene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2,6-Dinitrotoluene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2-Chloronaphthalene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2-Chlorophenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2-Methylnaphthalene	270	U	280	U	38	J	270	U	120	J	1900		33	J	270	U	270	U	270	U	89	J	45	J	NA
2-Methylphenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	330
2-Nitroaniline	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
2-Nitrophenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
3,3´-Dichlorobenzidine	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
3+4-Methylphenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	330
3-Nitroaniline	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
4,6-Dinitro-2-methylphenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
4-Bromophenyl phenyl ether	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
4-Chloro-3-methylphenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
4-Chloroaniline	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
4-Chlorophenyl phenyl ether	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
4-Nitroaniline	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
4-Nitrophenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Acenaphthene	28	J	280	U	150	J	270	U	240	J	2600		78	J	270	U	270	U	270	U	110	J	270	U	20,000
Acenaphthylene	270	U	280	U	29	J	270	U	44	J	200	J	150	J	270	U	270	U	270	U	110	J	270	U	100,000
Acetophenone	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Aniline	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Anthracene	320		280	U	390		270	U	2400		6300		1900		120	J	270	U	270	U	2300		93	J	100,000
Atrazine	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Azobenzene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Benzaldehyde	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Benzidine	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Benzo(a)anthracene	210	J	280	U	**1200**		270	U	**1100**		**7400**		**1300**		110	J	270	U	270	U	940		48	J	1,000
Benzo(a)pyrene	190	J	280	U	960		270	U	1000		**7400**		**1300**		130	J	270	U	270	U	950		53	J	1,000
Benzo(b)fluoranthene	340		280	U	**1600**		270	U	**1800**		**7300**		**1200**		130	J	270	U	270	U	**1600**		43	J	1,000
Benzo(g,h,i)perylene	160	J	280	U	600		270	U	700		4000		870		100	J	270	U	270	U	600		37	J	100,000
Benzo(k)fluoranthene	350		280	U	**1800**		270	U	**1900**		**7700**		**1300**		140	J	270	U	270	U	**1600**		46	J	800
Benzoic acid	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Benzyl alcohol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Biphenyl	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA

Notes:
All concentrations are reported in micrograms per kilogram (μg/kg) or parts per billion.
NA=Not Applicable
J=Analyte detected below quantitation limits
U=compound was analyzed for but not detected.
B=analyte was detected in associated method blank.
Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

TABLE 2
Analytical Results for Semi Volatile Organic Compounds in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-7		SB-7		SB-8		SB-8		SB-9		SB-9		SB-10		SB-10		SB-11		SB-11		SB-12		SB-12		*Part 375 SCOs Unrestricted Use
Sample Depth	0'-2'		18'-20'		0'-2'		18'-20'		0'-2'		6'-8'		0'-2'		7'-9'		0'-2'		12'-14'		0'-2'		7'-9'		
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		
Date Sampled	2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Semi Volatile Organics																									
Bis(2-chloroethoxy)methane	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Bis(2-chloroethyl)ether	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Bis(2-chloroisopropyl)ether	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Bis(2-ethylhexyl)phthalate	270	U	280	U	270	U	270	U	1800		550		290	U	270	U	270	U	270	U	290	U	270	U	NA
Butyl benzyl phthalate	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Caprolactam	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Carbazole	270	U	280	U	160	J	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Chrysene	210	J	280	U	**1200**		270	U	**1300**		**9000**		**1300**		140	J	270	U	270	U	**1200**		61	J	1,000
Dibenzo(a,h)anthracene	31	J	280	U	150	J	270	U	170	J	**1600**		200	J	42	J	270	U	270	U	150	J	270	U	330
Dibenzofuran	270	U	280	U	97	J	270	U	170	J	2700		78	J	270	U	270	U	270	U	110	J	270	U	7,000
Diethyl phthalate	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Dimethyl phthalate	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Di-n-butyl phthalate	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Di-n-octyl phthalate	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Fluoranthene	460		280	U	2400		270	U	2600		21000		2800		250	J	270	U	270	U	2600		110	J	100,000
Fluorene	270	U	280	U	170	J	270	U	220	J	3200		100	J	270	U	270	U	270	U	150	J	270	U	30,000
Hexachlorobenzene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	330
Hexachlorobutadiene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Hexachlorocyclopentadiene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Hexachloroethane	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Indeno(1,2,3-c,d)pyrene	120	J	280	U	**590**		270	U	**640**		**4500**		**790**		92	J	270	U	270	U	**520**		36	J	500
Isophorone	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Naphthalene	270	U	280	U	54	J	270	U	190	J	3700		40	J	270	U	270	U	270	U	140	J	270	U	12,000
Nitrobenzene	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
N-Nitrosodimethylamine	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
N-Nitrosodi-n-propylamine	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
N-Nitrosodiphenylamine	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Parathion	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA
Pentachlorophenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	800
Phenanthrene	320		280	U	2000		270	U	2500		28000		1900		130	J	270	U	270	U	2300		99	J	100,000
Phenol	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	330
Pyrene	440		280	U	2400		270	U	2500		27000		2300		220	J	270	U	270	U	2400		110	J	100,000
Pyridine	270	U	280	U	270	U	270	U	280	U	290	U	290	U	270	U	270	U	270	U	290	U	270	U	NA

Notes:
All concentrations are reported in micrograms per kilogram (μg/kg) or parts per billion.
NA=Not Applicable
J=Analyte detected below quantitation limits
U=compound was analyzed for but not detected.
B=analyte was detected in associated method blank.
Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

TABLE 3
Analytical Results for Pesticides in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-1		SB-1		SB-2		SB-2		SB-3		SB-3		SB-4		SB-4		SB-5		SB-5		SB-6		SB-6		*Part 375
Sample Depth	0'-2'		10'-12'		0'-2'		6'-8'		0'-2'		6'-8'		0'-2'		16'-18'		0'-2'		12'-14'		0'-2'		12'-14'		SCOs
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Unrestricted
Date Sampled	2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		Use
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Pesticides																									
4,4´-DDD	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	**6.3**		2.3	U	1	J	3.3
4,4´-DDE	2.2	U	2	U	**3.5**		2.2	U	2.1	U	2.3	U	2.7		2.2	U	2.2	U	2.3	U	2.3	U	3.1		3.3
4,4´-DDT	2.2	U	2	U	**15**		2.2	U	2.1	U	2.3	U	**7.5**		2.6		**6.8**		**13**		**19**		**3.7**		3.3
Aldrin	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.3		2.2	U	2.3	U	2.3	U	1.5	J	5
alpha-BHC	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	20
beta-BHC	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	36
Chlordane	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	94
Chlorobenzilate	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	NA
DBCP	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	NA
delta-BHC	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	1.8	J	40
Dieldrin	2.2	U	2	U	2.2	U	**6.3**		2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	5
Endosulfan I	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	2400
Endosulfan II	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	2400
Endosulfan sulfate	2.2	U	2	U	2.5	P	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	1.6	J	2400
Endrin	2.2	U	2	U	2.2	U	**26**	C	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	0.82	J	14
Endrin aldehyde	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	NA
Endrin ketone	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	1	J	NA
gamma-BHC	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	100
Heptachlor	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.1	J	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	42
Heptachlor epoxide	2.2	U	0.78	J	2.2	U	3.5		1.8	J	0.83	J	2.1	U	2.3		0.95	J	2.3	U	2.3	U	2.3	U	NA
Hexachlorobenzene	0.99	J	0.83	J	0.81	J	1.8	J	1.5	J	1.4	J	2.2		2.2	U	2.5		2.2	J	2.3	U	2.3	U	330
Hexachlorocyclopentadiene	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	NA
Methoxychlor	2.2	U	2	U	2.2	U	2.2	U	2.1	U	2.3	U	2.1	U	2.2	U	2.2	U	2.3	U	2.3	U	2.3	U	NA
Toxaphene	44	U	40	U	43	U	44	U	43	U	45	U	42	U	44	U	43	U	45	U	46	U	45	U	NA

Notes:
All concentrations are reported in micrograms per kilogram (μg/kg) or parts per billion.
P= >40% difference for detected concentration.
NA=Not Applicable
U=compound was analyzed for but not detected.
C=calibration %RSD/%D exceeded for non-CCC analytes.
J=Analyte detected below quantitation limits
Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 3
Analytical Results for Pesticides in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-7		SB-7		SB-8		SB-8		SB-9		SB-9		SB-10		SB-10		SB-11		SB-11		SB-12		SB-12		*Part 375 SCOs Unrestricted Use
Sample Depth	0'-2'		18'-20'		0'-2'		18'-20'		0'-2'		6'-8'		0'-2'		7'-9'		0'-2'		12'-14'		0'-2'		7'-9'		
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		
Date Sampled	2/18/2011		#######		2/18/2011		2/18/2011		#######		2/18/2011		2/18/2011		2/18/2011		#######		2/18/2011		#######		2/18/2011		
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Pesticides																									
4,4´-DDD	2.1	U	2.2	U	2	U	2.1	U	2.1	U	**14**		2.2	U	2.1	U	2	U	2.1	U	**8.3**	P	2.1	U	3.3
4,4´-DDE	2.1	U	2.2	U	2	U	2.1	U	**4.4**	P	**39**	P	2.2	U	2.1	U	2	U	2.1	U	1.6	J	2.1	U	3.3
4,4´-DDT	**11**		2.2	U	**8.7**		2.1	U	**11**		**57**		2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	3.3
Aldrin	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	5
alpha-BHC	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	20
beta-BHC	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	36
Chlordane	**1500**		2.2	U	**2400**		2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	94
Chlorobenzilate	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	NA
DBCP	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	NA
delta-BHC	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	40
Dieldrin	**6.3**		2.2	U	**26**		2.1	U	**9.5**		2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	5
Endosulfan I	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	2400
Endosulfan II	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	2400
Endosulfan sulfate	2.1	U	2.2	U	2	U	2.1	U	1.6	J	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	2400
Endrin	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	14
Endrin aldehyde	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	NA
Endrin ketone	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	NA
gamma-BHC	2.1	U	2.2	U	2	J	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	100
Heptachlor	**51**		2.2	U	**110**		2.1	U	2.3		33	P	2.2	U	2.1	U	1.3	J	2.1	U	2.3	U	2.1	U	42
Heptachlor epoxide	2.1	U	2.2	U	2	U	2.1	U	9.5		69	P	2.2	U	2.1	U	2		1.4	J	5.2	P	2.1	U	NA
Hexachlorobenzene	2.1	U	2.2	U	2	U	2.1	U	3		2.7		2.2	U	0.87	J	0.83	J	2.5		0.84	J	1.4	J	330
Hexachlorocyclopentadiene	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	NA
Methoxychlor	2.1	U	2.2	U	2	U	2.1	U	2.1	U	2.2	U	2.2	U	2.1	U	2	U	2.1	U	2.3	U	2.1	U	NA
Toxaphene	43	U	43	U	40	U	41	U	42	U	43	U	44	U	42	U	40	U	42	U	45	U	41	U	NA

Notes:
All concentrations are reported in micrograms per kilogram (μg/kg) or parts per billion.
P= >40% difference for detected concentration.
NA=Not Applicable
U=compound was analyzed for but not detected.
C=calibration %RSD/%D exceeded for non-CCC analytes.
J=Analyte detected below quantitation limits
Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 4
Analytical Results for PCBs in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-1		SB-1		SB-2		SB-2		SB-3		SB-3		SB-4		SB-4		SB-5		SB-5		SB-6		SB-6		*Part 375
Sample Depth	0'-2'		10'-12'		0'-2'		6'-8'		0'-2'		6'-8'		0'-2'		16'-18'		0'-2'		12'-14'		0'-2'		12'-14'		SCOs
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Unrestricted
Date Sampled	2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		Use
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
PCBs																									
Aroclor 1016	89	U	80	U	87	U	88	U	86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100
Aroclor 1221	89	U	80	U	87	U	88	U	86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100
Aroclor 1232	89	U	80	U	87	U	88	U	86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100
Aroclor 1242	89	U	80	U	87	U	88	U	86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100
Aroclor 1248	89	U	80	U	87	U	88	U	86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100
Aroclor 1254	89	U	80	U	87	U	88	U	86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100
Aroclor 1260	89	U	80	U	20	J	**180**		86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100
Aroclor 1262	89	U	80	U	87	U	88	U	86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100
Aroclor 1268	89	U	80	U	87	U	88	U	86	U	90	U	84	U	88	U	87	U	91	U	91	U	91	U	100

Notes:

All concentrations are reported in micrograms per kilogram (μg/kg) or parts per billion.

U=compound was analyzed for but not detected.

NA=Not Applicable

J=Analyte detected below quantitation limits

Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 4
Analytical Results for PCBs in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-7		SB-7		SB-8		SB-8		SB-9		SB-9		SB-10		SB-10		SB-11		SB-11		SB-12		SB-12		*Part 375
Sample Depth	0'-2'		18'-20'		0'-2'		18'-20'		0'-2'		6'-8'		0'-2'		7'-9'		0'-2'		12'-14'		0'-2'		7'-9'		SCOs
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Unrestricted
Date Sampled	2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		2/18/2011		Use
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
PCBs																									
Aroclor 1016	86	U	89	U	87	U	88	U	92	U	92	U	92	U	88	U	87	U	87	U	94	U	88	U	100
Aroclor 1221	86	U	89	U	87	U	88	U	92	U	92	U	92	U	88	U	87	U	87	U	94	U	88	U	100
Aroclor 1232	86	U	89	U	87	U	88	U	92	U	92	U	92	U	88	U	87	U	87	U	94	U	88	U	100
Aroclor 1242	86	U	89	U	87	U	88	U	92	U	92	U	92	U	88	U	87	U	87	U	94	U	88	U	100
Aroclor 1248	86	U	89	U	87	U	88	U	92	U	92	U	92	U	88	U	87	U	87	U	94	U	88	U	100
Aroclor 1254	86	U	89	U	87	U	88	U	92	U	92	U	92	U	88	U	87	U	87	U	94	U	88	U	100
Aroclor 1260	86	U	89	U	87	U	88	U	**27**	J	92	U	92	U	88	U	87	U	87	U	**31**	J	88	U	100
Aroclor 1262	86	U	89	U	87	U	88	U	92	U	92	U	92	U	88	U	87	U	87	U	94	U	88	U	100
Aroclor 1268	86	U	89	U	87	U	88	U	92	U	92	U	92	U	88	U	87	U	87	U	94	U	88	U	100

Notes:

All concentrations are reported in micrograms per kilogram (μg/kg) or parts per billion.

U=compound was analyzed for but not detected.

NA=Not Applicable

J=Analyte detected below quantitation limits

Bold indicates a detection.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 5
Analytical Results for Metals in Soil Samples
260 West 26th Street, New York, NY

Sample ID	SB-1		SB-1		SB-2		SB-2		SB-3		SB-3		SB-4		SB-4		SB-5		SB-5		SB-6		SB-6		*Part 375
Sample Depth	0'-2'		10'-12'		0'-2'		6'-8'		0'-2'		6'-8'		0'-2'		16'-18'		0'-2'		12'-14'		0'-2'		12'-14'		SCOs
Matrix	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Unrestricted
Date Sampled	2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		2/17/2011		Use
Units	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg
Metals																									
Aluminum	5,600		3,890		3,910		9,440		10,400		11,400		9,510		11,700		4,280		4,950		4,340		5,140		NA
Antimony	0.293	J	0.542	U	0.578	U	0.535	U	0.533	U	0.543	U	0.492	U	0.589	U	0.551	U	0.582	U	0.536	U	0.559	U	NA
Arsenic	4.03		0.953		**17.7**		5.52		1.51		1.5		1.02		3.44		3.74		4.91		3.88		3.07		13
Barium	114		55.4		109		212		35.9		35.2		64.3		166		236		258		152		125		350
Beryllium	0.45	U	0.433	U	0.462	U	0.428	U	0.426	U	0.434	U	0.393	U	0.471	U	0.441	U	0.466	U	0.429	U	0.448	U	7.2
Cadmium	0.99		0.433	U	0.277	J	0.535		0.426	U	0.434	U	0.393	U	0.471	U	0.242	J	0.466	U	0.171	J	0.448	U	2.5
Calcium	1,220		3,450		27,300		6,550		771		620		7,620		6,270		36,800		29,100		28,000		41,400		NA
Chromium	12.2		14.9		10.5		18.8		13.1		16.9		13.4		21.2		9.45		10.9		7.33		12.3		30
Cobalt	0.495		0.433	U	0.116	J	0.428	U	0.426	U	0.434	U	0.393	U	1.79		0.441	U	0.466	U	0.429	U	0.448	U	NA
Copper	**88.9**		10.7		26.2		28.3		9.18		8.23		24.1		38.7		8.61		13.7		38.8		25.9		50
Iron	11,800		10,000		9,710		16,800		12,200		11,700		15,800		19,700		6,520		15,700		14,600		18,700		NA
Lead	**387**		6.41		**511**		**528**		15.3		8.94		19.5		**331**		**221**		**547**		**169**		**74.7**		63
Magnesium	1,960		2,940		5,350		3,470		1,870		1,970		3,730		4,930		1,480		3,820		1,890		3,690		NA
Manganese	237		230		237		164		96		146		90.4		306		143		283		209		281		1,600
Mercury	**0.91**		0.0108	U	**0.524**		**0.558**		0.0367		0.0132		0.075		**1.81**		0.13		**0.705**		**0.523**		**0.336**		0.18
Nickel	11.5		21.7		9.03		15.4		9.78		11.9		14.4		19.7		6.17		7.27		6.97		12.8		30
Potassium	1,040		2,050		1,960		2,690		724		1,010		3,780		5,440		1,150		1,300		969		3,640		NA
Selenium	0.518	J	0.542	U	0.647		0.535	U	0.533	U	0.543	U	0.492	U	0.589	U	0.551	U	0.582	U	0.536	U	0.559	U	3.9
Silver	0.225	J	0.433	U	0.277	J	0.171	J	0.426	U	0.434	U	0.393	U	0.118	J	0.441	U	0.466	U	0.129	J	0.448	U	2
Sodium	142		121		288		219		306		295		132		239		419		486		546		201		NA
Thallium	2.41		4.35		2.75		4.92		3		2.93		6.88		10.8		2.03		2.14		1.26		6.56		NA
Vanadium	17.4		18		23.3		28.7		19		19.5		17.9		31.9		13.7		18.2		10.8		22		NA
Zinc	**289**		21.6		97.5		**273**		24.3		25.1		57.6		**190**		**134**		**153**		108		83.2		109

Notes:

All concentrations are reported in milligrams per kilogram (mg/kg) or parts per million.

ND=Indicates the compound was analyzed for but not detected.

NA=Not Applicable

J=Analyte detected below quantitation limits

NVG=No value given

Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

TABLE 5

Analytical Results for Metals in Soil Samples

260 West 26th Street, New York, NY

Sample ID	**SB-7**		**SB-7**		**SB-8**		**SB-8**		**SB-9**		**SB-9**		**SB-10**		**SB-10**		**SB-11**		**SB-11**		**SB-12**		**SB-12**		***Part 375**
Sample Depth	**0'-2'**		**18'-20'**		**0'-2'**		**18'-20'**		**0'-2'**		**6'-8'**		**0'-2'**		**7'-9'**		**0'-2'**		**12'-14'**		**0'-2'**		**7'-9'**		**SCOs**
Matrix	**Soil**		**Soil**		**Soil**		**Soil**		**Soil**		**Soil**		**Soil**		**Soil**		**Soil**		**Soil**		**Soil**		**Soil**		**Unrestricted**
Date Sampled	**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**2/18/2011**		**Use**
Units	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg
Metals																									
Aluminum	3690		3880		3320		2840		2510		3610		3300		3190		3340		2890		3110		5460		NA
Antimony	0.235	J	0.551	U	0.524	U	0.516	U	0.364	J	0.576	U	0.553	U	0.532	U	0.539	U	0.481	U	0.54	U	0.53	U	NA
Arsenic	1.28		1.01		1.53		0.701		10.6		3.34		4.14		1.94		0.927		0.596		3.46		2.99		13
Barium	31.3		60.6		52.7		56		**354**		75.6		261		90.2		65.1		50.3		227		91.9		350
Beryllium	0.428	U	0.441	U	0.419	U	0.412	U	0.428	U	0.461	U	0.443	U	0.425	U	0.431	U	0.385	U	0.432	U	0.424	U	7.2
Cadmium	0.428	U	0.441	U	0.419	U	0.412	U	1.88		0.138	J	0.177	J	0.425	U	0.431	U	0.385	U	0.432	U	0.424	U	2.5
Calcium	1940		3520		7500		2960		32700		17300		33500		13800		4250		3670		9270		4370		NA
Chromium	9.29		17		8.74		11		9.37		10.3		7.83		12.5		13.4		10.5		9.94		14.8		30
Cobalt	0.492		0.683		0.419		0.557		0.342	J	0.392	J	0.31	J	0.425	J	0.647		0.385	U	0.432	U	0.127	J	NA
Copper	15		6.04		12.9		6.72		**73.6**		13.1		8.76		13.2		9.07		8.14		**193**		41.7		50
Iron	8780		9590		7570		7790		12100		7710		8100		9370		10400		10300		11300		13500		NA
Lead	22.1		6.19		36.6		5.4		**191**		58.2		**188**		62.1		16.2		4.66		**86**		**63.6**		63
Magnesium	1970		2820		2010		2390		11100		3570		1880		2040		2380		2220		3650		3360		NA
Manganese	167		205		163		130		160		129		193		151		276		245		207		279		1,600
Mercury	0.0398		0.0103	U	0.0665		0.0106	U	**0.448**		0.112		**0.333**		0.133		0.00496	J	0.00939	U	**0.379**		**0.219**		0.18
Nickel	8.73		25.2		7.92		17.3		8.49		10.9		9.45		19.9		20		14.1		9.38		12.5		30
Potassium	831		1960		734		1510		767		1150		1250		1540		1920		1730		1180		2650		NA
Selenium	0.535	U	0.551	U	0.23	J	0.516	U	2.33		0.576	U	0.243	J	0.532	U	0.539	U	0.481	U	0.54	U	0.53	U	3.9
Silver	0.428	U	0.441	U	0.419	U	0.412	U	0.749		0.461	U	0.443	U	0.425	U	0.431	U	0.385	U	0.432	U	0.424	U	2
Sodium	64.6		193		87.1		101		340		229		324		190		136		102		199		152		NA
Thallium	1.86		4.1		1.47		2.76		1.11		1.89		1.55		2.47		3.1		2.89		1.62		6.04		NA
Vanadium	11.9		14.7		16.5		11.8		11.4		50.5		13.1		15.3		14.6		13.7		14.9		23.2		NA
Zinc	34.7		18		47.3		15.8		**641**		83.7		**146**		74.1		23.9		15.8		**138**		70.5		109

Notes:

All concentrations are reported in milligrams per kilogram (mg/kg) or parts per million.

ND=Indicates the compound was analyzed for but not detected.

NA=Not Applicable

J=Analyte detected below quantitation limits

NVG=No value given

Bold and boxed indicates that value is above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives.

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

Table 6

Analytical Results of Volatile Organic Compounds Detected In Soil Vapor Samples

260 West 26th Street
New York, New York

Sample ID	**SV-1**	**SV-2**
Matrix	Soil Vapor	Soil Vapor
Date Sampled	2/18/2011	2/18/2011
Volatile Organic Compounds via EPA Method TO-15		
Units	ug/m^3	ug/m^3
Acetone	ND	12 B
Benzene	1.2	0.79 J
Carbon Disulfide	0.46 J	ND
Chloroform	1.5	ND
Ethyl Benzene	1.1	1.2
p-Ethyltoluene	ND	0.34 J
4-Heptane	0.42 J	ND
4-Hexane	0.64 J	ND
Isopropanol	0.90 J	1.8
Methylene chloride	1.8 B	1.9 B
1,2,4-Trimethylbenzene	1.4	1.4
2-Butanone	3.5	2.4
Tetrachloroethylene	2.6	0.57 J
Tetrahydrofuran	2.2	2.2
Toluene	4.7	4.7
Trichloroethylene	0.86	ND
m,p-Xylene	3.9	3.8
o-Xylene	1.5	1.4

Notes:
All concentrations are shown in ug/m^3-micrograms per cubic meter
All samples collected over 2 hour period
J - Indicates an etimated value
B - Compound detected in associated Laboratory Method Blank
ND - Not detected at or above reporting limits

Table 7

Analytical Results of Volatile Organic Compounds In Groundwater Samples

260 West 26th Street, New York, NY

Sample ID Matrix Date Sampled	GW-1 Groundwater 3/31/2011	GW-2 Groundwater 3/31/2011	NYSDEC TOGS*
VOCs via EPA Method 8260			
Units	ug/l	ug/l	ug/l
1,1,1,2-Tetrachloroethane	ND	ND	5
1,1,1-Trichloroethane	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	5
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	5
1,1,2-Trichloroethane	ND	ND	1
1,1-Dichloroethane	ND	ND	5
1,1-Dichloroethene	ND	ND	5
1,1-Dichloropropene	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	5
1,2,3-Trichloropropane	ND	ND	5
1,2,4,5-Tetramethylbenzene	ND	ND	5
1,2,4-Trichlorobenzene	ND	ND	5
1,2,4-Trimethylbenzene	ND	ND	5
1,2-Dibromo-3-chloropropane	ND	ND	5
1,2-Dibromoethane	ND	ND	NVG
1,2-Dichlorobenzene	ND	ND	3
1,2-Dichloroethane	ND	ND	0.6
1,2-Dichloropropane	ND	ND	5
1,3,5-Trimethylbenzene	ND	ND	5
1,3-Dichlorobenzene	ND	ND	3
1,3-dichloropropane	ND	ND	5
1,4-Dichlorobenzene	ND	ND	3
1,4-Dioxane	ND	ND	NVG
2,2-Dichloropropane	ND	ND	5
2-Butanone	ND	ND	NVG
2-Chloroethyl vinyl ether	ND	ND	NVG
2-Chlorotoluene	ND	ND	NVG
2-Hexanone	ND	ND	NVG
2-Propanol	ND	ND	NVG
4-Chlorotoluene	ND	ND	NVG
4-Isopropyltoluene	ND	ND	5
4-Methyl-2-pentanone	ND	ND	NVG
Acetone	ND	ND	50
Acrolein	ND	ND	NVG
Acrylonitrile	ND	ND	NVG
Benzene	ND	ND	1
Bromobenzene	ND	ND	5
Bromochloromethane	ND	ND	5
Bromodichloromethane	ND	ND	50
Bromoform	ND	ND	50
Bromomethane	ND	ND	5
Carbon disulfide	ND	ND	NVG
Carbon tetrachloride	ND	ND	5
Chlorobenzene	ND	ND	5
Chlorodifluoromethane	ND	ND	NVG
Chloroethane	ND	ND	5
Chloroform	ND	ND	7
Chloromethane	ND	ND	NVG
cis-1,2-Dichloroethene	ND	ND	5
cis-1,3-Dichloropropene	ND	ND	0.4
Dibromochloromethane	ND	ND	50
Dibromomethane	ND	ND	5
Dichlorodifluoromethane	ND	ND	NVG
Diisopropyl ether	ND	ND	NVG
Ethanol	ND	ND	NVG
Ethyl acetate	ND	ND	NVG
Ethylbenzene	ND	ND	5
Freon-114	ND	ND	NVG
Hexachlorobutadiene	ND	ND	0.5
Isopropyl acetate	ND	ND	NVG
Isopropylbenzene	ND	ND	5
m,p-Xylene	ND	ND	5
Methyl Acetate	ND	ND	NVG
Methyl tert-butyl ether	ND	ND	10
Methylene chloride	**6.3 B**	**7.8 B**	5
n-Amyl acetate	ND	ND	NVG
Naphthalene	ND	ND	10
n-Butyl acetate	ND	ND	NVG
n-Butylbenzene	ND	ND	5
n-Propyl acetate	ND	ND	NVG
n-Propylbenzene	ND	ND	5
o-Xylene	ND	ND	5
p-Diethylbenzene	ND	ND	NVG
p-Ethyltoluene	ND	ND	NVG
sec-Butylbenzene	ND	ND	5
Styrene	ND	ND	5
t-Butyl alcohol	ND	ND	NVG
tert-Butylbenzene	ND	ND	5
Tetrachloroethene	ND	ND	5
Toluene	**1**	**16**	5
trans-1,2-Dichloroethene	ND	ND	5
trans-1,3-Dichloropropene	ND	ND	NVG
Trichloroethene	ND	ND	5
Trichlorofluoromethane	ND	ND	5
Vinyl acetate	ND	ND	NVG
Vinyl chloride	ND	ND	2

Notes:
All concentrations are reported in micrograms per liter (ug/L) or parts per billion.
B - Indicates analyte was detected in the associated method blank.
NVG - No Value Given
ND - Not detected at or above reporting limits
Detections are bolded
Bold and boxed indicates exceedance of groundwater standards or guidance values

**NYSDEC Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations; June 1998*

Table 8
Analytical Results of Semi Volatile Organic Compounds In Groundwater Samples
260 West 26th Street, New York, NY

Sample ID Matrix Date Sampled	GW-1 Groundwater 3/31/2011	GW-2 Groundwater 3/31/2011	NYSDEC TOGS**
SVOCs via EPA Method 8270			
Units	ug/l	ug/l	ug/l
1,2,4-Trichlorobenzene	ND	ND	5
1,2-Dichlorobenzene	ND	ND	3
1,3-Dichlorobenzene	ND	ND	3
1,4-Dichlorobenzene	ND	ND	3
2,4,5-Trichlorophenol	ND	ND	NVG
2,4,6-Trichlorophenol	ND	ND	NVG
2,4-Dichlorophenol	ND	ND	5
2,4-Dimethylphenol	ND	ND	50
2,4-Dinitrophenol	ND	ND	10
2,4-Dinitrotoluene	ND	ND	5
2,6-Dinitrotoluene	ND	ND	5
2-Chloronaphthalene	ND	ND	10
2-Chlorophenol	ND	ND	NVG
2-Methylnaphthalene	**3.7 J**	**1.7 J**	NVG
2-Methylphenol	ND	ND	NVG
2-Nitroaniline	ND	ND	5
2-Nitrophenol	ND	ND	NVG
3,3´-Dichlorobenzidine	ND	ND	5
3+4-Methylphenol	ND	ND	1
3-Nitroaniline	ND	ND	5
4,6-Dinitro-2-methylphenol	ND	ND	NVG
4-Bromophenyl phenyl ether	ND	ND	NVG
4-Chloro-3-methylphenol	ND	ND	NVG
4-Chloroaniline	ND	ND	NVG
4-Chlorophenyl phenyl ether	ND	ND	NVG
4-Nitroaniline	ND	ND	5
4-Nitrophenol	ND	ND	NVG
Acenaphthene	**6.3**	**2.5 J**	20
Acenaphthylene	ND	ND	NVG
Acetophenone	ND	ND	NVG
Aniline	ND	ND	NVG
Anthracene	**1.8 J**	**1.1 J**	50
Atrazine	ND	ND	NVG
Azobenzene	ND	ND	NVG
Benzaldehyde	ND	ND	NVG
Benzidine	ND	ND	NVG
Benzo(a)anthracene	ND	ND	0.002
Benzo(a)pyrene	ND	ND	NVG
Benzo(b)fluoranthene	ND	ND	0.002
Benzo(g,h,i)perylene	ND	ND	NVG
Benzo(k)fluoranthene	ND	ND	0.002
Benzoic acid	ND	ND	NVG
Benzyl alcohol	ND	ND	NVG
Biphenyl	ND	ND	NVG
Bis(2-chloroethoxy)methane	ND	ND	NVG
Bis(2-chloroethyl)ether	ND	ND	NVG
Bis(2-chloroisopropyl)ether	ND	ND	NVG
Bis(2-ethylhexyl)phthalate	ND	ND	5
Butyl benzyl phthalate	ND	ND	50
Caprolactam	ND	ND	NVG
Carbazole	ND	ND	NVG
Chrysene	**0.53 J**	ND	0.002
Dibenzo(a,h)anthracene	ND	ND	NVG
Dibenzofuran	**1.5 J**	**0.57 J**	NVG
Diethyl phthalate	ND	ND	NVG
Dimethyl phthalate	ND	ND	NVG
Di-n-butyl phthalate	ND	ND	50
Di-n-octyl phthalate	ND	ND	50
Fluoranthene	**1.5 J**	**1.2 J**	50
Fluorene	**1.2 J**	ND	50
Hexachlorobenzene	ND	ND	0.04
Hexachlorobutadiene	ND	ND	0.5
Hexachlorocyclopentadiene	ND	ND	5
Hexachloroethane	ND	ND	5
Indeno(1,2,3-c,d)pyrene	ND	ND	0.002
Isophorone	ND	ND	50
Naphthalene	**1.6 J**	**0.98 J**	10
Nitrobenzene	ND	ND	0.4
N-Nitrosodimethylamine	ND	ND	NVG
N-Nitrosodi-n-propylamine	ND	ND	NVG
N-Nitrosodiphenylamine	ND	ND	50
Parathion	ND	ND	NVG
Pentachlorophenol	ND	ND	NVG
Phenanthrene	**1.8 J**	**1.1 J**	50
Phenol	ND	ND	NVG
Pyrene	**1.5 J**	**1.2 J**	50
Pyridine	ND	ND	50

Notes:
All concentrations are reported in micrograms per liter (ug/L) or parts per billion.
J - Indicates an etimated value
NVG - No Value Given
ND - Not detected at or above reporting limits

***NYSDEC Technical and Operational Guidance Series (1.1.1)*
Ambient Water Quality Standards and Guidance Values
and Groundwater Effluent Limitations; June 1998

Detections are bolded
Bold and boxed indicates exceedance of groundwater standards or guidance values

Table 9

Analytical Results of Pesticides In Groundwater Samples

260 West 26th Street, New York, NY

Sample ID	GW-1	GW-2	NYSDEC
Matrix	Groundwater	Groundwater	TOGS*
Date Sampled	3/31/2011	3/31/2011	
Pesticides via EPA Method			
Units	ug/l	ug/l	ug/l
4,4´-DDD	ND	ND	0.3
4,4´-DDE	ND	ND	0.2
4,4´-DDT	0.018 J	0.0025 JP	0.2
Aldrin	ND	ND	NVG
alpha-BHC	ND	ND	0.01
beta-BHC	ND	ND	0.04
Chlordane	ND	ND	0.05
Chlorobenzilate	ND	ND	NVG
DBCP	ND	ND	NVG
delta-BHC	ND	ND	0.04
Dieldrin	ND	ND	0.004
Endosulfan I	ND	ND	NVG
Endosulfan II	ND	ND	NVG
Endosulfan sulfate	ND	ND	NVG
Endrin	ND	ND	NVG
Endrin aldehyde	ND	ND	5
Endrin ketone	ND	ND	NVG
gamma-BHC	ND	ND	0.05
Heptachlor	ND	ND	NVG
Heptachlor epoxide	ND	ND	NVG
Hexachlorobenzene	ND	ND	NVG
Hexachlorocyclopentadiene	ND	ND	NVG
Methoxychlor	ND	ND	NVG
Toxaphene	ND	ND	NVG

Notes:

NVG - No Value Given

J - Indicates an etimated value

NVG - No Value Given

ND - Not detected at or above reporting limits

P - > 40% difference for detected concentration between the two gas chromatography columns.

All concentrations are reported in micrograms per liter (ug/L) or parts per billion.

**NYSDEC Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations; June 1998*

Bold and boxed indicates exceedance of groundwater standards or guidance values

Table 10

Analytical Results of PCBs In Groundwater Samples

260 West 26th Street, New York, NY

Sample ID	GW-1	GW-2	NYSDEC
Matrix	Groundwater	Groundwater	TOGS**
Date Sampled	3/31/2011	3/31/2011	
PCBs via EPA Method 8082			
Units	ug/l	ug/l	ug/l
Aroclor 1016	ND	ND	0.09 *
Aroclor 1221	ND	ND	0.09 *
Aroclor 1232	ND	ND	0.09 *
Aroclor 1242	ND	ND	0.09 *
Aroclor 1248	ND	ND	0.09 *
Aroclor 1254	ND	ND	0.09 *
Aroclor 1260	ND	ND	0.09 *
Aroclor 1262	ND	ND	0.09 *
Aroclor 1268	ND	ND	0.09 *

Notes:
All concentrations are reported in micrograms per liter (ug/L) or parts per billion.
*standard is for sum of Aroclors
ND - Not detected at or above reporting limits

***NYSDEC Technical and Operational Guidance Series (1.1.1)*
Ambient Water Quality Standards and Guidance Values
and Groundwater Effluent Limitations; June 1998

Detections are bolded
Bold and boxed indicates exceedance of groundwater standards or guidance values

Table 11
Analytical Results of Metals in Groundwater Samples
260 West 26th Street, New York, NY

Sample ID	GW-1	GW-2	NYSDEC
Matrix	Groundwater	Groundwater	TOGS*
Date Sampled	3/31/2011	3/31/2011	
Total Metals			
Units	mg/L	mg/L	mg/L
Aluminum	**8.87**	**44**	NVG
Antimony	ND	ND	0.003
Arsenic	**0.032**	**0.05**	0.025
Barium	**2.2**	**4.11**	1
Beryllium	ND	ND	0.003
Cadmium	ND	ND	0.005
Calcium	**244**	**413**	NVG
Chromium	**0.061**	**0.257**	0.05
Cobalt	ND	ND	NVG
Copper	**0.397**	**0.914**	0.2
Iron	**32.4**	**68.7**	0.3
Lead	**2.49**	**4.61**	0.025
Magnesium	**102**	**52.5**	35
Manganese	**0.768**	**1.84**	0.3
Mercury	**0.0252**	**0.0306**	0.0007
Nickel	**0.029**	**0.094**	0.1
Potassium	**53.9**	**66.3**	NVG
Selenium	ND	**0.039**	0.01
Silver	ND	ND	0.05
Sodium	**42.1**	**47.4**	20
Thallium	ND	ND	0.0005
Vanadium	**0.023**	**0.056**	NVG
Zinc	**2.25**	**3.24**	2
Dissolved Metals			
Units	mg/L	mg/L	mg/L
Aluminum	**0.029**	**0.047**	NVG
Antimony	ND	ND	0.003
Arsenic	ND	ND	0.025
Barium	**0.36**	**0.495**	1
Beryllium	ND	ND	0.003
Cadmium	ND	ND	0.005
Calcium	**230**	**381**	NVG
Chromium	ND	ND	0.05
Cobalt	ND	ND	NVG
Copper	ND	ND	0.2
Iron	**0.095**	**0.074**	0.3
Lead	**0.008 J**	**ND**	0.025
Magnesium	**107**	**43.9**	35
Manganese	**0.298**	**0.091**	0.3
Mercury	ND	ND	0.0007
Nickel	ND	ND	0.1
Potassium	**56.8**	**50**	NVG
Selenium	ND	**0.046**	0.01
Silver	ND	ND	0.05
Sodium	**42.6**	**48.2**	20
Thallium	ND	ND	0.0005
Vanadium	ND	ND	NVG
Zinc	**0.013 J**	**0.047**	2

Notes:

ND - Not detected at or above reporting limits

NVG - No Value Given

Detections are bolded

**NYSDEC Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations; June 1998*

All concentrations are reported in milligrams per liter (mg/L) or parts per million.

Bold & boxed indicates exceedance of groundwater standards or guidance values

Addendum 7

Technical Specification for Grace 160R and 300R Barriers

GRACE

PREPRUFE® 300R & 160R

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Description

Preprufe® 300R & 160R membranes are unique composite sheets comprising a thick HDPE film, an aggressive pressure sensitive adhesive and a weather resistant protective coating.

Unlike conventional non-adhering membranes, which are vulnerable to water ingress tracking between the unbonded membrane and structure, the unique Preprufe bond to concrete prevents ingress or migration of water around the structure.

The Preprufe R System includes:

- **Preprufe 300R**—heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- **Preprufe 160R**—thinner grade for blindside, zero property line applications against soil retention systems.
- **Preprufe Tape LT**—for covering cut edges, roll ends, penetrations and detailing (temperatures between 25°F (-4°C) and 86°F (+30°C)).
- **Preprufe Tape HC**—as above for use in Hot Climates (minimum 50°F (10°C)).
- **Bituthene® Liquid Membrane**—for sealing around penetrations, etc.

Preprufe 300R & 160R membranes are applied either horizontally to smooth prepared concrete, carton forms or well rolled and compacted sand or crushed stone substrate; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes. The specially developed Preprufe adhesive layers work together to form a continuous and integral seal to the structure.

Preprufe can be returned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use Bituthene self-adhesive membrane or Procor® fluid applied membrane to walls after removal of formwork for a fully bonded system to all structural surfaces.

Advantages

- **Forms a unique continuous adhesive bond to concrete poured against it**—prevents water migration and makes it unaffected by ground settlement beneath slabs
- **Fully-adhered watertight laps** and detailing
- **Provides a barrier to water, moisture and gas**—physically isolates the structure from the surrounding ground
- **BBA Certified** for basement Grades 2, 3, & 4 to BS 8102:1990
- **Zero permeance** to moisture
- **Solar reflective**—reduced temperature gain
- **Simple and quick to install**—requiring no priming or fillets
- **Can be applied to permanent formwork**—allows maximum use of confined sites
- **Self protecting**—can be trafficked immediately after application and ready for immediate placing of reinforcement
- **Unaffected by wet conditions**—cannot activate prematurely
- Inherently waterproof, non-reactive system:
  - not reliant on confining pressures or hydration
  - unaffected by freeze/thaw, wet/dry cycling
- **Chemical resistant**—effective in most types of soils and waters, protects structure from salt or sulphate attack

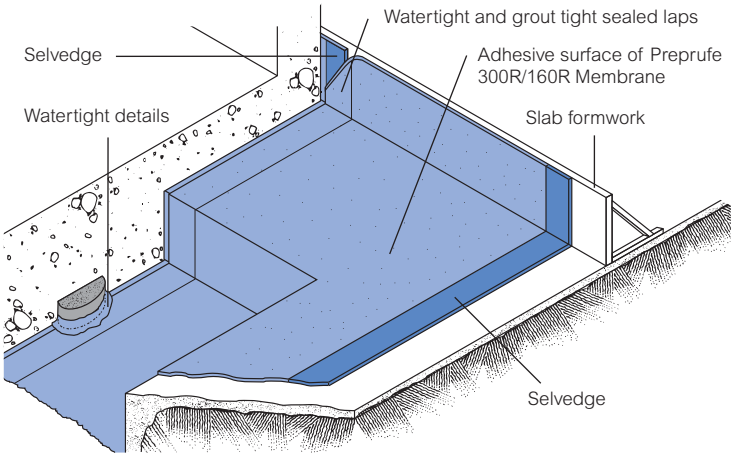
Installation

The most current application instructions, detail drawings and technical letters can be viewed at www.graceconstruction.com. Technical letters are provided for the following subjects to assist in the installation of Preprufe:

- Chemical Resistance
- Minimizing Concrete Shrinkage and Curling
- Rebar Chairs on Preprufe 300R Membrane
- Removal of Formwork Placed Against Preprufe Membranes
- Winter Lap Sealing and the use of Preprufe Tape LT

For other technical information contact your local Grace representative.

Preprufe 300R & 160R membranes are supplied in rolls 4 ft (1.2 m) wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of Preprufe Membrane and Preprufe Tape are interwound with a disposable plastic release liner which must be removed before placing reinforcement and concrete.



Drawings are for illustration purposes only.
Please refer to www.graceconstruction.com for specific application details.

BBA BRITISH BOARD OF AGREMENT CERTIFICATE No. 97/3325

Substrate Preparation

All surfaces—It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability (see Figure 1).

Horizontal—The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. The surface does not need to be dry, but standing water must be removed.

Vertical—Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

Membrane Installation

Preprufe can be applied at temperatures of 25°F (-4°C) or above. When installing Preprufe in cold or marginal weather conditions 55°F (<13°C) the use of Preprufe Tape LT is recommended at all laps and detailing. Preprufe Tape LT should be applied to clean, dry surfaces and the release liner must be removed immediately after application.

Horizontal substrates—Place the membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave plastic release liner in position until overlap procedure is completed (see Figure 2).

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps as the two layers are bonded together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear.

Refer to Grace Tech Letters for information on suitable rebar chairs for Preprufe.

Vertical substrates—Mechanically fasten the membrane vertically using fasteners appropriate to the substrate with the the clear plastic release liner facing towards the concrete pour. The membrane may be installed in any convenient length. Secure the top of the membrane using a batten such as a termination bar or similar 2 in. (50 mm) below the top edge (see Figure 3). Fastening can be made through the selvedge so that the membrane lays flat and allows firmly rolled overlaps. Immediately remove the plastic release liner. Any additional fasteners must be covered with a patch of Preprufe Tape (see Figure 4).

Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Roll firmly to ensure a watertight seal.

Roll ends and cut edges—Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap and roll firmly. Immediately remove printed plastic release liner from the tape.

Details

Refer to Preprufe Field Application Manual, Section V Application Instructions or visit www.graceconstruction.com. This Manual gives comprehensive guidance and standard details for:

- internal and external corners
- penetrations
- tiebacks
- columns
- grade beam pilecaps
- tie-ins
- terminations

Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by jet washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Repair small punctures (0.5 in. (12 mm) or less) and slices by applying Preprufe Tape centered over the damaged area and roll firmly. Remove the release liner from the tape. Repair holes and large punctures by applying a patch of Preprufe membrane, which extends 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with Preprufe Tape, remove the release liner from the tape and roll firmly. Any areas of damaged adhesive should be covered with Preprufe Tape. Remove printed plastic release liner from tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape, rolling firmly. Alternatively, use a hot air gun or similar to activate adhesive and firmly roll lap to achieve continuity.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe R Membrane and Tape.

It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Concrete must be placed and compacted carefully to avoid damage to the membrane. Never use a sharp object to consolidate the concrete.

Removal of Formwork

Preprufe membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe membranes are not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength of 1500 psi (10 N/mm^2) is recommended prior to stripping formwork supporting Preprufe membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

As a guide, to reach the minimum compressive strength stated above, a structural concrete mix with an ultimate strength of 6000 psi (40 N/mm^2) will typically require a cure time of approximately 6 days at an average ambient temperature of 25°F (-4°C), or 2 days at 70°F (21°C).

Figure 1

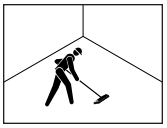


Figure 2

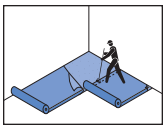
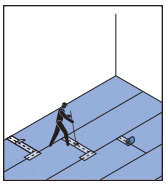
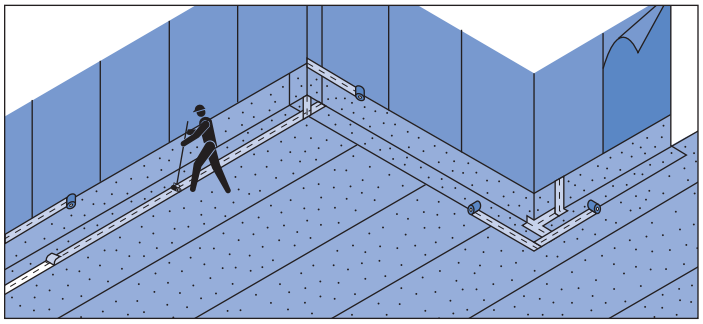


Figure 3

Figure 4

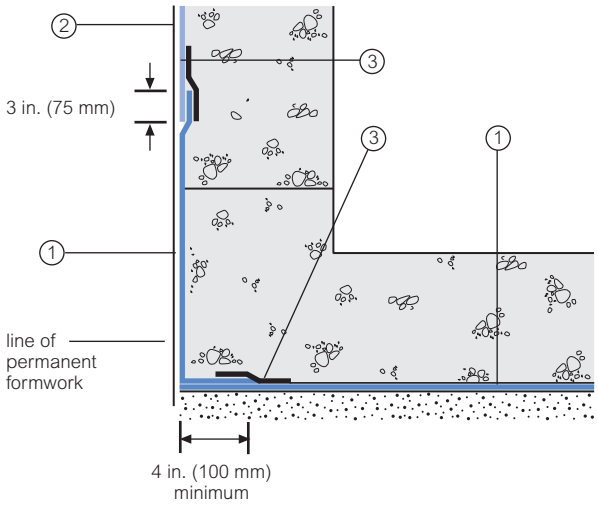




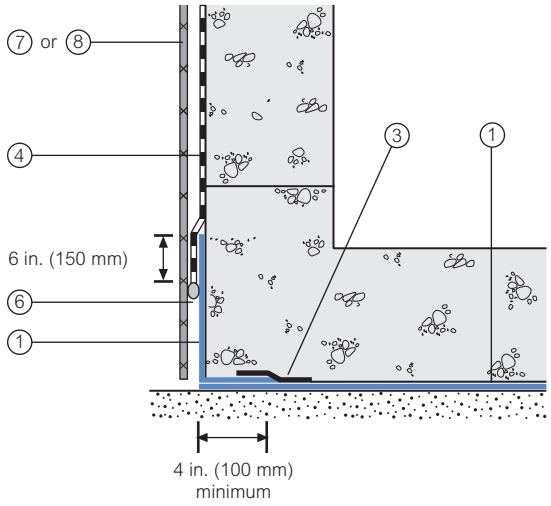
Detail Drawings

Details shown are typical illustrations and not working details. For a list of the most current details, visit us at www.graceconstruction.com. For technical assistance with detailing and problem solving please call toll free at 866-333-3SBM (3726).

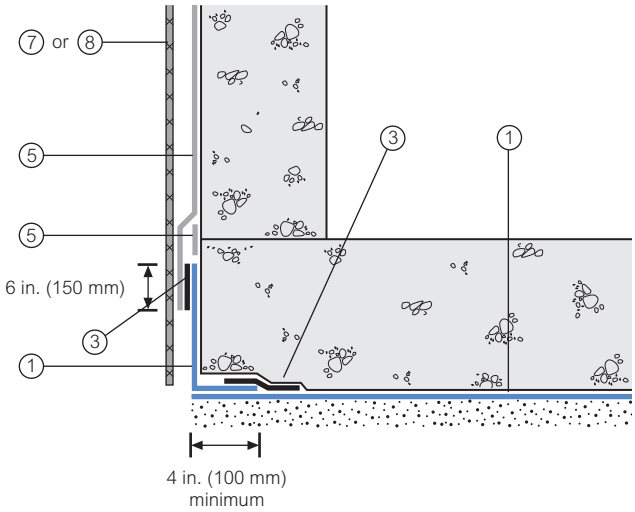
Wall base detail against permanent shutter



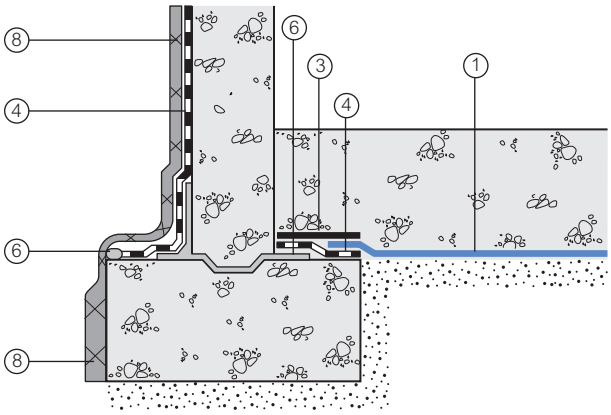
Bituthene wall base detail (Option 1)



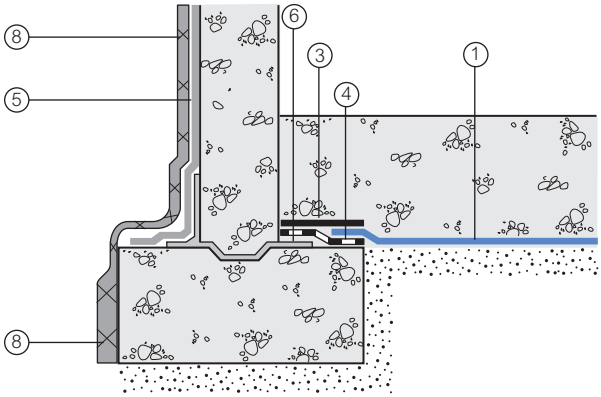
Procor wall base detail (Option 1)



Bituthene wall base detail (Option 2)



Procor wall base detail (Option 2)



1 Preprufe 300R
2 Preprufe 160R
3 Preprufe Tape
4 Bituthene
5 Procor
6 Bituthene Liquid Membrane
7 Protection
8 Hydroduct®

Supply

Dimensions (Nominal)	Preprufe 300R Membrane	Preprufe 160R Membrane	Preprufe Tape (LT or HC*)
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	
Roll size	4 ft x 98 ft (1.2 m x 30 m)	4 ft x 115 ft (1.2 m x 35 m)	4 in. x 49 ft (100 mm x 15 m)
Roll area	392 ft^2 (36 m^2)	460 ft^2 (42 m^2)	
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)	4.3 lbs (2 kg)
Minimum side/end laps	3 in. (75 mm)	3 in. (75 mm)	3 in. (75 mm)
* LT denotes Low Temperature (between 25°F (-4°C) and 86°F (+30°C)) HC denotes Hot Climate (50°F (>+10°C))			
Ancillary Products			
Bituthene Liquid Membrane—1.5 US gal (5.7 liter) or 4 US gal (15.1 liter)			

Physical Properties

Property	Typical Value 300R	Typical Value 160R	Test Method
Color	white	white	
Thickness	0.046 in. (1.2 mm) nominal	0.032 in. (0.8 mm) nominal	ASTM D3767
Low temperature flexibility	Unaffected at -10°F (-23°C)	Unaffected at -10°F (-23°C)	ASTM D1970
Resistance to hydrostatic head, minimum	231 ft (70 m)	231 ft (70 m)	ASTM D5385, modified[1]
Elongation, minimum	300%	300%	ASTM D412, modified[2]
Tensile strength, film, minimum	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack cycling at -10°F (-23°C), 100 cycles	Unaffected	Unaffected	ASTM C836
Puncture resistance, minimum	221 lbs (990 N)	100 lbs (445 N)	ASTM E154
Peel adhesion to concrete, minimum	5.0 lbs/in. (880 N/m) width	5.0 lbs/in. (880 N/m) width	ASTM D903, modified[3]
Lap peel adhesion	2.5 lbs/in. (440 N/m) width	2.5 lbs/in. (440 N/m) width	ASTM D1876, modified[4]
Permeance to water vapor transmission, maximum	0.01 perms (0.6 ng/(Pa × s × m^2))	0.01 perms (0.6 ng/(Pa × s × m^2))	ASTM E96, method B
Water absorption, maximum	0.5%	0.5%	ASTM D570
Methane permeability	9.1 mls/m^2/day	N/A	University of London, QMW College[3]
Permeability[5] (hydraulic conductivity)	K=<1.4 x 10^{-11}cm.s^{-1}	K=<1.4 x 10^{-11}cm.s^{-1}	ASTM D5084-90

Footnotes:

1. Hydrostatic head tests of Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
2. Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
3. Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
4. The test is conducted 15 minutes after the lap is formed (per Grace published recommendations) and run at a rate of 2 in. (50 mm) per minute at 25°F (-4°C).
5. Result is lower limit of apparatus. Membrane therefore considered impermeable.

Specification Clauses

Preprufe 300R or 160R shall be applied with its adhesive face presented to receive fresh concrete to which it will integrally bond. Only Grace Construction Products approved membranes shall be bonded to Preprufe 300R/160R. All Preprufe 300R/160R system materials shall be supplied by Grace Construction Products, and applied strictly in accordance with their instructions.

Specimen performance and formatted clauses are also available.

NOTE: Use Preprufe Tape to tie-in Procor with Preprufe.

Health and Safety

Refer to relevant Material Safety data sheet. Complete rolls should be handled by a minimum of two persons.

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

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