



CERTIFIED MAIL RETURN RECEIPT REQUESTED

Ms. Beverly McKeone
Division of Air Quality
WV Department of Environmental Protection
301 57th Street SE
Charleston, WV 25304-2345



Date: May 26, 2016
Subject: **PDF- R13-2443**

Covestro LLC
17595 Energy Road
Proctor, WV 26055-1299
USA

Dear Ms. McKeone:

Enclosed please find a signed paper copy and two electronic copies of a CD containing a Permit Determination form for Permit R13-2443C.

Telephone
304-455-2431

If you have any questions or need additional information, please call me at (304) 451-2431.

Yours Sincerely,

A handwritten signature in blue ink that reads "Mary Ann Henderson JAL".

Mary Ann Henderson
Manager, Regulatory Affairs



WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF AIR QUALITY
 601 57th Street, SE
 Charleston, WV 25304
 Phone: (304) 926-0475
 www.dep.wv.gov/daq

**PERMIT DETERMINATION FORM
(PDF)**

FOR AGENCY USE ONLY: PLANT I.D. # _____
 PDF # _____ PERMIT WRITER: _____

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE): Covestro LLC		
2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE): Covestro New Martinsville		3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CODE: 3 2 5 1 1 _
4A. MAILING ADDRESS: 17595 Energy Road Proctor, WV 26055		4B. PHYSICAL ADDRESS: 17595 Energy Road Proctor, WV 26055
5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE MAP AS ATTACHMENT A): Located on State Route 2 North, approximately 7 miles north of New Martinsville See Attached		
5B. NEAREST ROAD: State Route 2	5C. NEAREST CITY OR TOWN: Proctor	5D. COUNTY: Marshall
5E. UTM NORTHING (KM): 39.7245442	5F. UTM EASTING (KM): 80.829077	5G. UTM ZONE:
6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED: Mary Ann Henderson		6B. TITLE: Manager, Regulatory Affairs
6C. TELEPHONE: 304-451-2431	6D. FAX: 304-451-2955	6E. E-MAIL: Maryann.henderson@covestro.com
7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY): _0_5_1 - _0_0_0_0_9	7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY): R30-05100009=2013 and R13-2443C	
7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST: No		
8A. TYPE OF EMISSION SOURCE (CHECK ONE): <input type="checkbox"/> NEW SOURCE <input checked="" type="checkbox"/> ADMINISTRATIVE UPDATE <input type="checkbox"/> MODIFICATION <input type="checkbox"/> OTHER (PLEASE EXPLAIN IN 11B)		8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
9. IS DEMOLITION OR PHYSICAL RENOVATION AT AN EXISTING FACILITY INVOLVED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE: 07/01/2016	10B. DATE OF ANTICIPATED START-UP: 08/15/2016	
11A. PLEASE PROVIDE A DETAILED PROCESS FLOW DIAGRAM SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS ATTACHMENT B. Not applicable		
11B. PLEASE PROVIDE A DETAILED PROCESS DESCRIPTION AS ATTACHMENT C. See Attached		
12. PLEASE PROVIDE MATERIAL SAFETY DATA SHEETS (MSDS) FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS ATTACHMENT D. FOR CHEMICAL PROCESSE, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR. Attached		

13A. REGULATED AIR POLLUTANT EMISSIONS:

⇒ FOR A NEW FACILITY, PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ FOR AN EXISTING FACILITY, PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM		
PM ₁₀		
VOCs		
CO		
NO _x		
SO ₂		
Pb		
HAPs (AGGREGATE AMOUNT)		
TAPs (INDIVIDUALLY)*		
OTHER (INDIVIDUALLY)*		-0.00005 lb/yr

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL SUPPORTING CALCULATIONS AS ATTACHMENT E.

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. CERTIFICATION OF DATA

I, JEFFREY S. BOLTON (TYPE NAME) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A **RESPONSIBLE OFFICIAL**** (PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____

[Handwritten Signature: JS Bolton]

TITLE: GENERAL PLANT MANAGER

DATE: 5, 24, 16

** THE DEFINITION OF THE PHRASE 'RESPONSIBLE OFFICIAL' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

ATTACHMENT A ATTACHMENT B ATTACHMENT C ATTACHMENT D ATTACHMENT E

RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS. ATTACHMENT S

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

www.dep.wv.gov/daq



ATTACHMENT C
Process Description

Process Description

Currently the Polyol Unit, which is permitted under R13-2443C and Section 7 of R30-05100009-2013, utilizes two different isomers of Toluene Diamine - ortho and meta as raw materials. The differences in the isomer ratios are shown in the table below, but the physical properties of the two materials are very similar.

Component	CAS no.	Weight % in o-TDA	Weight % in m-TDA
3,4-Toluene Diamine	496-72-0	50-70	-
2,3-Toluene Diamine	2687-25-4	30-50	-
2,4-Toluene Diamine	95-80-7	<1	60-100
2,6-Toluene Diamine	823-40-5	-	10-30

There are no planned changes in the reaction or in the raw materials, this permit determination only concerns the storage of these raw materials. Hence a process diagram was not deemed to be necessary.

Covestro is planning to convert the existing o-TDA storage tank (EP8) to m-TDA storage. The existing m-TDA tank (EP-9) will be demolished and a new, larger o-TDA tank will be installed at the same location (EP-9a). (Please note that the "a" in the nomenclature represents a new tank, while the functional location remains the same)

Current Storage Arrangement

Emission Unit Description	Emission Unit ID	Emission Point ID	Volume (gal)	Material	Annual Throughput Limit Permitted (gal)
RM Tank (STV38)	011-735	EP8	12,800	o-TDA	5,736,698
RM Tank (STV45)	011-137	EP9	7,000	m-TDA	-

New Storage Arrangement

Emission Unit Description	Emission Unit ID	Emission Point ID	Volume (gal)	Material	Annual Throughput Limit Permitted (gal)
RM Tank (STV38)	011-735	EP8	12,800	m-TDA	3,000,000
RM Tank (STV45a)	011-137a	EP9a	16,000	o-TDA	-

ATTACHMENT D
Safety Data Sheets

SAFETY DATA SHEET



1. Identification

Covestro LLC
formerly Bayer MaterialScience LLC
1 Covestro Circle
Pittsburgh, PA 15205
USA

TRANSPORTATION EMERGENCY

CALL CHEMTREC: (800) 424-9300
INTERNATIONAL: (703) 527-3887

NON-TRANSPORTATION

Emergency Phone: Call Chemtrec
Information Phone: (844) 646-0545

Product Name: 2,4/2,6-Toluylenediamine mixture 80/20 liquid
Material Number: 9911
Chemical Family: Aromatic Diamine
Use: Intermediate for the production of polyurethane raw materials

2. Hazards Identification

GHS Classification

Acute toxicity (Oral): Category 3
Acute toxicity (Dermal): Category 3
Eye irritation: Category 2A
Skin sensitisation: Category 1
Germ cell mutagenicity: Category 2
Carcinogenicity: Category 2
Reproductive toxicity: Category 2
Specific target organ toxicity - repeated exposure: Category 2 (Liver, Kidney)
HNOC - Methemoglobin:

GHS Label Elements

Hazard pictograms:



Signal word: Danger

Hazard statements: Toxic if swallowed or in contact with skin
May cause an allergic skin reaction.
Causes serious eye irritation.
Suspected of causing genetic defects.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.

Material Name: 2,4/2,6-Toluylenediamine mixture 80/20 liquid

Material Number: 9911

May cause damage to organs (Liver, Kidney) through prolonged or repeated exposure.

Inhalation, skin absorption, or ingestion may cause methemoglobin formation resulting in a reduced ability of the blood to carry oxygen; a symptom of this may be cyanosis (purplish-blue coloring of skin, fingernails, and lips).

Precautionary statements:

Prevention:

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dust, mist, gas, vapors or spray.

Wash skin and face thoroughly after handling.

Do not eat, drink or smoke when using this product.

Contaminated work clothing must not be allowed out of the workplace.

Wear permeation resistant protective gloves and clothing. Wear eye and face protection.

Response:

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

Rinse mouth.

IF ON SKIN: Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical attention.

IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical attention.

IF exposed or concerned: Get medical attention.

Take off immediately all contaminated clothing.

Wash contaminated clothing before reuse.

Storage:

Store locked up.

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. Composition/Information on Ingredients

Hazardous Components

For Regulatory and State Right to Know information on this product (CAS# 25376-45-8) and its specific isomers please refer to regulatory information section of this SDS.

<u>Weight Percent</u>	<u>Components</u>	<u>CAS-No.</u>	<u>Classification</u>
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60 - 100%	2,4-Toluenediamine (TDA)	95-80-7	Acute toxicity Category 3 Oral. Acute toxicity Category 3 Dermal. Eye irritation Category 2A. Skin sensitisation Category 1. Germ cell mutagenicity Category 2. Carcinogenicity Category 2. Reproductive toxicity Category 2. Specific target organ toxicity - repeated exposure Category 2 Liver. Kidney. HNOC - Methemoglobin.
10 - 30%	2,6-Toluenediamine (TDA)	823-40-5	Eye irritation Category 2A. Skin sensitisation Category 1. Germ cell mutagenicity Category 2.

4. First Aid Measures

Most Important Symptom(s)/Effect(s)

Acute: May cause allergic skin reaction with symptoms of reddening, itching, swelling, and rash., Causes serious eye irritation with symptoms of reddening, tearing, swelling, and burning., Inhalation, skin absorption, or ingestion may cause methemoglobin formation resulting in a reduced ability of the blood to carry oxygen; a symptom of this may be cyanosis (purplish-blue coloring of skin, fingernails, and lips)., Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea., Contact with heated material can cause thermal burns.

Eye Contact

In case of contact, flush with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Skin Contact

CONTACT WITH HOT (MOLTEN) MATERIAL: Cool melted product on skin with plenty of water. Do not remove solidified product. Cover wound with sterile dressing. Get medical attention. Discard contaminated clothing and shoes. **CONTACT WITH NON-MOLTEN MATERIAL:** Wash affected areas, including hair, beneath nails and other concealed areas with Polyethylene Glycol 400. Repeat the washing with soap and water. If Polyethylene Glycol 400 is not available, wash immediately with soap and plenty of cold water. Call a physician immediately. Wash clothing and shoes before reuse.

Inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration using a pocket mask type resuscitator. If breathing is difficult, give oxygen. In case of blue discoloration (cyanosis) of skin, lips, or fingernails, give oxygen to breathe. Get medical attention.

Ingestion

If ingested, do not induce vomiting unless directed to do so by medical personnel. Give two glasses of water for dilution. Do not give anything by mouth to an unconscious person. Call a physician.

Notes to Physician

Immediately give oxygen if victim turns blue (lips, ears, fingernails). Since reversion of methaemoglobin to haemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need to be treated only by supportive measures.

5. Firefighting Measures

Suitable Extinguishing Media: Carbon dioxide (CO₂), Dry chemical, Foam, water spray for large fires.

Unsuitable Extinguishing Media No Data Available

Fire Fighting Procedure

Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes. Toxic and irritating gases/fumes may be given off during burning or thermal decomposition. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture.

Hazardous Decomposition Products

By Fire and Thermal Decomposition: Carbon Dioxide Carbon Monoxide Ammonia Nitrogen oxides (NO_x), other aliphatic fragments which have not been determined

Unusual Fire/Explosion Hazards

Dust may form explosive mixtures with air.

6. Accidental Release Measures

Spill and Leak Procedures

Evacuate and keep unnecessary people out of spill area. Cleanup personnel must use appropriate personal protective equipment. Dike or dam spilled material and control further spillage, if possible. If molten, allow material to cool and place into an appropriate marked container for disposal. Wash spill area with hot water. Collect wash water for approved disposal.

Additional Spill Procedures/Neutralization

Neutralization solution: mix equal amounts of the following to total two times the estimated spill volume: (1) mineral spirits 80%, VM&P naphtha 15% and household detergent 5%; and (2) a 50/50 mixture of monoethanolamine and water.

Covestro requires that CHEMTREC be immediately notified (800-424-9300) when this product is unintentionally released from its container during its course of distribution, regardless of the amount released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having knowledge of the release.

7. Handling and Storage

Handling/Storage Precautions

Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Do not get on skin or clothing. Do not get in eyes. Do not breathe vapours or spray mist. Containers should be kept tightly closed to prevent contamination.

Storage Period:

12 Months

Storage Temperature

Minimum: 110 °C (230 °F)

Storage Conditions

Avoid contact with moisture/water. Store in a cool dry place.

Material Name: 2,4,2,6-Toluylenediamine mixture 80/20 liquid

Material Number: 9911

Substances to Avoid

Oxidizing agents, Isocyanates, Acids

8. Exposure Controls/Personal Protection**Exposure Limits**

The sum of the Toluenediamine (TDA) isomer concentrations should not exceed the Covestro exposure limit of 0.02 ppm TWA - skin.

Country specific exposure limits have not been established or are not applicable

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

Personal protective equipment

When handling hot material, wear heat resistant clothing to prevent thermal burns.

Industrial Hygiene/Ventilation Measures

General dilution and local exhaust as necessary to control airborne vapors, mists, dusts and thermal decomposition products below appropriate airborne concentration standards/guidelines.

Respiratory Protection

Wear a positive-pressure supplied-air respirator with full facepiece.

Hand Protection

Permeation resistant gloves., Wear heat resistant gloves when handling molten material.

Eye Protection

Chemical resistant goggles must be worn., Chemical safety goggles in combination with a full face shield if a splash hazard exists.

Skin Protection

Permeation resistant clothing and foot protection.

Additional Protective Measures

Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees in the safe use and handling of this product.

9. Physical and Chemical Properties

State of Matter:	solid
State of Matter:	liquid
Appearance:	molten
Color:	Dark brown
Odor:	Ammonia
Odor Threshold:	No Data Available
pH:	ca. 9 @ 100 g/l
Melting Point:	ca. 90 °C (194 °F) (DIN EN ISO 3146)
Boiling Point:	ca. 285 °C (545 °F) @ 1,013 hPa
Flash Point:	168 °C (334.4 °F)
Evaporation Rate:	No Data Available

Material Name: 2,4/2,6-Toluenediamine mixture 80/20 liquid

Material Number: 9911

Flammability:	No Data Available
Lower explosion limit:	No Data Available
Upper Explosion Limit:	No Data Available
Vapor Pressure:	Approximately 1 mbar @ 100 °C (212 °F)
Vapor Density:	No Data Available
Density:	1.043 g/cm ³ @ 15 °C (59 °F) 1.23 g/cm ³ @ 20 °C (68 °F)
Relative Vapor Density:	No Data Available
Specific Gravity:	1.047 @ 100 °C (212 °F)
Solubility in Water:	14 g/l @ 15 °C (59 °F) 5 g/l @ 25 °C (77 °F)
Partition Coefficient: n-octanol/water:	No Data Available
Auto-ignition Temperature:	520 °C (968 °F)
Decomposition Temperature:	No Data Available
Dynamic Viscosity:	No Data Available
Kinematic Viscosity:	No Data Available
Molecular Weight:	122.2

10. Stability and Reactivity

Hazardous Reactions

Hazardous polymerisation does not occur.

Stability

Stable

Materials to Avoid

Oxidizing agents, Isocyanates, Acids

Conditions to Avoid

Avoid contact with moisture / water. Minimize exposure to air.

Hazardous Decomposition Products

By Fire and Thermal Decomposition: Carbon Dioxide; Carbon Monoxide; Ammonia; Nitrogen oxides (NOx), other aliphatic fragments which have not been determined

11. Toxicological Information

Likely Routes of Exposure:

Skin Contact
Eye Contact
Inhalation

Health Effects and Symptoms

Acute: May cause allergic skin reaction with symptoms of reddening, itching, swelling, and rash., Causes serious eye irritation with symptoms of reddening, tearing, swelling, and burning., Inhalation, skin absorption, or ingestion may cause methemoglobin formation resulting in a reduced ability of the blood to carry oxygen; a symptom of this may be cyanosis (purplish-blue coloring of skin, fingernails, and lips)., Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea., Contact with heated material can cause thermal burns.

Chronic: May cause liver damage., May cause kidney damage., May cause genetic defects., Suspected of causing cancer., Suspected of damaging fertility or the unborn child.

Toxicity Data for: 2.4/2.6-Toluylenediamine mixture 80/20 liquid

Material Name: 2.4/2.6-Toluylenediamine mixture 80/20 liquid

Material Number: 9911

Genetic Toxicity in Vivo:

Micronucleus Assay: negative (Mouse, male, intraperitoneal)

Positive and negative results were seen in various in vivo studies.
negative

Micronucleus Assay: (weak positive, but not depending by the dose rate) (rat, male, Oral)

(weak positive, but not depending by the dose rate)

Toxicity to Reproduction/Fertility

Fertility Screening, Oral, (rat, male/female) Reproductive effects have been observed in animal studies.

Developmental Toxicity/Teratogenicity

rabbit, female, oral, NOAEL (teratogenicity): 100 mg/kg, NOAEL (maternal): 30 mg/kg. Did not show teratogenic effects in animal experiments.

Toxicity Data for 2,6-Toluenediamine (TDA)

Eye Irritation

Human, irritating

Sensitization

Skin sensitisation:: sensitizer (Human)

Carcinogenicity:

2,4-Toluenediamine (TDA)

NTP - Hazard Designation: Reasonably Anticipated to be a Human Carcinogen.

IARC - Overall evaluation: 2B Possibly carcinogenic to humans.

IARC - Overall evaluation: 2B Possibly carcinogenic to humans.

12. Ecological Information

Biodegradation

0 %, Exposure time: 28 d

Bioaccumulation

Not expected to bio-accumulate.

Acute and Prolonged Toxicity to Fish

LC50: 20 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: 1.73 mg/l (Daphnia magna (Water flea), 48 h)

EC100: 3 mg/l (Daphnia magna (Water flea), 48 h)

EC0: 1 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants

EC50: 0.0402 mg/l, (Desmodesmus subspicatus (Green algae), 72 h)

EC50: 0.716 mg/l, (Desmodesmus subspicatus (Green algae), 72 h)

Ecological Data for 2,4-Toluenediamine (TDA)

Biodegradation

Material Name: 2,4/2,6-Toluenediamine mixture 80/20 liquid

Material Number: 9911

0 %, Exposure time: 28 Days

Bioaccumulation

Not expected to bio-accumulate.

Acute and Prolonged Toxicity to Fish

LC50: 20 mg/l (Zebra fish (Brachydanio rerio), 96 h)

13. Disposal Considerations

Waste Disposal Method

Waste disposal should be in accordance with existing federal, state and local environmental control laws.

Empty Container Precautions

Do not heat or cut container with electric or gas torch. Empty containers retain product residue (dust, liquid, vapor and/or gases) and can be dangerous. Do not reuse empty container. Label precautions also apply to this container when empty. Empty containers can be landfilled, when in accordance with the local regulations.

14. Transportation Information

Land transport (DOT)

Proper Shipping Name: 2,4-Toluylenediamine, solid
Hazard Class or Division: 6.1
UN/NA Number: UN1709
Packaging Group: III
Hazard Label(s): Toxic

RSPA/DOT Regulated Components:

2,4-Toluenediamine (TDA)
3,4-Toluenediamine
2,3-Toluenediamine

Reportable Quantity: 4 kg (8.82 lb)

Sea transport (IMDG)

Proper Shipping Name: 2,4-TOLUYLENEDIAMINE, SOLID
Hazard Class or Division: 6.1
UN number: UN1709
Packaging Group: III
Hazard Label(s): TOXIC
Marine pollutant: Marine pollutant

Air transport (ICAO/IATA)

Proper Shipping Name: 2,4-Toluylenediamine, solid
Hazard Class or Division: 6.1
UN number: UN1709
Packaging Group: III
Hazard Label(s): TOXIC
Marine pollutant: Marine pollutant

15. Regulatory Information

United States Federal Regulations

US. Toxic Substances Control Act: Listed on the TSCA Inventory.

No substances are subject to TSCA 12(b) export notification requirements.

US. EPA CERCLA Hazardous Substances (40 CFR 302) Components:

2,4-Toluenediamine (TDA) Reportable quantity: 10 lbs

2,6-Toluenediamine (TDA) Reportable quantity: 10 lbs

SARA Section 311/312 Hazard Categories:

|| **Acute Health Hazard**
Chronic Health Hazard

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) Components:

None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required Components:

2,4-Toluenediamine (TDA)

US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):

U221 When discarded in its purchased form, this product is a listed RCRA hazardous waste and should be managed as a hazardous waste. (40 CFR 261.20-24)

State Right-To-Know Information

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
60 - 100%	2,4-Toluenediamine (TDA)	95-80-7
15 - 25%	2,6-Toluenediamine (TDA)	823-40-5

New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
60 - 100%	2,4-Toluenediamine (TDA)	95-80-7
15 - 25%	2,6-Toluenediamine (TDA)	823-40-5

Pennsylvania Right to Know Special Hazard Substance List:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
60 - 100%	2,4-Toluenediamine (TDA)	95-80-7

Massachusetts Right to Know Extraordinarily Hazardous Substance List:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
60 - 100%	2,4-Toluenediamine (TDA)	95-80-7

California Prop. 65:

Warning! This product contains chemical(s) known to the State of California to be Carcinogenic.

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
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60 - 100%

2,4-Toluenediamine (TDA)

95-80-7

Based on information provided by our suppliers, this product is considered "DRC Conflict Free" as defined by the SEC Conflict Minerals Final Rule (Release No. 34-67716; File No. S7-40-10; Date: 2012-08-22).

16. Other Information

The method of hazard communication for Covestro LLC is comprised of Product Labels and Safety Data Sheets.

Contact:	Product Safety Department
Telephone:	(412) 413-2835
SDS Number:	112000013042
Version Date:	09/12/2015
SDS Version:	2.1

This information is furnished without warranty, express or implied. This information is believed to be accurate to the best knowledge of Covestro LLC. The information in this SDS relates only to the specific material designated herein. Covestro LLC assumes no legal responsibility for use of or reliance upon the information in this SDS.

|| Changes since the last version are highlighted in the margin. This version replaces all previous versions.

SAFETY DATA SHEET



1. Identification

Covestro LLC
formerly Bayer MaterialScience LLC
1 Covestro Circle
Pittsburgh, PA 15205
USA

TRANSPORTATION EMERGENCY

CALL CHEMTREC: (800) 424-9300
INTERNATIONAL: (703) 527-3887

NON-TRANSPORTATION

Emergency Phone: Call Chemtrec
Information Phone: (844) 646-0545

Product Name: ORTHO-TOLUENEDIAMINE (LIGHT) (MOLTEN BULK-HOT)
Material Number: 5614619
Chemical Family: Aromatic Diamine
Use: Intermediate for the production of polyurethane raw materials

2. Hazards Identification

GHS Classification

Acute toxicity (Oral): Category 4
Eye irritation: Category 2A
Skin sensitisation: Category 1
Germ cell mutagenicity: Category 2
Carcinogenicity: Category 1B
Reproductive toxicity: Category 2
Skin irritation: Category 2
HNOC - Methemoglobin:

GHS Label Elements

Hazard pictograms:



Signal word: Danger

Hazard statements: Harmful if swallowed.
May cause an allergic skin reaction.
Causes skin irritation.
Causes serious eye irritation.
Suspected of causing genetic defects.
May cause cancer.
Suspected of damaging fertility or the unborn child.

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

Inhalation, skin absorption, or ingestion may cause methemoglobin formation resulting in a reduced ability of the blood to carry oxygen; a symptom of this may be cyanosis (purplish-blue coloring of skin, fingernails, and lips).

Precautionary statements:

Prevention:

Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Avoid breathing dust, mist, gas, vapors or spray.
 Wash skin and face thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Contaminated work clothing must not be allowed out of the workplace.
 Wear permeation resistant protective gloves and clothing. Wear eye and face protection.

Response:

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
 IF ON SKIN: Wash with plenty of soap and water.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF exposed or concerned: Get medical attention.
 Rinse mouth.
 If skin irritation or rash occurs: Get medical attention.
 If eye irritation persists: Get medical attention.
 Wash contaminated clothing before reuse.

Storage:

Store locked up.

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. Composition/Information on Ingredients

Hazardous Components

For Regulatory and State Right to Know information on this product (CAS# 25376-45-8) and its specific isomers please refer to regulatory information section of this SDS.

<u>Weight Percent</u>	<u>Components</u>	<u>CAS-No.</u>	<u>Classification</u>
50 - 70%	3,4-Toluenediamine	496-72-0	Skin irritation Category 2. Eye irritation Category 2A.
30 - 50%	2,3-Toluenediamine	2687-25-4	Acute toxicity Category 3 Oral. Acute toxicity Category 4 Dermal. Skin irritation Category 2. Eye irritation Category 2A.

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT) (MOLTEN BULK-HOT)	Material Number: 5614619
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0.1 - 1%	2,4-Toluenediamine (TDA)	95-80-7	Acute toxicity Category 3 Oral. Acute toxicity Category 3 Dermal. Eye irritation Category 2A. Skin sensitisation Category 1. Germ cell mutagenicity Category 2. Carcinogenicity Category 2. Reproductive toxicity Category 2. Specific target organ toxicity - repeated exposure Category 2 Liver. Kidney. HNOC - Methemoglobin.
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The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

4. First Aid Measures

Most Important Symptom(s)/Effect(s)

Acute: Contact with heated material can cause thermal burns., Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea., Causes serious eye irritation with symptoms of reddening, tearing, swelling, and burning., Causes skin irritation with symptoms of reddening, itching, and swelling., May cause allergic skin reaction with symptoms of reddening, itching, swelling, and rash., Inhalation, skin absorption, or ingestion may cause methemoglobin formation resulting in a reduced ability of the blood to carry oxygen; a symptom of this may be cyanosis (purplish-blue coloring of skin, fingernails, and lips).

Eye Contact

In case of contact, flush with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Skin Contact

CONTACT WITH HOT (MOLTEN) MATERIAL: Cool melted product on skin with plenty of water. Do not remove solidified product. Cover wound with sterile dressing. Get medical attention. Discard contaminated clothing and shoes. **CONTACT WITH NON-MOLTEN MATERIAL:** Wash affected areas, including hair, beneath nails and other concealed areas with Polyethylene Glycol 400. Repeat the washing with soap and water. Call a physician immediately. Wash clothing and shoes before reuse.

Inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration using a pocket mask type resuscitator. If breathing is difficult, give oxygen. In case of blue discoloration (cyanosis) of skin, lips, or fingernails, give oxygen to breathe. Get medical attention.

Ingestion

If ingested, do not induce vomiting unless directed to do so by medical personnel. Give two glasses of water for dilution. Do not give anything by mouth to an unconscious person. Call a physician.

Notes to Physician

Immediately give oxygen if victim turns blue (lips, ears, fingernails). Since reversion of methaemoglobin to haemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need to be treated only by supportive measures.

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

5. Firefighting Measures

Suitable Extinguishing Media: Carbon dioxide (CO₂), Dry chemical, Foam, water spray for large fires.

Unsuitable Extinguishing Media No Data Available

Fire Fighting Procedure

Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes. Toxic and irritating gases/fumes may be given off during burning or thermal decomposition. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture.

Hazardous Decomposition Products

By Fire and Thermal Decomposition: Carbon Dioxide Carbon Monoxide Ammonia Nitrogen oxides (NO_x), other aliphatic fragments which have not been determined

6. Accidental Release Measures

Spill and Leak Procedures

Evacuate and keep unnecessary people out of spill area. Cleanup personnel must use appropriate personal protective equipment. Dike or dam spilled material and control further spillage, if possible. If molten, allow material to cool and place into an appropriate marked container for disposal. Wash spill area with hot water. Collect wash water for approved disposal.

Additional Spill Procedures/Neutralization

Neutralization solution: mix equal amounts of the following to total two times the estimated spill volume: (1) mineral spirits 80%, VM&P naphtha 15% and household detergent 5%; and (2) a 50/50 mixture of monoethanolamine and water.

Covestro requires that CHEMTREC be immediately notified (800-424-9300) when this product is unintentionally released from its container during its course of distribution, regardless of the amount released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having knowledge of the release.

7. Handling and Storage

Handling/Storage Precautions

Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Do not get on skin or clothing. Do not get in eyes. Do not breathe vapours or spray mist. Containers should be kept tightly closed to prevent contamination.

Storage Period:

2 Months: When stored in closed container.

Storage Temperature

Minimum: 80 °C (176 °F)
Maximum: 150 °C (302 °F)

Storage Conditions

Avoid contact with moisture/water.

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

Substances to Avoid

Oxidizing agents, Isocyanates, Acids

8. Exposure Controls/Personal Protection**Exposure Limits**

The sum of the Toluenediamine (TDA) isomer concentrations should not exceed the Covestro exposure limit of 0.02 ppm TWA - skin.

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

Personal protective equipment

When handling hot material, wear heat resistant clothing to prevent thermal burns.

Industrial Hygiene/Ventilation Measures

General dilution and local exhaust as necessary to control airborne vapors, mists, dusts and thermal decomposition products below appropriate airborne concentration standards/guidelines.

Respiratory Protection

Wear a positive-pressure supplied-air respirator with full facepiece.

Hand Protection

Permeation resistant gloves., Wear heat resistant gloves when handling molten material.

Eye Protection

Chemical resistant goggles must be worn., Chemical safety goggles in combination with a full face shield if a splash hazard exists.

Skin Protection

Permeation resistant clothing and foot protection.

Additional Protective Measures

Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees in the safe use and handling of this product.

9. Physical and Chemical Properties

State of Matter:	liquid
Appearance:	hot melt
Color:	Light to dark brown
Odor:	Faint, ammonia like
Odor Threshold:	No Data Available
pH:	Approximately 9 (as aqueous solution)
Melting Point:	55 - 70 °C (131 - 158 °F)
Boiling Point:	Approximately 265 °C (509 °F)
Flash Point:	148.89 °C (300 °F) (Pensky-Martens Closed Cup (ASTM D-93))
Evaporation Rate:	No Data Available
Lower explosion limit:	No Data Available
Upper Explosion Limit:	No Data Available

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

Vapor Pressure:	6 mmHg @ 100 °C (212 °F) 10 mmHg @ 130 °C (266 °F)
Vapor Density:	No Data Available
Density:	Approximately 1 g/cm ³ @ 20 °C (68 °F)
Relative Vapor Density:	No Data Available
Specific Gravity:	No Data Available
Solubility in Water:	Partially soluble
Partition Coefficient: n-octanol/water:	No Data Available
Auto-ignition Temperature:	No Data Available
Decomposition Temperature:	No Data Available
Dynamic Viscosity:	No Data Available
Kinematic Viscosity:	No Data Available
Bulk Density:	Approximately 999 kg/m ³
Molecular Weight:	122.17

10. Stability and Reactivity

Hazardous Reactions

Hazardous polymerisation does not occur.

Stability

Stable

Materials to Avoid

Oxidizing agents, Isocyanates, Acids

Conditions to Avoid

Avoid contact with moisture / water. Minimize exposure to air.

Hazardous Decomposition Products

By Fire and Thermal Decomposition: Carbon Dioxide; Carbon Monoxide; Ammonia; Nitrogen oxides (NOx), other aliphatic fragments which have not been determined

11. Toxicological Information

Likely Routes of Exposure:

Skin Contact
Eye Contact
Inhalation

Health Effects and Symptoms

Acute: Contact with heated material can cause thermal burns., Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea., Causes serious eye irritation with symptoms of reddening, tearing, swelling, and burning., Causes skin irritation with symptoms of reddening, itching, and swelling., May cause allergic skin reaction with symptoms of reddening, itching, swelling, and rash., Inhalation, skin absorption, or ingestion may cause methemoglobin formation resulting in a reduced ability of the blood to carry oxygen; a symptom of this may be cyanosis (purplish-blue coloring of skin, fingernails, and lips).

Chronic: May cause genetic defects., May cause cancer., Suspected of damaging fertility or the unborn child.

Toxicity Data for: ORTHO-TOLUENEDIAMINE (LIGHT) (MOLTEN BULK-HOT)

Acute Oral Toxicity

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

LD50: 532 - 1900 mg/kg (rat)

Acute Inhalation Toxicity

LC0: > 200 mg/l, 1 h(rat)

Acute Dermal Toxicity

LD50: > 2000 mg/kg (rabbit)

Skin Irritation

rabbit, slight irritant

Eye Irritation

rabbit, moderate irritant

Mutagenicity

Genetic Toxicity in Vitro:

Ames: positive (Salmonella typhimurium, Metabolic Activation: with/without)

HGPRT Assay: positive (Chinese hamster ovary (CHO) cells)

Micronucleus test: positive (other mammalian cell line)

Genetic Toxicity in Vivo:

Different groups of mice received two intraperitoneal injections (24 hours apart) of o-TDA (2,3- and 3,4-diaminotoluene) at doses of 0, 75, 150 or 300 mg/kg and evaluations were conducted at 24 hours post exposure. Indications of a clastogenic effect of o-TDA was detected at 300 mg/kg.

Developmental Toxicity/Teratogenicity

rabbit, female, oral, NOAEL (teratogenicity): 100 mg/kg, NOAEL (maternal): 30 mg/kg,

Did not show teratogenic effects in animal experiments.

Toxicity Data for 3,4-Toluenediamine

Acute Dermal Toxicity

LD50: > 2500 mg/kg (rat)

Skin Irritation

irritating

Eye Irritation

irritating

Other Relevant Toxicity Information

May cause irritation of respiratory tract.

Toxicity Data for 2,3-Toluenediamine

Acute Oral Toxicity

LD50: 270 mg/kg (rat)

Acute Dermal Toxicity

LD50: 1200 mg/kg (rat)

Eye Irritation

irritating

Other Relevant Toxicity Information

May cause irritation of respiratory tract.

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

Toxicity Data for 2,4-Toluenediamine (TDA)

Acute Oral Toxicity

LD50: 73 mg/kg (rat, female) (OECD Test Guideline 401)

Acute Dermal Toxicity

LD50: 650 mg/kg (rabbit)

Skin Irritation

rabbit, OECD Test Guideline 404, Exposure Time: 4 h, Non-irritating

Eye Irritation

rabbit, Draize, Moderately irritating

Sensitization

Respiratory sensitization: negative

Skin sensitisation:: positive (Human)

Skin sensitization (local lymph node assay (LLNA)):: positive (Mouse, OECD Test Guideline 429)

Repeated Dose Toxicity

103 weeks, (feeding study) oral: LOAEL: 5.9 mg/kg, (rat, male/female)

Mutagenicity

Genetic Toxicity in Vitro:

Ames: positive (Salmonella typhimurium, Metabolic Activation: with/without)

HGPRT Assay: positive (Chinese hamster ovary (CHO) cells, Metabolic Activation: without)

Genetic Toxicity in Vivo:

Micronucleus Assay: negative (Mouse, male, intraperitoneal)

Positive and negative results were seen in various in vivo studies.

negative

Micronucleus Assay: (weak positive, but not depending by the dose rate) (rat, male, Oral)

(weak positive, but not depending by the dose rate)

Toxicity to Reproduction/Fertility

Fertility Screening, Oral, (rat, male/female) Reproductive effects have been observed in animal studies.

Developmental Toxicity/Teratogenicity

rabbit, female, oral, NOAEL (teratogenicity): 100 mg/kg, NOAEL (maternal): 30 mg/kg, Did not show teratogenic effects in animal experiments.

Carcinogenicity:

2,4-Toluenediamine (TDA)

NTP - Hazard Designation: Reasonably Anticipated to be a Human Carcinogen.

IARC - Overall evaluation: 2B Possibly carcinogenic to humans.

IARC - Overall evaluation: 2B Possibly carcinogenic to humans.

12. Ecological Information

Biodegradation

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

0 %, Exposure time: 28 d

Bioaccumulation

Not expected to bio-accumulate.

Acute and Prolonged Toxicity to Fish

LC50: 20 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: 1.73 mg/l (Daphnia magna (Water flea), 48 h)

EC100: 3 mg/l (Daphnia magna (Water flea), 48 h)

EC0: 1 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants

EC50: 0.0402 mg/l, (Desmodesmus subspicatus (Green algae), 72 h)

EC50: 0.716 mg/l, (Desmodesmus subspicatus (Green algae), 72 h)

Ecological Data for 2,4-Toluenediamine (TDA)

Biodegradation

0 %, Exposure time: 28 Days

Bioaccumulation

Not expected to bio-accumulate.

Acute and Prolonged Toxicity to Fish

LC50: 20 mg/l (Zebra fish (Brachydanio rerio), 96 h)

13. Disposal Considerations

Waste Disposal Method

Waste disposal should be in accordance with existing federal, state and local environmental control laws.

Empty Container Precautions

Do not heat or cut container with electric or gas torch. Empty containers retain product residue (dust, liquid, vapor and/or gases) and can be dangerous. Do not reuse empty container. Label precautions also apply to this container when empty. Empty containers can be landfilled, when in accordance with the local regulations.

14. Transportation Information

Land transport (DOT)

Proper Shipping Name:	Environmentally hazardous substances, solid, n.o.s., molten (contains Toluendiamine (Tda) Mixed Isomers)
Hazard Class or Division:	9
UN/NA Number:	UN3077
Packaging Group:	III
Hazard Label(s):	Class 9

RSPA/DOT Regulated Components:

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

3,4-Toluenediamine
2,3-Toluenediamine
2,4-Toluenediamine (TDA)

Reportable Quantity: 4 kg (8.82 lb)

Sea transport (IMDG)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., MOLTEN (contains Toluenediamine (Tda) Mixed Isomers)
Hazard Class or Division: 9
UN number: UN3077
Packaging Group: III
Hazard Label(s): MISCELLANEOUS

Air transport (ICAO/IATA)

Forbidden

Additional Transportation Information

When in individual containers of less than the Product RQ, this material ships as non-regulated.

15. Regulatory Information

United States Federal Regulations

US. Toxic Substances Control Act: Listed on the TSCA Inventory.

|| No substances are subject to TSCA 12(b) export notification requirements.

US. EPA CERCLA Hazardous Substances (40 CFR 302) Components:

3,4-Toluenediamine Reportable quantity: 10 lbs
2,3-Toluenediamine Reportable quantity: 10 lbs
2,4-Toluenediamine (TDA) Reportable quantity: 10 lbs

SARA Section 311/312 Hazard Categories:

Acute Health Hazard
Chronic Health Hazard

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) Components:

None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required Components:

3,4-Toluenediamine
2,3-Toluenediamine
2,4-Toluenediamine (TDA)

US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):

When discarded in its purchased form, this product is a listed RCRA hazardous waste and should be managed as a hazardous waste. (40 CFR 261.20-24)

State Right-To-Know Information

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
55 - 65%	3,4-Toluenediamine	496-72-0
35 - 45%	2,3-Toluenediamine	2687-25-4

New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
55 - 65%	3,4-Toluenediamine	496-72-0
35 - 45%	2,3-Toluenediamine	2687-25-4
0.1 - 1%	2,4-Toluenediamine (TDA)	95-80-7

Pennsylvania Right to Know Special Hazard Substance List:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
0.1 - 1%	2,4-Toluenediamine (TDA)	95-80-7
<0.1%	o-Toluidine	95-53-4

Massachusetts Right to Know Extraordinarily Hazardous Substance List:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
0.1 - 1%	2,4-Toluenediamine (TDA)	95-80-7
<0.1%	o-Toluidine	95-53-4

California Prop. 65:

Warning! This product contains chemical(s) known to the State of California to be Carcinogenic.

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
0.1 - 1%	2,4-Toluenediamine (TDA)	95-80-7
<0.1%	o-Toluidine	95-53-4

Based on information provided by our suppliers, this product is considered "DRC Conflict Free" as defined by the SEC Conflict Minerals Final Rule (Release No. 34-67716; File No. S7-40-10; Date: 2012-08-22).

16. Other Information

The method of hazard communication for Covestro LLC is comprised of Product Labels and Safety Data Sheets.

Contact: Product Safety Department
Telephone: (412) 413-2835
SDS Number: 112000032672
Version Date: 08/29/2015
SDS Version: 2.0

This information is furnished without warranty, express or implied. This information is believed to be accurate to the best knowledge of Covestro LLC. The information in this SDS relates only to the specific material designated herein. Covestro LLC assumes no legal responsibility for use of or reliance upon the information in this SDS.

|| Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Material Name: ORTHO-TOLUENEDIAMINE (LIGHT)
(MOLTEN BULK-HOT)

Material Number: 5614619

ATTACHMENT E
Supporting Calculations

EMISSION CALCULATIONS AND SUMMARY

CURRENT EMISSIONS:

Emissions from the existing o-TDA storage tank were calculated using Tanks 4.09d with an annual throughput of 5.7 MM gallons. The annual emissions were attributable to working losses and were 0.0001 lb. (See attached)

Since the throughput of the exiting m-TDA tank was much less than 5 MM gallons per year, emissions are listed as "trace" in the application and Reg-13 permit.

PROPOSED EMISSIONS:

Emissions from the new o-TDA tank will be zero since the tank is designed for vapor recovery.

Emissions from the "new" m-TDA tank are proportional to throughput and will be approximately 0.00005 lb (approximately a 50% decrease) per year since the throughput will be limited to 3 MM gallons.

Hence, there is a net decrease in emissions.

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: 011-735
 City: New Martinsville
 State: West Virginia
 Company: Covestro
 Type of Tank: Vertical Fixed Roof Tank
 Description: TDA tank

Tank Dimensions

Shell Height (ft): 18.75
 Diameter (ft): 10.5
 Liquid Height (ft) : 18
 Avg. Liquid Height (ft): 9
 Volume (gallons): 11,659.35
 Turnovers: 492
 Net Throughput(gal/yr): 5,736,398.11
 Is Tank Heated (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
 Shell Condition: Good
 Roof Color/Shade: White/White
 Roof Condition: Good

Roof Characteristics

Type: Dome
 Height (ft) 2.33
 Radius (ft) (Dome Roof) 10.5

Breather Vent Settings

Vacuum Settings (psig): -0.03
 Pressure Settings (psig) 0.03

Meteorological Data used in Emissions Calculations: Pittsburgh, Pennsylvania (Avg Atmospheric Pressure = 14.11 psia)

Emissions Report - Detail Format Liquid Contents of Storage Tank

**011-735 - Vertical Fixed Roof Tank
New Martinsville, West Virginia**

Mixture/Component	Month		Daily Liquid Surf. Temperature (deg F)		Vapor Pressure (psia)		Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Basis for Vapor Pressure Weight Calculations
	All		Min.	Max.	Min.	Max.				
Toluenediamine	All	0	0	0	0.0000	0.0000	122.17			Option 2: A=7.6101, B=2209.831885, C=183.06

TANKS 4.0.9d Emissions Report - Detail Format Detail Calculations (AP-42)

**5300-648 - Vertical Fixed Roof Tank
New Martinsville, West Virginia**

Annual Emission Calculations	
Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	951.7546
Vapor Density (lb/cu ft):	0.0000
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	1.0000
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	951.7546
Tank Diameter (ft):	10.5
Vapor Space Outage (ft):	10.9915
Tank Shell Height (ft):	18.75
Average Liquid Height (ft):	9
Roof Outage (ft):	1.2415
Roof Outage (Dome Roof)	
Roof Outage (ft):	1.2415
Dome Radius (ft):	10.5
Shell Radius (ft):	5.25

Vapor Density	
Vapor Density (lb/cu ft):	0.0000
Vapor Molecular Weight (lb/lb-mole):	122.17
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0000
Daily Avg. Liquid Surface Temp. (deg. R):	459.6700
Daily Average Ambient Temp. (deg. F):	50.3083
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	459.67
Tank Paint Solar Absorbance (Shell):	0.17
Tank Paint Solar Absorbance (Roof):	0.17
Daily Total Solar Insulation Factor (Btu/sqft day):	1,202.96
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0000
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0000
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0000
Daily Avg. Liquid Surface Temp. (deg R):	459.6700
Daily Min. Liquid Surface Temp. (deg R):	459.6700
Daily Max. Liquid Surface Temp. (deg R):	459.6700
Daily Ambient Temp. Range (deg. R):	19.15
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	1.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0000
Vapor Space Outage (ft):	10.9915
Working Losses (lb):	0.0001

Vapor Molecular Weight (lb/lb-mole): 122.17
 Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 0.0000
 Annual Net Throughput (gal/yr): 5,736,398.11
 Annual Turnovers: 492
 Turnover Factor: 0.2276
 Maximum Liquid Volume (gal): 11,659.35
 Maximum Liquid Height (ft): 18
 Tank Diameter (ft): 10.5
 Working Loss Product Factor: 1
 Total Losses (lb): 0.0001

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

5300-648 - Vertical Fixed Roof Tank
New Martinsville, West Virginia

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Toluenediamine	0.0001	0.0000	0.0001

ATTACHMENT S

Title V Permit Changes

Attachment S

Title V Permit Revision Information

1. New Applicable Requirements Summary	
Mark all applicable requirements associated with the changes involved with this permit revision:	
<input type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input type="checkbox"/> NESHAP (45CSR15)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input type="checkbox"/> Section 111 NSPS (Subpart(s) _____)	<input type="checkbox"/> Section 112(d) MACT standards (Subpart(s) _____)
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqts.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64) ⁽¹⁾
<input type="checkbox"/> NO _x Budget Trading Program Non-EGUs (45CSR1)	<input type="checkbox"/> NO _x Budget Trading Program EGUs (45CSR26)
<p>⁽¹⁾ If this box is checked, please include Compliance Assurance Monitoring (CAM) Form(s) for each Pollutants Specific Emission Unit (PSEU) (See Attachment H to Title V Application). If this box is not checked, please explain why Compliance Assurance Monitoring is not applicable:</p>	

2. Non Applicability Determinations

List all requirements, which the source has determined not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and a rationale for the determination.

Not applicable since there is only a Class I Administrative Update (Permit Determination) with a net decrease in emissions.

Permit Shield Requested (not applicable to Minor Modifications)

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

3. Suggested Title V Draft Permit Language

Are there any changes involved with this Title V Permit revision outside of the scope of the NSR Permit revision? Yes No If Yes, describe the changes below.

Also, please provide **Suggested Title V Draft Permit language** for the proposed Title V Permit revision (including all applicable requirements associated with the permit revision and any associated monitoring /recordkeeping/ reporting requirements), OR attach a marked up pages of current Title V Permit. Please include appropriate citations (Permit or Consent Order number, condition number and/or rule citation (e.g. 45CSR§7-4.1)) for those requirements being added / revised.

See attached

4. Active NSR Permits/Permit Determinations/Consent Orders Associated With This Permit Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-2443C	01/28/2007	A.4
	/ /	
	/ /	

5. Inactive NSR Permits/Obsolete Permit or Consent Orders Conditions Associated With This Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
	MM/DD/YYYY	
	/ /	
	/ /	

6. Change in Potential Emissions

Pollutant	Change in Potential Emissions (+ or -), TPY
VOC	-0.00005 lb/yr

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

7. Certification For Use Of Minor Modification Procedures (Required Only for Minor Modification Requests)

Note: This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete. The criteria for allowing the use of Minor Modification Procedures are as follows:

- i. Proposed changes do not violate any applicable requirement;
- ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
- iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;
- iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;
- v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;
- vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

Notwithstanding subparagraph 45CSR§30-6.5.a.1.A. (items i through vi above), minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in rules of the Director which are approved by the U.S. EPA as a part of the State Implementation Plan under the Clean Air Act, or which may be otherwise provided for in the Title V operating permit issued under 45CSR30.

Pursuant to 45CSR§30-6.5.a.2.C., the proposed modification contained herein meets the criteria for use of Minor permit modification procedures as set forth in Section 45CSR§30-6.5.a.1.A. The use of Minor permit modification procedures are hereby requested for processing of this application.

(Signed):  Date: 5 / 24 / 16
 (Please use blue ink) (Please use blue ink)

Named (typed): _____ Title: _____

Note: Please check if the following included (if applicable):

- Compliance Assurance Monitoring Form(s)
- Suggested Title V Draft Permit Language

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

SUGGESTED TITLE V PERMIT LANGUAGE

Deletions are marked with strike-through and additions marked in red

Section 1

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
011-137a	EP9a	RM Tank STV45a	1974 2016	7,000 16,000 gallons	
011-140	No Vent Pressurized	Freon Tank (STV37) pressurized no vent	1973	6,600 gallons	
011-160.1	EP11	RM Tank STV45	1972	20,000 gallons	
011-160.2	EP12	RM Tank STV46	1972	20,000 gallons	
011-163.2	EP54	RM Tank (PVP54) terate	1972	12,000 gallons	
011-513	EP14	RM Tank (STV48) KOH	1975	18,500 gallons	
011-540	EP7	RM Tank (STV41) Fyrol	1979	10,000 gallons	
011-543	EP4	RM Tank (STV38) Niax	1979	10,000 gallons	
011-569	EP5	RM Tank (STV39) PG	1975	10,000 gallons	
011-735	EP8	RM Tank (STV42) e-m TDA	1987	12,800 gallons	

7.1.2. → The following emission points have trace emissions of regulated air pollutants. The permittee shall notify the Director of the Division of Air Quality prior to any change of service of the following equipment for the use with a compound with a higher vapor pressure than that currently utilized and document any change in potential emissions.¶

Emission Point ID#	Sources Vented through this Emission Point	Pollutant
EP3A	PVP59A/B {Far East Blend Premix Tank (011-741)}	VOC
EP3D	PVP61A/B {East Blend Premix Tank (011-609.3)}	VOC
EP3F	PVP63A/B {Middle Blend Premix Tank (011-609.1)}	VOC
EP3H	PVP65A/B {West Blend Premix Tank (011-609.2)}	VOC
EP3I	Neutralizer Blend Tank (011-034.3)	VOC
EP3J	Wiped Film Evaporator (011-051.1)	VOC
EP5	STV39 {Propylene glycol storage tank (011-569)}	VOC
EP6	STV40 {Glycerine storage tank (011-015)}	VOC
EP8	PVP42A, PVP42B, PVP42C {o-TDA storage tank (011-735)}	VOC
EP9a	STV43a {m-o-TDA storage tank (011-137a)}	VOC
EP10	STV44 {Ethylene diamine storage tank (011-010)}	VOC
EP11	STV45 {Propylene glycol start media storage tank (011-160.1)}	VOC
EP12	STV46 {Glycerine start media storage tank (011-160.2)}	VOC
EP13	STV47 {93% Sulfuric acid storage tank (011-019)}	Sulfuric Acid
EP14	STV48 {46% KOH storage tank (011-513)}	*
EP39	STV25 {Polyol (E-9143) storage tank (011-630)}	VOC

→ 7.1.4. → The total annual throughput shall not exceed the listed amount for the following storage tanks.¶

Emission Point ID#	Sources Vented through this Emission Point	Annual Throughput Limit (gallons)
EP4	STV38 {NIAX 3428 storage tank (011-543)}	1,622,800
EP7	STV41 {Fyrol PCF storage tank (011-540)}	332,300
EP8	m-TDA storage tank (011-735)	5,736,698 3,000,000

→ → [45CSR13, Permit No. R13-2443 (Condition A.4)]¶