



SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

| | |
|------------------------------|--|
| Name of the substance | p-Toluenesulphonyl Isocyanate |
| Identification number | 615-012-00-7 (Index number) |
| Registration number | 01-2119980050-47-0000, 01-211980050-47-0001 |
| Synonyms | 4-methylbenzenesulfonyl isocyanate * p-toluenesulphonyl isocyanate |
| Issue date | 09-October-2013 |
| Version number | 03 |
| Revision date | 03-April-2019 |
| Supersedes date | 01-February-2017 |

1.2. Relevant identified uses of the substance or mixture and uses advised against

| | |
|-----------------------------|--|
| Identified uses | Industrial chemical. A complete list of registered uses for this product can be found in the table of content of the exposure scenario for communication, available as an annex to the eSDS. |
| Uses advised against | None known. |

1.3. Details of the supplier of the safety data sheet

| | |
|---------------------|--|
| Supplier | VanDeMark Chemical Inc. BV |
| Address | Lichtenauerlaan 102-120 Rotterdam 3062 ME Netherlands |
| e-mail | sales@vdmchemical.com |
| Manufacturer | VanDeMark Chemical Inc. |
| Address | 1 North Transit Road, Lockport, NY 14094 USA |
| Telephone | +1 716-433-6764 |
| e-mail | sales@vdmchemical.com |

| | |
|--|--|
| 1.4. Emergency telephone number | CHEMTREC +1-703-527-3887 (International) |
| Europe | 112 |

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

| | | |
|--|---|---|
| Health hazards | | |
| Skin corrosion/irritation | Category 2 | H315 - Causes skin irritation. |
| Serious eye damage/eye irritation | Category 2 | H319 - Causes serious eye irritation. |
| Respiratory sensitisation | Category 1 | H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Specific target organ toxicity - single exposure | Category 3 respiratory tract irritation | H335 - May cause respiratory irritation. |

Hazard summary Reacts violently with water. Irritating to eyes, respiratory system and skin. May cause sensitisation by inhalation. Occupational exposure to the substance or mixture may cause adverse health effects.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

| | |
|--------------------------|---|
| Contains: | Tosyl isocyanate |
| Hazard pictograms |  |

Signal word Danger

Hazard statements

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.

Precautionary statements

Prevention

P264 Wash thoroughly after handling.
P280 Wear protective gloves and eye/face protection.

Response

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTRE/doctor.

Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information EUH014 - Reacts violently with water.

2.3. Other hazards This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

SECTION 3: Composition/information on ingredients

3.1. Substances

General information

| Chemical name | % | CAS-No. / EC No. | REACH Registration No. | Index No. | Notes |
|------------------------|---|------------------------|---|--------------|-------|
| Tosyl isocyanate | >98.7 - <99.4 | 4083-64-1 223-810-8 | 01-2119980050-47-0000 01-211980050-47-0001 | 615-012-00-7 | |
| Classification: | Skin Irrit. 2;H315, Eye Irrit. 2;H319, Resp. Sens. 1;H334, STOT SE 3;H335 | | | | |

Impurities

| Chemical name | % | CAS-No. / EC No. | REACH Registration No. | Index No. | Notes |
|----------------|------------------|-----------------------|------------------------|--------------|-------|
| Tosyl chloride | >0.57 - <1.14 | 98-59-9 202-684-8 | - | - | |
| Chlorobenzene | >0.01 - <0.19 | 108-90-7 203-628-5 | - | 602-033-00-1 | # |

List of abbreviations and symbols that may be used above

#: This substance has been assigned Union workplace exposure limit(s).

Composition comments

The full text for all H-statements is displayed in section 16.
All concentrations are in percent by weight unless otherwise indicated.
Occupational Exposure Limits for impurities are listed in Section 8.

SECTION 4: First aid measures

General information

If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

4.1. Description of first aid measures

Inhalation Remove victim to fresh air. If breathing is difficult, give oxygen. Get medical attention.
Skin contact Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. Get medical attention if irritation develops or persists.
Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical attention if irritation develops or persists.
Ingestion Have victim rinse mouth thoroughly with water. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention if any discomfort occurs.

4.2. Most important symptoms and effects, both acute and delayed

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Shortness of breath. Wheezing. Skin irritation. May cause redness and pain. Headaches, nausea and vomiting.

4.3. Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

| | |
|---|---|
| General fire hazards | Material may react violently with water. |
| 5.1. Extinguishing media | |
| Suitable extinguishing media | Carbon dioxide (CO ₂). Dry powder. Dry sand. |
| Unsuitable extinguishing media | Do not use water. |
| 5.2. Special hazards arising from the substance or mixture | In case of fire, toxic and corrosive gases may be formed. Reacts with water and emits carbon dioxide gas. Combustion products may include: carbon oxides, nitrogen oxides, sulfur oxides, hydrogen cyanide. |
| 5.3. Advice for firefighters | |
| Special protective equipment for firefighters | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. |
| Special fire fighting procedures | Move containers from fire area if you can do it without risk. Use water spray to cool unopened containers. Do not get water inside container or in contact with the material. |

SECTION 6: Accidental release measures

| | |
|---|--|
| 6.1. Personal precautions, protective equipment and emergency procedures | |
| For non-emergency personnel | Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapours and contact with skin and eyes. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. |
| For emergency responders | Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS. |
| 6.2. Environmental precautions | Do not discharge into drains, water courses or onto the ground. Prevent further leakage or spillage if safe to do so. Environmental manager must be informed of all major spillages. |
| 6.3. Methods and material for containment and cleaning up | <p>DO NOT GET WATER on spilled material or inside containers. Reacts with water and emits carbon dioxide gas. Do not close container tightly. Risk of excess pressure build-up.</p> <p>Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.</p> <p>Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.</p> <p>Never return spills to original containers for re-use. Ensure that waste and contaminated materials are collected and removed from the work area as soon as possible in a suitably labelled container.</p> |
| 6.4. Reference to other sections | For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS. |

SECTION 7: Handling and storage

| | |
|--|---|
| 7.1. Precautions for safe handling | Keep away from heat and sources of ignition. Use only with adequate ventilation. Avoid inhalation of vapours and contact with skin and eyes. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Keep the workplace clean. Technical aids: Use disposable equipment (rags, brushes, spatulas, putty knives, etc.), if possible. Material may react violently with water. |
| 7.2. Conditions for safe storage, including any incompatibilities | Store locked up. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Store in tightly closed original container in a dry and cool place. Store in a cool place below 170°F (77°C). |
| 7.3. Specific end use(s) | Industrial chemical. |

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

UK. EH40 Workplace Exposure Limits (WELs)

| Impurities | Type | Value |
|------------------------------|------|-----------------------|
| Chlorobenzene (CAS 108-90-7) | STEL | 14 mg/m ³ |
| | | 3 ppm |
| | TWA | 4.7 mg/m ³ |
| | | 1 ppm |

UK. EH40 Workplace Exposure Limits (WELs)

| Impurities | Type | Value |
|------------------------------|------|---------|
| Tosyl chloride (CAS 98-59-9) | STEL | 5 mg/m3 |

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, 2017/164/EU

| Impurities | Type | Value |
|------------------------------|------|-------------------|
| Chlorobenzene (CAS 108-90-7) | STEL | 70 mg/m3 |
| | | 15 ppm |
| | TWA | 23 mg/m3 5 ppm |

Biological limit values No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs)**General Population**

| Product | Value | Assessment factor | Notes |
|---|-------------------|-------------------|------------------------|
| p-Toluenesulphonyl Isocyanate (CAS 4083-64-1) | | | |
| Long-term, Systemic, Dermal | 0.46 mg/kg bw/day | 200 | Repeated dose toxicity |
| Long-term, Systemic, Inhalation | 0.8 mg/m3 | 50 | Repeated dose toxicity |
| Long-term, Systemic, Oral | 0.46 mg/kg bw/day | 200 | Repeated dose toxicity |

Workers

| Product | Value | Assessment factor | Notes |
|---|-------------------|-------------------|------------------------|
| p-Toluenesulphonyl Isocyanate (CAS 4083-64-1) | | | |
| Long-term, Systemic, Dermal | 0.92 mg/kg bw/day | 100 | Repeated dose toxicity |
| Long-term, Systemic, Inhalation | 3.24 mg/m3 | 25 | Repeated dose toxicity |

Predicted no effect concentrations (PNECs)

| Product | Value | Assessment factor | Notes |
|---|-------------|-------------------|-------|
| p-Toluenesulphonyl Isocyanate (CAS 4083-64-1) | | | |
| Freshwater | 0.03 mg/l | 1000 | |
| Marine water | 0.003 mg/l | 10000 | |
| Sediment (freshwater) | 0.172 mg/kg | | |
| Sediment (marine water) | 0.017 mg/kg | | |
| Soil | 0.017 mg/kg | | |
| STP (Sewage treatment plant) | 0.4 mg/l | 10 | |

Exposure guidelines**UK EH40 WEL: Skin designation**

Chlorobenzene (CAS 108-90-7) Can be absorbed through the skin.

8.2. Exposure controls**Appropriate engineering controls**

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.

Individual protection measures, such as personal protective equipment**General information**

Use personal protective equipment as required. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection

Use chemical goggles / face shield. Eye wash station should be located in immediate work area.

Skin protection**- Hand protection**

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Chemical resistant protective gloves consistent with Standard EN 374 Suitable materials with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):
Neoprene - 0.6 mm coating thickness.

Notice: The selection of a specific glove for an application and duration of use in a workplace should also take in to account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection) potential body reactions to the glove material as well as instructions/specifications provided by the glove manufacturer.

| | |
|--|---|
| - Other | Wear appropriate chemical resistant clothing. Selection of specific items such as face shield, boots, apron, or full body suit will depend on task and potential for exposure. Polyethylene coatings of 10 mils provide a barrier for splash protection. Safety shower should be located in the immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water. Launder clothing before reuse. |
| Respiratory protection | Respiratory protections should be worn when there is a potential to exceed the exposure limit requirements or guidelines. When respiratory protection is required, use an approved cartridge for organic vapors with particulate filtration properties (A2-P2 for concentration up to 5.000 ppm, air powered A3-P3 for concentration up to 10.000 ppm). In higher concentrations or in case of insufficient data on concentration wear a positive-pressure supplied-air respirator. |
| Thermal hazards | When material is heated, wear gloves to protect against thermal burns. |
| Hygiene measures | Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Private clothes and working clothes should be kept separately. |
| Environmental exposure controls | Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels. |

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Colour Colourless.

Odour Acrid.

Odour threshold Not available.

pH Not available.

Melting point/freezing point -2.37 °C (27.73 °F) (101.3 kPa) / -2 °C (28.4 °F)

Initial boiling point and boiling range Not available.

Flash point 146.0 °C (294.8 °F) (1013 hPa)

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Vapour pressure 0.025 Pa, 25 °C

Vapour density Heavier than Air.

Relative density 1.295 (20 °C (68 °F))

Solubility(ies) Reacts with water.

Partition coefficient (n-octanol/water) 0.6 (30 °C (86 °F))

Auto-ignition temperature 551 °C (1023.8 °F)

Decomposition temperature Not available.

Viscosity 5.16 mPa·s (20 °C (68 °F))

Explosive properties Not explosive.

Oxidising properties Not oxidising.

9.2. Other information

Molecular formula C8H7NO3S

Molecular weight 197.21 g/mol

SECTION 10: Stability and reactivity

10.1. Reactivity Water reactive material.

10.2. Chemical stability Stable in sealed containers.

10.3. Possibility of hazardous reactions Reacts with water and emits carbon dioxide gas.

| | |
|---|---|
| 10.4. Conditions to avoid | Water, moisture. Heat may cause the containers to explode. |
| 10.5. Incompatible materials | Reacts violently with water. Acids. Strong oxidising agents. Amines. Alcohols. Strong bases. Avoid contact with water and moisture. |
| 10.6. Hazardous decomposition products | No hazardous decomposition products are known. |

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

| | |
|---------------------|--|
| Inhalation | May cause respiratory irritation. May cause allergic respiratory reaction. |
| Skin contact | Causes skin irritation. |
| Eye contact | Causes serious eye irritation. |
| Ingestion | Ingestion may cause irritation and malaise. |

Symptoms Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Shortness of breath. Wheezing. Skin irritation. May cause redness and pain. Headaches, nausea and vomiting.

11.1. Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

| Product | Species | Test Results |
|---|---|------------------------|
| Tosyl isocyanate (CAS 4083-64-1) | | |
| Acute | | |
| Dermal | | |
| LD50 | Rat | > 2000 mg/kg, 24 Hours |
| Oral | | |
| LD50 | Rat | 2330 mg/kg |
| Skin corrosion/irritation | Causes skin irritation. | |
| Serious eye damage/eye irritation | Causes serious eye irritation. | |
| Respiratory sensitisation | May cause allergy or asthma symptoms or breathing difficulties if inhaled. | |
| Skin sensitisation | Due to partial or complete lack of data the classification is not possible. | |
| Germ cell mutagenicity | Due to partial or complete lack of data the classification is not possible. | |
| Carcinogenicity | Due to partial or complete lack of data the classification is not possible. | |
| Reproductive toxicity | Due to partial or complete lack of data the classification is not possible. | |
| Specific target organ toxicity - single exposure | May cause respiratory irritation. | |
| Specific target organ toxicity - repeated exposure | Due to partial or complete lack of data the classification is not possible. | |
| Aspiration hazard | Due to partial or complete lack of data the classification is not possible. | |
| Mixture versus substance information | The product is a substance. | |
| Other information | No data available. | |

SECTION 12: Ecological information

| | |
|---|--|
| 12.1. Toxicity | The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. |
| 12.2. Persistence and degradability | The product reacts with water to form a solid insoluble reaction product which is non-degradable, according to information available. |
| 12.3. Bioaccumulative potential | The product is not expected to bioaccumulate. |
| Bioconcentration factor (BCF) | Not available. |
| 12.4. Mobility in soil | Water reactive material. |
| 12.5. Results of PBT and vPvB assessment | This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII. |
| 12.6. Other adverse effects | None known. |

SECTION 13: Disposal considerations

13.1. Waste treatment methods

| | |
|-------------------------------------|---|
| Residual waste | Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner. Do not discharge into drains, water courses or onto the ground. |
| Contaminated packaging | Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers retain product residue, follow label warnings even after container is emptied. Do not get water inside containers. |
| EU waste code | 08 05 01* The Waste code should be assigned in discussion between the user, the producer and the waste disposal company. |
| Disposal methods/information | Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not discharge into drains, water courses or onto the ground. Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. |

SECTION 14: Transport information

ADR

14.1. - 14.6.: Not regulated as dangerous goods.

RID

14.1. - 14.6.: Not regulated as dangerous goods.

ADN

14.1. - 14.6.: Not regulated as dangerous goods.

IATA

14.1. - 14.6.: Not regulated as dangerous goods.

IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Chlorobenzene (CAS 108-90-7)

Tosyl isocyanate (CAS 4083-64-1)

| | |
|---|---|
| Other regulations | The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work. |
| National regulations | Follow national regulation for work with chemical agents in accordance with Directive 98/24/EC, as amended. |
| 15.2. Chemical safety assessment | For this substance a chemical safety assessment has been carried out. |

SECTION 16: Other information

List of abbreviations

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.
 ADR: European Agreement Concerning the International Carriage of Dangerous Goods by Road.
 CAS: Chemical Abstract Service.
 CEN: European Committee for Standardization (Comité Européen de Normalisation).
 ECHA: European Chemical Agency.
 IATA: International Air Transport Association.
 IBC: Intermediate Bulk Container.
 IMDG: International Maritime Dangerous Goods.
 MARPOL: International Convention for the Prevention of Pollution from Ships.
 PBT: Persistent, bioaccumulative, toxic.
 RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
 STEL: Short-Term Exposure Limit.
 TWA : Time Weighed Average.
 vPvB: very Persistent, very Bioaccumulative.

References

Chemical safety report.

Information on evaluation method leading to the classification of mixture

The mixture is classified based on test data for physical hazards. The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details, refer to Sections 9, 11 and 12.

Full text of any H-statements not written out in full under Sections 2 to 15

H315 Causes skin irritation.
 H319 Causes serious eye irritation.
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 H335 May cause respiratory irritation.

Training information

Follow training instructions when handling this material.

Disclaimer

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.