

Safety Data Sheet per OSHA HazCom 2012

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## Product name: 3,4,5-Trifluorobenzenesulfonyl chloride

Indication of any immediate medical attention and special treatment needed No further relevant information available.

### 5 Fire-fighting measures

Extinguishing media Suitable extinguishing agents CO2, sand, extinguishing powder. Do not use water. Special hazards arising from the substance or mixture If this product is involved in a fire, the following can be released: Carbon monoxide and carbon dioxide Hydrogen chloride (HCl) Hydrogen fluoride (HF) Sulfur oxides (SOx) Advice for firefighters Protective equipment: Wear self-contained respirator. Wear fully protective impervious suit.

### 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures Wear protective equipment. Keep unprotected persons away Ensure adequate ventilation Environmental precautions: Do not allow material to be released to the environment without proper governmental permits. Methods and material for containment and cleaning up: Keep away from ignition sources. Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Use neutralizing agent. Dispose of contaminated material as waste according to section 13. Provide adequate ventilation. Prevention of secondary hazards: No special measures required. Reference to other sections See Section 7 for information on safe handling See Section 8 for information on personal protection equipment. See Section 13 for disposal information. 7 Handling and storage

Handling Precautions for safe handling Handle under dry protective gas. Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace. Information about protection against explosions and fires: No information known. Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storerooms and receptacles: No special requirements. Information about storage in one common storage facility: Store away from oxidizing agents. Store away from strong bases. Store away from water/moisture. Further information about storage conditions: Store under dry inert gas. This product is moisture sensitive. Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Protect from humidity and water. Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection Additional information about design of technical systems: Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Control parameters Components with limit values that require monitoring at the workplace: Not required. Additional information: No data Exposure controls Personal protective equipment Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin. Maintain an ergonomically appropriate working environment. Breathing equipment: Use suitable respirator when high concentrations are present. Protection of hands: Impervious gloves Check protective gloves prior to each use for their proper condition. Check protective gloves prior to each use for their proper condition. The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer. Penetration time of glove material (in minutes) Not determined Every protection: Tightly sealed goggles Full face protection Body protection: Protective work clothing. 9 Physical and chemical properties Information on basic physical and chemical properties General Information Appearance: Form: Liquid Color: Colorless

# Product name: 3,4,5-Trifluorobenzenesulfonyl chloride

	nesulfonyl chloride	
Odor:	Not determined	(Contd. of page 2)
Odor threshold:	Not determined.	
pH-value:	Not determined.	
Change in condition Melting point/Melting range:	Not determined	
Boiling point/Boiling range:	ca 230 °C (ca 446 °F)	
Sublimation temperature / start: Flash point:	Not determined	
Flammability (solid, gaseous)	Not determined.	
Ignition temperature: Decomposition temperature:	Not determined Not determined	
Auto igniting:	Not determined.	
Danger of explosion: Explosion limits:	Product does not present an explosion hazard.	
Lower:	Not determined	
Upper: Vapor pressure:	Not determined Not determined	
Density at 20 °C (68 °F):	1.643 g/cm³ (13.711 lbs/gal) Not determined.	
Relative density Vapor density	Not determined.	
Evaporation rate Solubility in / Miscibility with	Not determined.	
Water:	Not miscible or difficult to mix	
Partition coefficient (n-octanol/water) Viscosity:	): Ivot aeterminea.	
dynamic: kinematic:	Not determined. Not determined.	
Other information	Not determined. No further relevant information available.	
10 Stability and reactivity Reactivity No information known. Chemical stability Stable under recom. Thermal decomposition / conditions to Possibility of hazardous reactions No Conditions to avoid No further relevan Incompatible materials: Oxidizing agents Bases Water/moisture Hazardous decomposition products: Carbon monoxide and carbon dioxide Hydrogen chloride (HCI) Hydrogen fluoride Sulfur oxides (SOX)	t information available.	
LD/LC50 values that are relevant for of Skin irritation or corrosion: Causes se Eye irritation or corrosion: Causes se Sensitization: No sensitizing effects kn Germ cell mutagenicity: No effects know Carcinogenicity: No classification data Reproductive toxicity: No effects know Specific target organ system toxicity Specific target organ system toxicity Aspiration hazard: No effects known	evere skin burns. rious eye damage. lown. own. a on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH. wn. - <b>repeated exposure:</b> No effects known.	
12 Ecological information		
Toxicity Aquatic toxicity: No further relevant inf Persistence and degradability No furth Bioaccumulative potential No further r Mobility in soil No further relevant infor Additional ecological information: General notes:	her relevant information available. relevant information available. rmation available. the environment without proper governmental permits. <b>nt</b>	
13 Disposal considerations		
Waste treatment methods	or national regulations to ensure proper disposal. nade according to official regulations.	
14 Transport information		
UN-Number		
DOT, IMDG, IATA	UN3265	(Contra on
		(Contd. on page 4

## Product name: 3,4,5-Trifluorobenzenesulfonyl chloride (Contd. of page 3) UN proper shipping name DOT Corrosive liquid, acidic, organic, n.o.s. (3,4,5-Trifluorobenzenesulfonyl chloride) CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (3,4,5-Trifluorobenzenesulfonyl IMDG, IATA chloride) Transport hazard class(es) DOT Class Corrosive substances. Label 8 (C3) Corrosive substances Class 8 \_abel IMDG, IATA 8 Corrosive substances. Class Label 8 Packing group DOT, IMDG, IATA 11 Environmental hazards: Not applicable. Special precautions for user EMS Number: Warning: Corrosive substances F-A.S-B Segregation groups Acids Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable. Transport/Additional information: DOT Marine Pollutant (DOT): No UN3265, Corrosive liquid, acidic, organic, n.o.s. (3,4,5-Trifluorobenzenesulfonyl chloride), 8, II UN "Model Regulation": 15 Regulatory information Safety, health and environmental regulations/legislation specific for the substance or mixture GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS) Hazard pictograms E.F. GHS05 Signal word Danger Hazard statements H314 Causes severe skin burns and eye damage. P280 Wear protective gloves/protective clothing/eye protection/face protection. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P309 IF exposed or if you feel unwell: P310 Immediately call a POISON CENTER/doctor/... National regulations National regulations National regulations This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only. This product must be used by or directly under the supervision of a technically qualified individual as defined by TSCA. This product must not be used for commercial purposes or in formulations for commercial purposes. SARA Section 313 (specific toxic chemical listings) Substance is not listed. California Proposition 65 Prop 65 - Chemicals known to cause cancer Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity, the substance is not listed. Prop 65 - Developmental toxicity and the substance is not listed. Prop 65 - Dev Information about limitation of use: For use only by technically qualified individuals. Other regulations, limitations and prohibitive regulations Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed. The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use about the charge of the manufacturing on the the regulation of the regulation (EC) in the the manufacturing on the the manufacturing on the the test of test of the test of te market and use must be observed. Substance Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed. Chemical safety assessment: A Chemical Safety Assessment has not been carried out. 16 Other information Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees." This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user. Department issuing SDS: Global Marketing Department Date of preparation / last revision 11/24/2015 / -Date of preparation / last revision 11/24/2015'/ -Abbreviations and acronyms: RID: Rejement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA) ICAO: International Civil Aviation Organization ICAO: Ti: Technical Instructions by the "International Civil Aviation Organization" (ICAO) ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IDDG: International Amitime Code for Dangerous Goods DOT: US Department of Transportation IATA: International Abstracts Service (division of the American Chemical Society) HMIS: Hazardous Materials Identification System (USA) WHMIS: Workplace Hazardous Materials Information System (Canada) LC50: Lethal concentration, 50 percent

### Product name: 3,4,5-Trifluorobenzenesulfonyl chloride

LD50: Lethal dose, 50 percent vPvB: very Persistent and very Bioaccumulative ACGIH: American Conference of Governmental Industrial Hygienists (USA) OSHA: Occupational Safety and Health Administration (USA) NTP: National Toxicology Program (USA) IARC: International Agency for Research on Cancer EPA: Environmental Protection Agency (USA) Page 5/5 Printing date 11/24/2015 Reviewed on 02/22/2010

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USA