1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name	**TECNOGRAPHIT**
Product code	**MA0TF505014**
INDEX number	**n.a.**
EC number	**n.a.**
CAS number	**n.a.**
Registration number	**n.a. (the product is a mixture). See section 3.2 for information on contained substances**

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

Identified uses relevant
Polyurethane foam for use with specific manual gun (two components) for sealing fireproof partitioning systems.

Uses advised against
Different uses from industrial and professional ones.

1.3 Details of the supplier of the safety data sheet

Company name	**Marvon S.r.l.**
Address	**Via Gargnà, n.6**
District and Conutry	**25078 - Vestone (BS) - ITALIA**
Telephone number	**+039 0365 81390**
Fax	**+039 0365 879926**
e-mail address of the competent person responsible for the safety data sheet	**marvon@marvon.com**

1.4 Emergency telephone number

For urgent information refer to:

- Marvon Srl - Via Gargnà, 6 - 25078 Vestone (BS)
  Tel. +039 0365 81390, active from Monday to Friday, from 8:00 to 12:00 and from 13.30 to 18.00
- Poison centers (H24):
  Centro Antiveleni di Milano Tel. +39 02 66101029 (CAV Ospedale Niguarda Ca' Granda - Milano)
  Centro Antiveleni di Pavia Tel. +39 0382 24444 (CAV IRCCS Fondazione Maugeri - Pavia)
  Centro Antiveleni di Bergamo Tel. +39 800 883300 (CAV Ospedali Riuniti - Bergamo)
  Centro Antiveleni di Firenze Tel. +39 055 7947819 (CAV Ospedale Careggi - Firenze)
  Centro Antiveleni di Roma Tel. +39 06 3054343 (CAV Policlinico Gemelli - Roma)
  Centro Antiveleni di Roma Tel. +39 06 49978000 (CAV Policlinico Umberto I - Roma)
  Centro Antiveleni di Napoli Tel. +39 081 7472870 (CAV Ospedale Cardarelli - Napoli)

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions of Regulation (EC) 1272/2008 (CLP) (and subsequent amendments and supplements). It thus requires a safety data sheet that complies with the provisions of Regulation (EC) 1907/2006 and subsequent amendments.

Regulation 1272/2008 (CLP) and following amendments and adjustments:

Acute Tox. 4	H332
Skin Irrit. 2	H315
Eye Irrit. 2	H319
Resp. Sens. 1	H334
Skin Sens. 1	H317
Carc. 2	H351
STOT SE 3	H335

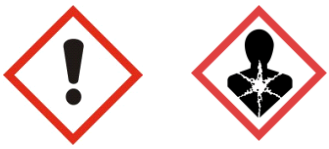
STOT RE 2 H373

The full wording of the hazard statements (H) is given in Section 16 of the sheet.

2.2 Label elements

Hazard labeling pursuant to Regulation (EC) 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms



Signal word: Danger

Hazard statements

H332	Harmful if inhaled.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H335	May cause respiratory irritation.
H373	May cause damage to organs through prolonged or repeated exposure.

Addtional hazard statements

EUH 204	Contains isocyanates. May produce an allergic reaction.

Precautionary statements

P102	Keep out of reach of children.
P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342+P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P308+P313	IF exposed or concerned: Get medical advice/ attention.
P501	Dispose of contents/container to regulation.

Special provisions pursuant to Annex XVII to EC Regulation 1907/2006 and subsequent supplements
The use of this product may cause allergic reaction in subjects already sensitized to diisocyanates.

2.3 Other hazards

The product does not contain any PBT or vPvB.

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Information not relevant.

3.2 Mixture

Two-component mixture. Two-line cartridge with two components (A, B).

Component A
Mixture containing not hazardous additives
Hazard classification: Eye Irrit. 2 H319

Identifier	Conc. (% p/p)	Classification Regulation (EC) 1272/2008
ALCHILAMINOPOLI (OSSIALCHILEN)OLO CAS: 25214-63-5 EC: 500-035-6 INDEX: - Registration number: 01-2119471485-32-XXXX	15% ≤ C < 30%	Eye Irrit. 2 H319

Component B
Sostanza
Hazard classification:

Acute Tox. 4	H332
Skin Irrit. 2	H315
Eye Irrit. 2	H319
Resp. Sens. 1	H334
Skin Sens. 1	H317
Carc. 2	H351
STOT SE 3	H335
STOT RE 2	H373

Identifier	Conc. (% p/p)	Classification Regulation (EC) 1272/2008
METHYLENEDIPHENYL DIISOCYANATE, isomers and homologous (1) CAS: 247-714-0 CE: 26447-40-5 INDEX: - Registration number: Not applicable to polymers under art. 2.9 REACH	100%	Acute Tox. 4 H332, Skin Irrit. 2 H315, Eye Irrit. 2 H319, Resp. Sens. 1 H334, Skin Sens. 1 H317, Carc. 2 H351, STOT SE 3 H335, STOT RE 2 H373

(1) *Specific isomers:*

4,4'-methylenediphenyl diisocyanate:	*CAS: 101-68-8* *CE: 202-966-0*
2,4'-methylenediphenyl diisocyanate:	*CAS: 5873-54-1* *CE: 227-534-9*
2,2'-methylenediphenyl diisocyanate:	*CAS: 2536-05-2* *CE: 219-799-4*

The full wording of the hazard statements (H) is given in Section 16 of the sheet.

4 FIRST-AID MEASURES

4.1 Description of First-Aid Measures

Before any intervention, take care of your own safety.
Rescue protection: Take appropriate precautions.

Inhalation
Remove person to fresh air and keep comfortable for breathing. If symptoms persist, get medical advice/attention.

Contact with skin
Wash with plenty of water and soap. If symptoms persist, get medical advice/attention.

Contact with eyes
Rinse with plenty of water for 15-20 minutes, held eyelids open and remove contact lenses. If symptoms persist, get medical advice/attention.

Ingestion
Rinse mouth, nose and throat with water. If symptoms persist, get medical advice/attention.

4.2 Most important symptoms and effects, both acute and delayed

For symptoms and effects due to the substances contained, see Section 11 of the sheet.

4.3 Indication of any immediate medical attention and special treatment needed

Follow the instruction given in Section 4.1 of the sheet. Treat symptomatically.

5 FIRE-FIGHTING MEASURES

5.1 Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT
Foam, carbon dioxide, extinguishing powder.
UNSUITABLE EXTINGUISHING EQUIPMENT
Abundant water jets.

5.2 Special hazards arising from the substance or mixture

The product is not flammable.
In the event of fire, gases and vapours potentially harmful to health can be formed:
Carbon monoxide (CO), carbon dioxide (CO2), nitrogen oxide (NO2), isocyanate vapours and traces of hydrogen cyanide (HCN).
Do not breathe combustion products.

5.3 Adivice for firefighters

In the event of fire, wear suitable protective equipment (protective clothing and breathing apparatus).
Apply standard fire-fighting measures. Use jets of water to cool the containers to prevent product decomposition and the formation of substances potentially hazardous for health.
Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

6 MEASURES IN CASE OF ACCIDENTAL RELEASE

6.1 Personal precautions, protective equipment and emergency procedures

Before any intervention, wear protective equipment and follow precautions for safe handling as described in Section 8 and 7 of the sheet.
Keep unauthorized and unprotected persons at a safe distance.
Make sure that the place of the leak is well aired.
Do not touch the spilled product. Avoid contact with eyes and skin. Do not breath vapours.

6.2 Environmental precautions

Avoid the release to the environment. Inform the competent authorities, should the product reach waterways or sewers, or contaminate soil or vegetation.

6.3 Methods and materials for containment and cleaning up

Absorb the liquid with absorbent material. Collect in dry, covered containers.
Avoid water contamination during cleaning and disposal.
Disposal of contaminated material must be done in accordance with the provisions of Section 13 of the sheet.

6.4 Reference to other sections

Any information on safe handling, personal protection and disposal is given in sections 7, 8 and 13 of the sheet.

7 HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Misure protettive

Handle with care.
For information on personal protection see Section 8 of the sheet.

7.1.2 Indicazioni in materia di igiene del lavoro

Do not eat, drink or smoke during use, in work and storage areas.
Wash hands after use, before break and after work.
Respect normal personal hygiene.
Avoid contact with clothing. Remove the contaminated clothing. Wash contaminated clothing before reusing them.
Remove contaminated clothing and protective equipment before entering eating areas.
Do not breath vapours and avoid contact with skin and eyes.

7.2 Conditions for safe storage, including any incompatibilities

Keep away from food and drink. Keep out of reach of children and pets.
Store only in the original container. Store the containers closed, in a ventilated place, protected from direct sunlight.
Avoid contact with incompatible materials, see Section 10 of the sheet.

7.3 Specific end use(s)

Two-component polyurethane foam for fire compartment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Threshold limit values

National occupational exposure limit values
Information not available.

Union limit values
Information not available.

Other occupational exposure limit values
ACGIH 2019

- 4,4'-METHYLENEDIPHENYL DIISOCYANATE (CAS: 101-68-8)
  TLV-TWA: 0.005 ppm = 0.051 mg/m3

DNELs

- 4,4'-METHYLENEDIPHENYL DIISOCYANATE (CAS: 101-68-8)

Route of exposure - Inhalation:
Local effects - Acute / Short term - Workers: DNEL = 50 ug/m3
Local effects - Long-term - Workers: DNEL = 100 ug/m3
Local effects - Acute / Short term - General population: DNEL = 25 ug/m3
Local effects - Long-term - General population: DNEL = 50 ug/m3

- ALCHILAMINOPOLI(OSSIALCHILEN)OLO (CAS: 25214-63-5)

Route of exposure - Inhalation:
Systemic effects - Long-term - Workers: DNEL = 35.2 mg/m3
Systemic effects - Long-term - General population: DNEL = 10.4 mg/m3
Route of exposure - Dermal:
Systemic effects - Long-term - Workers: DNEL = 5 mg/kg bw/day
Systemic effects - Long-term - General population: DNEL = 3 mg/kg bw/day
Route of exposure - Ingestion:
Systemic effects - Long-term - General population: DNEL = 3 mg/kg bw/day

Biological limit values
Information not available.

Atmospheric contaminants
Information not available.

PNECs

- 4,4'-METHYLENEDIPHENYL DIISOCYANATE (CAS: 101-68-8)

Comparto ambientale	PNEC
Freshwater	1 mg/L
Marine water	100 ug/L
Intermittent release (frewater)	10 mg/L
Intermittent release (marine water)	-
Sediment (freshwater)	-
Sediment (marine water)	-
Soils	-
Sewage treatment plant (STP)	1 mg/L

- ALCHILAMINOPOLI(OSSIALCHILEN)OLO (CAS: 25214-63-5)

Comparto ambientale	PNEC
Freshwater	85 ug/L
Marine water	8.5 ug/L
Intermittent release (frewater)	1.51 mg/L
Intermittent release (marine water)	-
Sediment (freshwater)	193 ug/kg sediment dw
Sediment (marine water)	19.3 ug/kg sediment dw
Soils	18.3 ug/kg soil dw
Sewage treatment plant (STP)	70 mg/L

Recommended monitoring procedures
The product contains components with exposure limits, personal monitoring of the atmosphere in the work environment and biological may be required to determine the effectiveness of ventilation or other control measures and / or the need to use respiratory protective equipment. Refer to the monitoring standards, such as the following:

- European standard EN 689 (Atmosphere in the workplace - Guidance on the evaluation of exposure by inhalation to chemical compounds for the purpose of comparison with limit values and measurement strategy)
- European standard EN 14042 (Atmospheres in the workplace - Guide to the application and use of procedures for the assessment of exposure to chemical and biological agents)
- European standard EN 482 (Atmospheres in the working environment - General requirements for the performance of procedures for the measurement of chemical agents)

Reference should also be made to national guidance documents on methods for the determination of hazardous substances.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Given that the use of appropriate technical measures should always take priority over personal protective equipment, ensure adequate ventilation in the workplace; where possible, install ventilation equipment or air replacement systems, except for closed or external processes.
Workplace concentrations must be kept below the threshold limit values.
Individual protective equipment must have CE marking in compliance with the regulations.
Follow precautions for safe handling during use as described in Section 7 of the sheet.

8.2.2 Individual protection measures, such as personal protective equipment

Keep away from food and drink. Do not eat, drink or smoke during use.
Wash hands before break and after work.
Remove the contaminated clothing.
Avoid contact with skin and eyes.

Hand protection
Wear suitable protective gloves, preferably rubber (see UNI EN 374 standard).

- Policloroprene - CR: thickness >=0,5mm; break time >=480min
- Nitril rubber - NBR: thickness >=0,35mm; break time >=480min
- Butyl rubber - IIR: thickness >=0,5mm; break time >=480min
- Flouride rubber - FKM: thickness >=0,4mm; break time >=480min

The following must be considered for the final choice of the glove material: compatibility, degradation, break time and permeation. The process of using the product and any other products deriving from it must also be evaluated. The gloves have a wear time that depends on the duration of exposure and how to use it.

Eye/face protection
Wear protective glasses (see UNI EN 402).

Skin protection
Use suitable work clothes and safety shoes (see EN ISO 20344 standard).

Respiratory protection
In presence of high concentrations in the workplace, wear suitable respiratory protective equipment (see EN 149).
In case of emergency, wear breathing apparatus (see UNI EN 137 or 138).

Thermal hazards
None referred to the product.
Wear anti-tank gloves if there are thermal hazards during processing.

8.2.3 Environmental exposure controls

Avoid release to the environment. The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

	COMPONENT A	COMPONENT B
(a) Appearance:	Viscous pasta, dark red	Liquid, light brown
(b) Odour:	Characteristic (amines)	Characteristic
(c) Odour threshold:	Information not available	Information not available
(d) pH:	Information not available	Information not available
(e) Melting / freezing point:	Information not available	Information not available

(f) Initial boiling point or Boiling range:	> 100 °C	300 °C
(g) Flash point:	not flammable	Not flammable
(h) Evaporation Rate:	Information not available	Information not available
(i) Flammability of solids and gases:	not flammable	Not flammable
(j) Upper/lower flammability or explosive limits:	Information not available	Information not available
(k) Vapour pressure:	Information not available	0,00001 hPa a 20 °C
(l) Vapour density:	Information not available	Information not available
(m) Relative density:	1,2 g/cm3	1,21-1,27 g/cm3
(n) Solubilty:	soluble in organic solvents	It reacts with water
(o) Partition coefficient: n-octanol/water:	Information not available	Information not available
(p) Auto-ignition temperature:	Information not available	> 500 °C
(q) Decomposition temperature:	Information not available	Information not available
(r) Viscosity:	70.000 mPa.s a 25 °C	230 mPa.s
(s) Explosive properties:	The product does not contain chemical groups associated with explosive properties	The product does not contain chemical groups associated with explosive properties
(t) Oxidising properties:	The product does not contain chemical groups associated with osidising properties	The product does not contain chemical groups associated with osidising properties

9.2 Other informations

VOC (EC): 0

10 STABILITY AND REACTIVITY

10.1 Reactivity

There are no risks of reaction with other substances in normal conditions of use.

10.2 Chemical stability

The product is stable in normal conditions of use and storage.

10.3 Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

Component B: Strongly exothermic reaction with amines and alcohols. It forms an insoluble solid polymer and carbon dioxide in contact with water. Pressure increases with danger of burst in case of closed containers. Therefore, the wet material, if recovered, must be stored in open containers.

10.4 Conditions to avoid

The usual precautions used for chemical products should be respected.

Component B: It can polymerize in contact with water and form carbon dioxide. It can react dangerously with alcohols, amines.

10.5 Incompatible materials

Component B: amines, alcohols.

10.6 Hazardous decomposition products

Carbon monoxide (CO), carbon dioxide (CO2), nitrogen oxide (NO2), isocyanate vapours and traces of hydrogen cyanide (HCN).

11 TOXICOLOICAL INFORMATIOS

11.1 Information on toxicological effects

ACUTE TOXICITY
Harmful if inhaled.

- 4,4'-METHYLENEDIPHENYL DIISOCYANATE (N. CAS: 101-68-8)

LD50 (oral) rat: 2000 mg/kg bw
LC50 (inhalation, 4h) rat: 0.367-0.559 mg/L
LD50 (dermal), rabbit: 9400 mg/Kg bw

- ALCHILAMINOPOLI(OSSIALCHILEN)OLO (N. CAS: 25214-63-5)

LD50 (oral) rat: > 2000 mg/kg bw
LD50 (dermal) rat: > 2000 mg/Kg bw

SKIN CORROSION / IRRITATION
Based on the available data, the classification criteria are met.
Causes skin irritation.

SERIOUS EYE DAMAGE / IRRITATION
Based on the available data, the classification criteria are met.
Causes serious eye irritation.

RESPIRATORY SENSITISATION
Based on the available data, the classification criteria are met.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

SKIN SENSITISATION
Based on the available data, the classification criteria are met.
May cause an allergic skin reaction.

GERM CELL MUTAGENICITY
Based on the available data, the classification criteria are not met.

CARCINOGENICITY
Based on the available data, the classification criteria are met.
Suspected of causing cancer.

REPRODUCTIVE TOXICITY
Does not meet the classification criteria for this hazard class.

STOT - SINGLE EXPOSURE
Based on the available data, the classification criteria are met.
May cause respiratory irritation.

STOT - REPEATED EXPOSURE
Based on the available data, the classification criteria are met.
May cause damage to organs through prolonged or repeated exposure.

ASPIRATION HAZARD
Based on the available data, the classification criteria are not met.

Possible route of exposure
Ingestion, dermal contact, inhalation.

Symptoms related to the physical, chemical and toxicological characteristics
See above.

Delayed and immediate effects as well as chronic effects from short and long term exposure

See above.

Interactive effects
Information not available.

12 ECOLOGICAL INFORMATION

Use the product according to good working practices. Avoid release to the environment. Inform the competent authorities, should the product reach waterways or sewers, or contaminate soil or vegetation.

12.1 Toxicity

Aquatic toxicity

- 4,4'-METHYLENEDIPHENYL DIISOCYANATE (N. CAS: 101-68-8)

LC50 Freshwater fish 96h: > 1000 mg/L
EC50 Freshwater invertebrates 24h: > 1000 mg/L
EC50 Freshwater algae 72h: > 1640 mg/L
NOEC Freshwater invertebrates 21 days: 10 mg/L

- ALCHILAMINOPOLI(OSSIALCHILEN)OLO (N. CAS: 25214-63-5)

LC50 Fish: > 100 mg/l/96h
EC50 Aquatic invertebrates: > 100 mg/l/48h
EC50 Algae and Aquatic plants: > 100 mg/l/72h

12.2 Persistence and degradability

The product in not readibly biodegradable.

12.3 Bioaccumulative potential

The product and the contained substances do not accumulate in nature.

12.4 Mobility in soil

- ALCHILAMINOPOLI(OSSIALCHILEN)OLO (N. CAS: 25214-63-5)

Soil / water partition coefficient: 1,5

12.5 Results of PBT and vPvB assessment

The product does not contain any PBT or vPvB.

12.6 Other adverse effects

Information not available.

13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

The waste management must be assessed case by case, in relation to the composition of the waste and its danger, in compliance with national and local regulations.
For waste handling and measures in case of accidental release see Sections 6 and 7 in the sheet. Specific precautions should be considered in relation to the composition of the waste.

PRODUCT
Product residues should be considered special hazardous waste. Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations. Transport might be subject to the provisions of ADR.

CONTAMINATED PACKAGING
Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

14 INFORMATION ON TRANSPORT

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

14.1 UN Number

Not applicable.

14.2 UN proper shipping name

Not applicable.

14.3 Trasport hazard classes

Not applicable.

14.4 Packing group

Not applicable.

14.5 Environmental hazard

Not applicable.

14.6 Special precautions for user

Not applicable.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable.

15 REGULATORY INFORMATION

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

- Regulation (EC) 1907/2006 (REACH) of the European Parliament and subsequent amendments and supplements
- Regulation (EC) 1272/2008 (CLP) of the European Parliament and subsequent amendments and supplements:
- Regulation (EU) 2015/830

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006
Restrictions relating to the product: None.
Restrictions relating to the contained substances: For component B: 3, 56

Substances in Candidate List (Art. 59 REACH)
None.

Substances subject to authorisation (Annex XIV REACH)
None.

Substances subject to exportation reporting pursuant to (EC) Reg. 649/201
None.

Substances subject to the Rotterdam Convention
None.

Substances subject to the Stockholm Convention

None.

Substances subject to the Montreal Protocol
None.

Seveso category
None.

Healthcare controls
Information not available.

15.2 Valutazione della sicurezza chimica

A chemical safety assessment has been performed for the contained substances. All available information from exposure scenarios of the substances that are registered is included in the body of the sheet.

16 OTHER INFORMATION

Text of hazard statements (H) mentioned in section 2-3 of the sheet

Acute Tox. 4	Acute Toxicity, cat. 4
Eye Irrit. 2	Eye Irritation, cat. 2
Skin Irrit. 2	Skin Irritation, cat. 2
Resp. Sens. 1	Respiratory sensitisation, cat. 1
Skin Sens. 1	Skin sensitisation, cat. 1
Carc. 2	Carcinogenicity, cat. 2
STOT SE 3	Specific Target Organ Toxicity, single exposure, cat. 3
STOT RE 2	Specific Target Organ Toxicity, repeated exposure, cat. 2
H332	Harmful if inhaled.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H335	May cause respiratory irritation.
H373	May cause damage to organs through prolonged or repeated exposure.

Classification procedure used in accordance with Regulation (EC) 1272/2008 (CLP) relating to mixtures
Acute Tox. 4, H332: Calculation method
Skin Irrit. 2, H315: Calculation method
Eye Irrit. 2, H319: Calculation method
Resp. Sens. 1, H334: Calculation method
Skin Sens. 1, H317: Calculation method
Carc. 2, H351: Calculation method
STOT SE 3, H335: Calculation method
STOT RE 2, H373: Calculation method

Abbreviations and acronyms
- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP

- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: EC Regulation 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation

General bibliography

Regulation (EC) 1907/2006 (REACH) of the European Parliament and subsequent amendments and supplements
Regulation (EC) 1272/2008 (CLP) of the European Parliament and subsequent amendments and supplements:

- Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
- Regulation (EU) 2015/830 of the European Parliament
- Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
- Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
- Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
- Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
- Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
- Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
- Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
- Regulation (EU) 2016/1179 (IX Atp. CLP)
- Regulation (EU) 2017/776 (X Atp. CLP)
- Regulation (EU) 2018/669 (XI Atp. CLP)
- Regulation (EU) 2018/1480 (XIII Atp. CLP)

The Merck Index - 10th Edition
Handling Chemical Safety
INRS - Fiche Toxicologique (toxicological sheet)
Patty - Industrial Hygiene and Toxicology
N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
ACGIH - Threshold limit values
ECHA website

Note for users

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.
This document must not be regarded as a guarantee on any specific product property.
The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.
Provide appointed staff with adequate training on how to use chemical products.

Changes to previous review

This safety data sheet has been prepared in accordance with Annex II of Regulation (EC) 1907/2006, as amended by Regulation (EU) 2015/830.
Changes to previous review: first emission.