OTO CAM YAPIŞTIRMA MACUNU

SAFETY DATA SHEET

TC. Çevre ve Şehircilik Bakanlığı tarafından 13/12/2014 tarih ve 29204 sayılı resmî gazetede yayınlanan Zararlı Maddeler ve Karışımlara İlişkin Güvenlik Bilgi Formları Hakkında Yönetmeliğine uygun olarak düzenlenmiştir.

Hazırlanma Tarihi: Temmuz 2019
Revize: 01 FORM: EF.55

1. IDENTIFICATION OF THE ARTICLE / PREPARATOR AND THE COMPANY / OWNER

1.1 Identification of the substance/mixture and of the company/undertaking : OTO CAM YAPIŞTIRMA MACUNU
1.2 Relevant identified uses of the substance or mixture and uses advised against : Adhesive one-component for automotive industry.

1.3 Details of the supplier of the safety data sheet :

Manufacturer	SKALA KİMYA SAN VE TİC. A.Ş.
Address	Akşemsettin Mh. Fatih Bulvarı Serap Sk. No:5/A Sultanbeyli/İSTANBUL
Telephone	0850 969 19 05
Related person	Süleyman KARAKAYA

1.4 Emergency tel. No: 114 UZEM

2. HAZARDS IDENTIFICATION

2.1 Classification of the mixture
This mixture is classified as dangerous according to EC Directive 1999/45/EC.
Major adverse effects: see sections 9 to 12.

2.2 Label elements
- Risk symbol(s):

- R-phrases: R42 (*)
- S-phrases: S23, S38, S45, S53, S60(*)
Contains isocyanates. See the information submitted by the manufacturer.
(*) See section 16 for full text of R-phrases, and S- phrases. (*)

2.3 Other hazards
None.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
N.AV.
3.2 Mixtures
Substances presenting a health or environmental hazard within the meaning of the Dangerous Substances Directive
67/548/EEC or Regulation (EC) No. 1272/2008, assigned a Community workplace exposure limit, classified as PBT/vPvB or included in the Candidate List:

Name	Registration No	CAS No	EINECS No	Class.67/548/ CE (**)	Class. CLP (**)	Conc.%

Diisononyl phthalate [5]	N.AV.	28553-12-0	249-079-5			> 1,0 - < 10,0
Diphenylmethane-4,4'-diisocyanate [1] [2]	N.AV.	101-68-8	202-966-0	Xi, Xn, R20, R36/37/38, R40, R42/43, R48/20	H315, H317, H319,H332, H334, H335, H351, H373	> 0,1 - < 1,0
Hexamethylene-1,6-diisocyanate homopolymer [1]	N.AV.	28182-81-2	500-060-2	Xi, R43	H317	> 1,0 - < 5,0
N-Methyl-2-pyrrolidinone [1] [2]	N.AV.	872-50-4	212-828-1	Xi, R36/37/38, R61	H315, H319, H335, H360D	> 0,1 - < 1,0

[1] Substance that presents a danger to the environment or health.
[2] Substance with a workplace exposure limit
[3] PBT-Substance.
[4] vPvB-Substance.
[5] Ingredient voluntarily declared.
(**)See Section 16 for full text of R-phrases and H-statements.

4. FIRST AID MEASURES

4.1 Description of first aid measures

In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person. If unconscious, lead in a safe place and seek medical advice.
Routes of exposure:
- Skin contact: remove with a cloth or paper and wash with soap and water. In case of persistent irritation, or in the case of tissue damage, consult a doctor.
- Eye contact: wash with running water for several minutes, holding the eyelids open. If symptoms persist, call a physician.
- Ingestion: Do NOT induce vomiting. Never give anything by mouth if victim is unconscious. Call for medical help immediately.
- Inhalation: If you feel unwell move to a fresh air, if symptoms persist, consult a doctor.

4.2 Most important symptoms and effects, both acute and delayed

- Skin contact: N.AV.
- Eye contact: N.AV.
- Ingestion: N.AV.
- Inhalation: N.AV.

4.3 Indication of any immediate medical attention and special treatment needed

N.AV.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

- Appropriate extinguishing media: water spray, foam, CO2 and powder.
- Information about suitable extinguishing media: preferred foams resistant to alcohol.

- Extinguishing inappropriate: do not use direct water stream.
- Indicate whether certain methods of extinction are inadequate in a specific situation related to substance: none in particular.

5.2 Special hazards arising from the substance or mixture

With the fire, poisonous gases may be formed. The product is not explosive but it is possible the formation of mixtures of explosive air/vapor.

5.3 Advice for fire-fighters

Do not inhale gases produced by fire. Wear breathing apparatus with an independent source of fresh air. Cool containers or tanks exposed to fire with water spray.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions: wear gloves and protective clothing, safety glasses and protection for the breathing apparatus (SCBA). Avoid sources of ignition.

6.2 Environmental precautions

Do not allow product contaminate the sewage or any water course. In case of accidental release alert the relevant authorities.

6.3 Methods and material for containment and cleaning up

- Recommendations on how to contain a spill: contain and absorb the material with inert absorbent barriers.
- Recommendations on how to clean a spill: collect mechanically picking up and place in appropriate containers before you start the disposal of the waste regulation.

6.4 Reference to other sections

Treat material as prescribed in section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with respiratory system, skin and eyes. See also section 8.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers closed. Protect from 'water from' moisture. Avoid direct exposure to the sun. Keep away from sources of ignition. Ensure electrical continuity with a 'proper grounding to avoid' static discharges.

7.3 Specific end use(s)

N.AV. refer to section 1.2.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

4,4' – methylenediphenyl diisocyanate (n° CAS: 101-68-8; n° EC: 202-966-0).
Limit value for occupational exposure:
National (IT):
TLV-TWA = N.AV.
TLV-STEL = N.AV.
ACGIH 2009:
TLV-TWA = 0,005 ppm.
TLV-STEL/C = N.AV.

N-Methyl-2-pyrrolidinone (n° CAS: 872-50-4; n° EC: 212-828-1).
Limit value for occupational exposure:
National (IT):
TLV-TWA = N.AV.
TLV-STEL = N.AV.
EU:
TLV-TWA = 10 ppm (40mg/m3)
TLV-STEL = 20 ppm (80mg/m3)
ACGIH 2009:
TLV-TWA = N.AV.
TLV-STEL/C = N.AV.
Valori limite biologici: N.AV.
DNEL: N.AV.
PNEC: N.AV.

8.2 Exposure controls

Individual protection measures, such as personal protective equipment:
Eye protection/face: use glasses to protect against splash of liquids.
Skin Protection: no special precaution must be adopted for normal use, wear appropriate clothing.
Hand protection: use chemical resistant gloves classified under Standard EN 374: Protective gloves against chemicals and micro-organisms. Acceptable nitrile gloves.
Respiratory protection: when atmospheric levels may exceed the exposure guideline, use the self-breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance	thixotropic paste
Odour	Characteristic
Odour threshold	N.AV

9.1 Information on basic physical and chemical properties

pH	N.AV.
Melting point/freezing point (92/69/EEC, A1)	N.AV.
Initial boiling point and boiling range (92/69/EEC, A2)	N.AV.
Initial boiling point and boiling range (92/69/EEC, A2)	N.AV.
Flash point	> 100°C estimated.
Evaporation rate	N.AV.
Flammability (solid, gas)	N.AV.
Explosive limits	N.AV.
Vapour tension	N.AV.
Vapour density (air=1)	N.AV.
Relative density (92/69/EEC, A3)	1,26 g/ml (20°C)
Solubility in water (92/69/EEC, A6)	N.AV.
Solubility in organic solvents	N.AV.
Partition coefficient: n-octanol/water	N.AV.
Auto-ignition temperature	N.AV.
Decomposition temperature	N.AV.
Viscosity	180000-250000 cps (23°C) [Method: plate/cone]
Explosive properties	N.AV.

Oxidising properties	N.AV.

9.2 Other information:

VOC	1.76 g/l. (0.14%)

10. STABILITY AND REACTIVITY

10.1 Reactivity
N.AV.

10.2 Chemical stability

Stable under recommended storage and handling conditions (see section 7).

10.3 Possibility of hazardous reactions
None under recommended storage and handling conditions

10.4 Conditions to avoid
Some components of this product can decompose at elevated temperatures. Avoid moisture.

10.5 Incompatible materials
Oxidizing agents, acids, bases, alcohols, amines, water, ammonia, metal compounds and moist air.

10.6 Hazardous decomposition products
Combustion can give rise to the formation of dangerous products.

11. TOXICOLOGICAL INFORMATION

There are no data available on the mixture itself. Set out below is the toxicological information relating to the main
substances in the mixture.
Hazardous effects to health from exposure to the mixture: see Sections 2 and 4.
11.1 Information on toxicological effects
• Diisononyl phthalate:
- Acute toxicity, dermal toxicity: LD50 rabbit > 3160 mg/kg. Metodo OECD TG 402.
- Acute toxicity, by oral route: LD50 rat => 10000 mg/kg. Directive 84/449/EEC method B.1

• Hexamethylene-1,6-diisocyanate homopolymer:
- Acute toxicity, dermal toxicity: LD50 rabbit > 5000 mg/kg. Metodo OECD TG 402. Test on major components.
- Acute inhalation toxicity: LC50 rat = 4,63 mg/l, 4 h, (Atm. dust / mist). Method OECD TG 403. Test on major components.
- Acute toxicity, by oral route: LD50 rat => 5000 mg/kg. Directive 84/449/EEC method B.1.
• N-Methyl-2-pyrrolidinone :
- Acute toxicity, dermal toxicity: LD50 rabbit > 5000 mg/kg. Metodo OECD TG 402.
- Acute inhalation toxicity: LC50 rat = > 5,1 mg/l, 4 h, (Atm. dust / mist). Method OECD TG 403.
- Acute toxicity, by oral route: LD50 rat = 4150 mg/kg. Directive 84/449/EEC method B.1.

• 4,4' – methylenediphenyl diisocyanate:
- Acute toxicity, by oral route: LD50 rat => 2000 mg/kg. Directive 84/449/EEC method B.1 - Tests on comparable product.
- Acute toxicity, dermal toxicity: LD50 rabbit => 9400 mg/kg. Method OECD TG 402 - Tests on similar product.
- Acute inhalation toxicity: LC50 rat = 0,368 mg/l, 4 h,> 2,24 mg/l, 1h. (Atm. dust / mist). Method OECD TG 403 -

Substance tested in forms other than commercial and in which is supposed to be used rationally. It therefore justifies a different classification of the acute inhalation toxicity.
- Primary skin irritation: rabbit = irritant, causes skin irritation. Method OECD TG 404 – Tests on comparable product.
- Primary irritations of the mucous membranes: rabbit = non-irritating. Method OECD TG 405 – Tests on comparable
product.
- Skin sensitization according to Buehler (skin test): guinea pigs = negative, does not cause skin sensitization. Method
OECD TG 406.
- Skin sensitization (LLNA (Local Lymph Node Assay)): mouse = positive. Method OECD TG 429.
- Respiratory sensitization: guinea pigs = positive, may cause sensitization by inhalation.
- Subacute, subchronic and prolonged toxicity: rat NOAEL = 0,2 mg/m3, 1 mg/m3LOAEL; irritation to the nasal cavity and lungs. Method OECD TG 453 - Tests on similar product.
- Carcinogenicity: rat (inalativo) = if applicable of tumors in the higher dose (6 mg/m3). Method OECD TG 453 - Tests on similar product.
- Reproductive toxicity / teratogenicity: rat = NOAEL (teratogenicity) 12 mg/m3NOAEL (maternal) 4 mg/m3 NOAEL (developmental toxicity) 4 mg/m3, did not show teratogenic effects in animal experiments. Method OECD TG 414 – Tests on similar product.
- Genotoxicity in vitro test Salmonella / microsome (Ames test) = negative. Method OECD TG 471 – Tests on comparable product.
- Genotoxicity in vivo micronucleus assay, rat = negative. Method OECD TG 474.
- Specific toxicity in the target organ (single exposure): = inalativo may irritate the respiratory tract.
- Specific toxicity in the target organ (repeated exposure): = inalativo can cause damage to organs in the event of prolonged or repeated exposure.

CMR Rating:
Carcinogenicity: product is suspected to cause cancer if inhaled (Carc 2).
Mutagenicity: In vitro and in vivo studies showed no mutagenic effects. Based on the dataavailable data, the classification criteria are not met.
Teratogenicity: Did not show teratogenic effects in animal experiments. On the basis ofavailable data, the classification criteria are not met.
Toxicity to reproduction/fertility: Based on the available data, the classification criteria are not satisfied.
Toxicological evaluation:
Acute Effects: harmful if inhaled. The product causes irritation of eyes, skin and mucous membranes.
Sensitization: may cause sensitization by inhalation and skin contact.
Additional information: particular characteristics/effects: If there is a danger of overexposure, depending-concentration, irritation of the eyes, nose, throat and respiratory tract.Possible the delayed appearance of disorders and development of a form of hypersensitivity (disordersbreathing, coughing, asthma). In the case of people who are hypersensitive reactions may occur as earlyconcentrations of isocyanate very low, even below the TLV value. In case of contact prolonged, skin irritating and dehydrating effects are possible.

12. ECOLOGICAL INFORMATION

Use according to standards of good practice and avoid release to the environment
(see also sections 6,7,13,14, 15).
There are no ecotoxicological data on the mixture itself. Set out below is the toxicological information relating to the main substances in the mixture.

12.1 Toxicity

• N-Methyl-2-pyrrolidinone :
- Acute and prolonged toxicity to fish (LC50): Oncorhynchus mykiss, 96h. = > 5000 mg/l. Pimephales promelas, 96h. = 1072 mg/l. Method OECD TG 203.
- Acute toxicity for daphnia (EC50): Daphnia magna (water flea), 24h. => 1000 mg/l. Method OECD TG 202.
- Acute toxicity to algae (ErC50): Desmodesmus subspicatus, 72h. (Inhibitor of growth) => 500 mg/l. Method

OECD TG 201
- Chronic Toxicity to Daphnia: Daphnia magna (water flea), 21d, NOEC (reproduction) = 12,5 mg/l. Method OECD TG 202.

• Hexamethylene-1,6-diisocyanate homopolymer:
- Acute and prolonged toxicity to fish (NOEC): Danio rerio (zebra fish), 96h. = > 100 mg/l.
- Acute toxicity for daphnia (NOEC): Daphnia magna (water flea), 48h. = > 100 mg/l.
- Acute toxicity to algae (ErC50): Scenedesmus sp., 72h. (Inhibitor of growth) => 1000 mg/l. Method OECD TG 201
- Acute bacterial toxicity (EC50): activated sludge, 3h. (Inhibitor of growth) = > 1000 mg/l.

• 4,4' – methylenediphenyl diisocyanate:
- Acute toxicity to fish (LC50): Danio rerio (zebra fish), 96h. = 1000 mg/l. Method OECD TG 203 - Tests on similar product.
- Acute toxicity for daphnia (EC50): Daphnia magna (water flea), 24h. => 1000 mg/l. Method OECD TG 202 - Tests on similar product.
- Chronic Toxicity to Daphnia: Daphnia magna (water flea), 21d, NOEC (reproduction) => 10 mg/l. Method OECD TG 202 - Tests on similar product.
- Acute toxicity to algae (ErC50): Scenedesmus subspicatus, 72h. (Inhibitor of growth) => 1640 mg/l. Method OECD TG 201 - Tests on similar product.
- Acute bacterial toxicity (EC50): activated sludge, 3h. (Inhibitor of respiration) => 100 mg/l. Method OECD TG 209 - Tests on similar product.
- Toxicity to soil dwelling organisms: Eisenia fetida (earthworm), 14 d NOEC (mortality) => 1000 mg/kg. Method OECD TG 207 - Tests on similar product.
- Toxicity to terrestrial plants: Avena sativa (oats), 14d NOEC (germination) => 1000 mg/kg, Avena sativa (oats), 14d NOEC (growth rate) => 1000 mg/kg; Lactuca sativa (lettuce), 14d NOEC (germination) => 1000 mg/kg; Lactuca sativa (lettuce), 14d NOEC (growth rate) => 1000 mg/kg. Method OECD TG 208 - Tests on similar product.

Ecotoxicological assessment:
Acute aquatic environment: based on the available data, the classification criteriaare not satisfied.
Chronic toxicity to the aquatic environment: there is no evidence of chronic aquatic toxicity.
Bitoxicity data on soil: is not expected adsorption to soil. The substance is evaluated as not critical for soil organisms. Impact on the treatment of waste: due to the low toxicity to bacteria in biological purification plants there is no risk of yield reduction treatment.

12.2 Persistence and degradability
• N-Methyl-2-pyrrolidinone :
Biodegradability: 91%, 28d, readily biodegradable. Metodo OECD TG 303A.

• Diisononyl phthalate:
Biodegradability: 74%,28d. Ultimately biodegradable. Method OECD TG 301C. >99%, 28d. Ultimately biodegradable. Method OECD TG 302A.
Photodegradation: phototransformation in air, half-life (indirect photolysis) = 0,7 d. Estimated.
• Hexamethylene-1,6-diisocyanate homopolymer:
Biodegradability: 0%, 28d, not inherently biodegradable.
• 4,4' – methylenediphenyl diisocyanate:
Biodegradation: 0%, 28d, or not inherently biodegradable. Method OECD TG 302C – Tests on similar product.
Stability in 'water: hydrolysis half-life = 20h. at 25 ° C, the substance is rapidly hydrolyzes in water – Tests on similar product.Photodegradation: phototransformation in air, half-life (indirect photolysis) = 0,92 d., as a result of evaporation or exposure to the air, the product is moderately degraded via photochemical processes. Method SRC - AOP (calculation). Volatility (Henry's law constant): calculated value = 0,0229 Pa·m3/mol, the substance should be classified as slightly volatile in water.

12.3 Bioaccumulative potential
• N-Methyl-2-pyrrolidinone :

Bioaccumulation (BCF): < 100. Bioconcentration potential is low.
• Diisononyl phthalate:
Bioaccumulation (BCF): < 100. Bioconcentration potential is low.
• 4,4' – methylenediphenyl diisocyanate:
Bioaccumulation (BCF 200): Cyprinus carpio (Carp), 28d, concentration = 0,00008 mg/l, it is not to be expected the
accumulation in aquatic organisms.

12.4 Mobility in soil
• N-Methyl-2-pyrrolidinone :
Considering the low Henry's constant (4.46 E-08 atm*m3/mole) is not expected to volatilize from the body 's natural water
or moist soil is an important factor for the fate of the final product. Potential for mobility in soil is very high (0 <Koc <50).
Partition coefficient organic carbon / water in soil (Koc):> 5000 estimated.
• 4,4' – methylenediphenyl diisocyanate:
The mobility is limited by the transformation into a solid insoluble by reaction with humidity and CO2 emissions.

12.5 Results of PBT and vPvB assessment
The components of the mixture, based on the information available, do not meet the criteria vPvB and PBT.

12.6 Other adverse effects
None.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Recover if possible. Operate according to local and national regulations: 91/156/EEC, 91/689/EEC, 94/62/EEC.
Disposal of uncured material (according to Directive 2000/532/EC):
waste code EWC 080409 * - adhesives and sealants containing organic solvents or other dangerous substances.
Disposal of hardened product (according to Directive 2000/532/EC):
EWC waste code 080410 - waste adhesives and sealants other than those mentioned in 080409 *.
Empty containers must be disposed of or recycled.
Containers containing uncured product are hazardous wastes.

14. TRANSPORT INFORMATION

Not classified as dangerous under transport regulations.
14.1 UN number
N.AP.

14.2 UN proper shipping name
N.AP.

14.3 Transport hazard class(es)
N.AP.

14.4 Packing group
N.AP.

14.5 Environmental hazards
N.AP.

14.6 Special precautions for user
Not dangerous for transport.
Irritating to skin or eyes.
Protect from moisture.
Keep away from foodstuffs, acids and alkalis.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
N.AP.

Additional information for Transport in accordance with IMDG, ADR/RID and ICAO/IATA
- ADR / RID: non-dangerous goods.
- ADN: non-dangerous goods.
- IATA: non-dangerous goods.
- IMDG: Not dangerous goods.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH); Directive 67/548/EEC (Classification, packaging and labelling of dangerous substances) and subsequent amendments; Directive 1999/45/EC (Classification, packaging and labelling of dangerous preparations) and subsequent amendments; Regulation (EC) No 1907/2006 (Reach); Regulation (EC) No 1272/2008 (CLP); Regulation (EC) No 790/2009 of 10 August 2009 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures. Commission Directive 92/69/EEC of 31 July 1992 adapting to technical progress for the seventeenth time Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances The “Threshold Limit Values”of the substances are taken from: a) Italian legislation: Decree 9 April 2008, n. 81 - Appendix XXXVIII and XLIII, 3 August 2009 Legislative Decree no. 106 - Annex XXXVIII; b) EU Legislation: Directive of 2009/161/CE 17dec. 2009; c) the substances not listed by the National legislation and by the EU Legislation are taken from the volume A.C.G.I.H 2009 “Threshold Limit Value (TLV's) for Chemical Substances and Physical Agents & Biological Exposure Indices (BEIs) “[Source Federchimica - Italian National Association of Chemical Industry : “Threshold limit values and biological indices of exposure to the Risks related to chemicals in the workplace “2010 edition].
Other requirements, restrictions and ban regulations: none

15.2 Chemical Safety Assessment
N.AV.

16. OTHER INFORMATION

Full text of R-phrases, Hazard Statements-h AND S-phrases appearing in section 2 and 3:
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H332 - Harmful if inhaled.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 - May cause respiratory irritation.

H351 - Suspected of causing cancer.
H360D - May damage the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure.
R20 - Harmful by inhalation.
R36/37/38 - Irritating to eyes, respiratory system and skin.
R40 - Limited evidence of a carcinogenic effect.
R42/43 - May cause sensitization by inhalation and skin contact.
R43 - May cause sensitization by skin contact.
R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R61 - May cause harm to the unborn child.
S23 - Do not breathe gas / fumes / vapor / spray
S38 - In case of insufficient ventilation, wear suitable respiratory equipment.
S45 - In case of accident or if you feel unwell, seek medical advice imemdiately (show the label where possible).
S53 - Avoid exposure - obtain special instructions before use.
S60 - This material and its container must be disposed of as hazardous waste.

The information contained in this Safety Data Sheet is based on the present state of knowledge and current national legislation.
It provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.
The product should not be used for purposes other than those shown in Section 1 without first referring to the supplier and obtaining written handling instructions.
As the specific conditions of use of the product are outside the supplier's control, the user is responsible for ensuring that the requirements of relevant legislation are complied with.
The information contained in this safety data sheet does not constitute the user's own assessment of work-place risks, as required by other health and safety legislation.

REACH Regulation (EC) No. 1907/2006
This product contains substances listed in the list of candidates substances. Permission identified pursuant to Article 59 (1): N-methyl-2-pyrrolidinone CAS 872-50-4

This sheet replaces all previous versions

Bibliography
ESIS – European chemical Substances Information System - Joint Research Centre;
Federchimica – Book series of the Committee for Substances Safety , No. 2 "THE MSDS Part 2 - Examples of Safety Data
Sheet of a substance and a mixture prepared according to Regulation (EU) 453/2010, July 2010".
Acronyms
ACGIH: American Conference of Governmental Industrial Hygienists.
ADN: european Agreement concerning the international carriage of Dangerous good by iNland goods.
ADR: Agreement concerning the international carriage of Dangerous goods by Road.
BCF: Bio Concentration Factor.
CLP: Classification, Labelling and Packaging
EC50, EC10: Effective Concentration of a substance that causes 50% or 10% of the maximum response.
DNEL: derived no effect level
ErC50: Effective Concentration of a substance that causes a 50% reduction in the growth rate.
EWC: European Waste Catalogue.
IATA: international air transport association.
IBC, code : International Code for the Construction and Equipment of ships carrying dangerous chemical in Bulk.
IMDG: International maritime dangerous goods.
Koc: partition coefficient soil / water.
LC 50: Lethal Concentration for 50% of individuals.

LD 50: Lethal Dose for 50% of individuals.
OECD: Organisation for Economic Co-operation and Development: Guideline for Testing of Chemicals.
MARPOL73/78: Convenzione internazionale per la prevenzione dell'inquinamento causato da navi 1973, come modificata dal protocollo del 1978.
NOEC: No Observed Effect Concentration.
PBT: Persistent, bioaccumulative and toxic.
PNEC: Predicted no effect concentration.
RID: Règlement concernent le transport International ferroviaire des marchandises Dangereuses (Regulation concenring the
International carriage od Dangerous goods).
STEL: short term exposure limit.
TLV: threshold limit value.
TWA: Time Weighted Average.
UE: Unione Europea.
vPvB: Very persistent very bioaccumulative.

Decoding:
(#) = This symbol indicates that the information has been updated to the review date.
N.AV. = Not available.
N.AP = Not applicable .
[...] = Bibliographic reference.

This safety data sheet was reviewed in all its sections in accordance to the Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
All subsequent updates will be marked with #.