

Safety data sheet

according to 1907/2006/EC, Article 31



Printing date 04.03.2019

Revision: 04.03.2019

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

- **1.1 Product identifier**
- **Trade name: REFLECON® tarnish-30-HC**
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
- **Life cycle stages**
 - F Formulation or re-packing
 - IS Use at industrial Sites
- **Sector of Use**
 - SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
- **Product category** PC14 Metal surface treatment products
- **Process category**
 - PROC7 Industrial spraying
 - PROC19 Manual activities involving hand contact
 - PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
- **Environmental release category**
 - ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
- **Article category** AC7 Metal articles
- **Application of the substance / the mixture** Anti-reflection agent for optical 3D-metrology
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
 - MR Chemie GmbH
 - Nordstr. 61-63
 - 59427 Unna (Germany)
 - Tel. +49 (0)2303 95151 0
 - Fax: +49 (0)2303 95151 10
 - post@mr-chemie.de
 - www.mr-chemie.de
- **Further information obtainable from:**
 - MR Chemie GmbH, Dep. safety data sheets, Tel.: +49/(0)2303/95151-38, QS@mr-chemie.de
- **1.4 Emergency telephone number:**
 - 24h- Emergency Contact Phone Number For Chemical Emergency, Spill, Leak, Fire, Exposure or Accident (WISAG FMO Cargo Service GmbH & CO.KG)
 - Call Day or Night within USA and Canada: 1 800 424 9300
 - Outside USA and Canada: 001 703 527 3887
 - In-Country Emergency Number for:
 - Germany: 0800-181-7059
 - China: 4001 204937 (Mandarin)
 - Hong Kong: 800 968 793 (Cantonese)
 - India: 000 800 100 7141 (Hindi)
 - South Africa: 0 800 983 611 (English)

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
 - The mixture is classified according to Regulation (EC) No 1272/2008 according to the most recent ATP.
- 
GHS02 flame
- Flam. Liq. 2
H225 Highly flammable liquid and vapour.
- 
GHS08 health hazard
- Asp. Tox. 1
H304 May be fatal if swallowed and enters airways.

(Contd. on page 2)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 1)



GHS09 environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

Eye Irrit. 2

H319 Causes serious eye irritation.

STOT SE 3

H336 May cause drowsiness or dizziness.

· 2.2 Label elements

· Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labelled according to the CLP regulation.

· Hazard pictograms



GHS02

GHS07

GHS08

GHS09

· Signal word Danger

· Hazard-determining components of labelling:

pentane

2-Propanol

· Hazard statements

H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

H304 May be fatal if swallowed and enters airways.

H411 Toxic to aquatic life with long lasting effects.

· Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P331 Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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

· Additional information:

EUH066 Repeated exposure may cause skin dryness or cracking.

· 2.3 Other hazards

· Results of PBT and vPvB assessment

· PBT: Not applicable.

· vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

· 3.2 Chemical characterisation: Mixtures

· **Description:** Mixture of substances listed below with nonhazardous additions.

(Contd. on page 3)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 2)

· Dangerous components:

CAS: 109-66-0 EINECS: 203-692-4 Reg.nr.: 01-2119459286-30-XXXX	pentane	Flam. Liq. 2, H225 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 STOT SE 3, H336	60 - 70%
CAS: 67-63-0 EINECS: 200-661-7 Reg.nr.: 01-2119457558-25-XXXX	2-Propanol	Flam. Liq. 2, H225 Eye Irrit. 2, H319; STOT SE 3, H336	20 - 30%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures**· 4.1 Description of first aid measures****· General information:**

Seek medical advice if symptoms occurs or in cases of doubt.
Immediately remove any clothing soiled by the product.

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

· After eye contact:

Rinse opened eye for several minutes under running water. Then consult a doctor.

· **After swallowing:** Do not induce vomiting; call for medical help immediately.

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

No further relevant information available.

· Information for doctor:

Grease with skin-cream to restore fat film in order to prevent skin inflammation.

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

No further relevant information available.

SECTION 5: Firefighting measures**· 5.1 Extinguishing media**

CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· Suitable extinguishing agents:

CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· **For safety reasons unsuitable extinguishing agents:** Water with full jet

· 5.2 Special hazards arising from the substance or mixture

In case of fire, the following can be released:

Carbon monoxide (CO)

· 5.3 Advice for firefighters

· **Protective equipment:** Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures**· 6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

· 6.2 Environmental precautions:

Prevent seepage into sewage system, workpits and cellars.

Do not allow to enter sewers/ surface or ground water.

· 6.3 Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

(Contd. on page 4)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 3)

6.4 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.

SECTION 7: Handling and storage**7.1 Precautions for safe handling**

- Ensure good ventilation/exhaustion at the workplace.
- Open and handle receptacle with care.
- Prevent formation of aerosols.

Information about fire - and explosion protection:

- Keep ignition sources away - Do not smoke.
- Protect against electrostatic charges.

7.2 Conditions for safe storage, including any incompatibilities**Storage:****Requirements to be met by storerooms and receptacles:**

- Store in a cool location.
- Condition of the tanks and stockrooms is to be co-ordinated with the responsible authorities.
- Keep receptacles tightly sealed.

Information about storage in one common storage facility: Not required.**Further information about storage conditions:** Protect from heat and direct sunlight.**Recommended storage temperature:** 5 - 30 °C, 41 - 86 °F**7.3 Specific end use(s)** No further relevant information available.**SECTION 8: Exposure controls/personal protection****Additional information about design of technical facilities:** No further data; see item 7.**8.1 Control parameters****Ingredients with limit values that require monitoring at the workplace:****109-66-0 pentane**

IOELV (EU)	Long-term value: 3000 mg/m ³ , 1000 ppm
WEL (Great Britain)	Long-term value: 1800 mg/m ³ , 600 ppm
AGW (Germany)	Long-term value: 3000 mg/m ³ , 1000 ppm 2(II);DFG, EU, Y

67-63-0 2-Propanol

WEL (Great Britain)	Short-term value: 1250 mg/m ³ , 500 ppm Long-term value: 999 mg/m ³ , 400 ppm
AGW (Germany)	Long-term value: 500 mg/m ³ , 200 ppm 2(II);DFG, Y

DNELs**109-66-0 pentane**

Dermal	Long-term - systemic effects, worker	432 mg/kg bw/day (worker)
Inhalative	Long-term - systemic effects, worker	3,000 mg/m ³ (worker)

67-63-0 2-Propanol

Dermal	Long-term - systemic effects, worker	888 mg/kg bw/day (worker)
Inhalative	Long-term - systemic effects, worker	500 mg/m ³ (worker)

PNECs**109-66-0 pentane**

Aquatic compartment, freshwater	0.23 mg/L (freshwater)
---------------------------------	------------------------

(Contd. on page 5)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 4)

Aquatic compartment - marine water	0.23 mg/L (marine water)
Aquatic compartment - water intermittent releases	0.88 mg/L (intermittent release water)
Aquatic compartment- sediment in freshwater	1.2 mg/kg sed dw (sediment fresh water)
Aquatic compartment sediment in marine water	1.2 mg/kg sed dw (sediment marine water)
Terrestrial compartment - soil	0.55 mg/kg dw (soil)
Sewage treatment plant	3.6 mg/L (sewage treatment plant)

67-63-0 2-Propanol

Aquatic compartment, freshwater	140.9 mg/L (freshwater)
Aquatic compartment - marine water	140.9 mg/L (marine water)
Aquatic compartment- sediment in freshwater	552 mg/kg sed dw (sediment fresh water)
Aquatic compartment sediment in marine water	552 mg/kg sed dw (sediment marine water)
Terrestrial compartment - soil	28 mg/kg dw (soil)
Sewage treatment plant	2,251 mg/L (sewage treatment plant)
Oral secondary poisoning	160 mg/kg food (food secondary poisoning)

· **Ingredients with biological limit values:****67-63-0 2-Propanol**

BGW (Germany)	25 mg/l Untersuchungsmaterial: Vollblut Probennahmezeitpunkt: Expositionsende bzw. Schichtende Parameter: Aceton
	25 mg/l Untersuchungsmaterial: Urin Probennahmezeitpunkt: Expositionsende bzw. Schichtende Parameter: Aceton

· **Additional information:** The lists valid during the making were used as basis.· **8.2 Exposure controls**· **Personal protective equipment:**· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.

· **Respiratory protection:**

Filter AX-P2

For good ventilation provide, this can be achieved by local or space exhaust. If the concentration lies over the job limit values, then, a certified respirator suitable for this purpose must be used.

· **Protection of hands:**

Protective gloves

Check the permeability prior to each renewed use of the glove.

For the protection against chemicals in areas with heightened risk of injury (mechanical hazard) no recommendation for a suitable glove material can be given.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

Nitrile rubber, NBR

Recommended thickness of the material: ≥ 0.5 mm

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

(Contd. on page 6)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 5)

- **Penetration time of glove material**

Supplier for suitable protection gloves:

ASD ArbeitsSicherheit Dortmund

Torstr. 101 - 37355 Niederorschel OT Rüdigershagen

Tel.: 02301 / 919543 - Fax: 02301 / 9453893

E-Mail: m.schnellhardt@t-online.de - <http://www.arbeitssicherheitdortmund.de>Value for the permeation: Level \leq 6

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**



Tightly sealed goggles

- **Body protection:** Protective work clothing

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form:	Fluid
Colour:	Not determined.
· Odour:	Solvent-like
· Odour threshold:	Not determined.

- pH-value: Not determined.

- **Change in condition**

Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	36.1 °C

- Flash point: -35 °C
Basis: active substance

- Flammability (solid, gas): Not applicable.

- Ignition temperature: 285 °C

- Decomposition temperature: Not determined.

- Auto-ignition temperature: Product is not selfigniting.

- Explosive properties: Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

- **Explosion limits:**

Lower:	1.4 Vol %
Upper:	12 Vol %

- Vapour pressure at 20 °C: 573 hPa

· Density at 20 °C:	0.8 g/cm ³
· Relative density	Not determined.
· Vapour density	Not determined.
· Evaporation rate	Not determined.

- Solubility in / Miscibility with water: Not miscible or difficult to mix.

- Partition coefficient: n-octanol/water: Not determined.

(Contd. on page 7)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 6)

- **Viscosity:**
- Dynamic: Not determined.
- Kinematic: Not determined.
- Organic solvents: 92.0 %
- VOC (EU) 92.00 %
- **9.2 Other information** No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.

- **LD/LC50 values relevant for classification:**

67-63-0 2-Propanol

Oral	LD50	5,045 mg/kg (rat)
Dermal	LD50	12,800 mg/kg (rbt)
Inhalative	LC50/4 h	30 mg/l (rat)

- **Primary irritant effect:**
- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
- **Serious eye damage/irritation**
Causes serious eye irritation.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure**
May cause drowsiness or dizziness.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard**
May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish

(Contd. on page 8)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 7)

- **Additional ecological information:**
- **General notes:**
Water hazard class 2 (German Regulation) : hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Toxic for aquatic organisms
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Eliminate the pure, unchanged substance in accordance with local regulations.
- **Waste disposal key:**
For this product no waste key number can be specified, because only the intended purpose permits an allocation. The waste key number is to be specified in arrangement with the regional waste disposal.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|--|---------------------------------------|
| 14.1 UN-Number | |
| ADR, IMDG, IATA | UN1263 |
| 14.2 UN proper shipping name | |
| ADR | 1263 PAINT, ENVIRONMENTALLY HAZARDOUS |
| IMDG | PAINT (PENTANES), MARINE POLLUTANT |
| IATA | PAINT |
| 14.3 Transport hazard class(es) | |
| ADR | |
| | |
| Class | 3 (F1) Flammable liquids. |
| Label | 3 |
| | |
| IMDG | |
| | |
| Class | 3 Flammable liquids. |

(Contd. on page 9)

Safety data sheet


according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 8)

· Label	3
· IATA	
	
· Class	3 Flammable liquids.
· Label	3
· 14.4 Packing group	
· ADR, IMDG, IATA	II
· 14.5 Environmental hazards:	Product contains environmentally hazardous substances: pentane
· Marine pollutant:	Symbol (fish and tree)
· Special marking (ADR):	Symbol (fish and tree)
· 14.6 Special precautions for user	Warning: Flammable liquids.
· Danger code (Kemler):	33
· EMS Number:	F-E, S-E
· Stowage Category	B
· 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· Transport category	2
· Tunnel restriction code	D/E
· IMDG	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 1263 PAINT, 3, II, ENVIRONMENTALLY HAZARDOUS

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- Directive 2012/18/EU
- Named dangerous substances - ANNEX I None of the ingredients is listed.
- Seveso category
E2 Hazardous to the Aquatic Environment
P5c FLAMMABLE LIQUIDS
- Qualifying quantity (tonnes) for the application of lower-tier requirements 200 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements 500 t
- REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

(Contd. on page 10)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 04.03.2019

Revision: 04.03.2019

Trade name: REFLECON® tarnish-30-HC

(Contd. of page 9)

- **National regulations:**
- **Waterhazard class:** Water hazard class 2 : hazardous for water.
- **VOC (EU)** 736.0 g/l
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

The data in this safety data sheet are based on our knowledge at the time of the revision. The information should give you reference points for a safe handling of the product specified in this safety data sheet. The data are not transferable to other products. If the product specified in this safety data sheet is mixed or processed with other materials, the data cannot be transferred without examination.

- **Relevant phrases**

The wording of the listed risk phrases are those of the individual raw materials.

H225 Highly flammable liquid and vapour.

H304 May be fatal if swallowed and enters airways.

H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

H411 Toxic to aquatic life with long lasting effects.

- **Recommended restriction of use**

Existing national and local laws concerning chemicals are to be considered.

- **Department issuing SDS:**

MR Chemie GmbH, Dep. safety data sheets, Tel.: +49/(0)2303/95151-38

- **Contact:**

MR Chemie GmbH, Dep. safety data sheets, Tel.: +49/(0)2303/95151-38, QS@mr-chemie.de

- **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Flammable liquids – Category 2

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

Asp. Tox. 1: Aspiration hazard – Category 1

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

- * **Data compared to the previous version altered.**