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

· **1.1 Product identifier**
· **Trade name: MR® 88 Remover Aerosol**
· **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
PC9a Coatings and paints, thinners, paint removers
PC35 Washing and cleaning products (including solvent based products)
· **Process category**
PROC7 Industrial spraying
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC13 Treatment of articles by dipping and pouring
· **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**
Testing material for nondestructive surface crack detection

· **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

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)

(WISAG FMO Cargo Service GmbH & CO.KG)

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SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**

GHS02 flame

Aerosol 1 H222-H229 Extremely flammable aerosol. Pressurised container: May burst if heated.

· **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

· **Signal word** Danger
· **Hazard statements**
H222-H229 Extremely flammable aerosol. Pressurised container: May burst if heated.
· **Precautionary statements**
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211 Do not spray on an open flame or other ignition source.
P251 Do not pierce or burn, even after use.
P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.
· **Additional information:**
EUH066 Repeated exposure may cause skin dryness or cracking.
Buildup of explosive mixtures possible without sufficient ventilation.
· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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SECTION 3: Composition/information on ingredients

· **3.2 Chemical characterisation: Mixtures**
· **Description:** Mixture of substances listed below with nonhazardous additions.

· **Dangerous components:**			
CAS: 64-17-5 EINECS: 200-578-6 Reg.nr.: 01-2119457610-43-XXXX	ethanol	Flam. Liq. 2, H225	60-70%
CAS: 74-98-6 EINECS: 200-827-9 Reg.nr.: 01-2119486944-21-XXXX	propane	Flam. Gas 1, H220 Press. Gas (Comp.), H280	25-30%
CAS: 106-97-8 EINECS: 203-448-7 Reg.nr.: 01-2119474691-32-XXXX	butane	Flam. Gas 1, H220 Acute Tox. 3, H331 Press. Gas (Comp.), H280	15-20%
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	<1%

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

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SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:**
Take affected persons out into the fresh air.
Immediately remove any clothing soiled by the product.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:**
If skin irritation continues, consult a doctor.
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:** Not relevant - aerosol can.
· **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.

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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.
· **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:** Do not allow to enter sewers/ surface or ground water.
· **6.3 Methods and material for containment and cleaning up:**
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
· **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.

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SECTION 7: Handling and storage

· **7.1 Precautions for safe handling** No special precautions are necessary if used correctly.

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· **Information about fire - and explosion protection:**
Do not spray onto a naked flame or any incandescent material.
Keep ignition sources away - Do not smoke.
Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C, e.g. electric lights. Do not pierce or burn, even after use.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
Store in a cool location.
Observe official regulations on storing packagings with pressurised containers.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Protect from heat and direct sunlight.
· **7.3 Specific end use(s)** No further relevant information available.

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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:**	
64-17-5 ethanol	
WEL (Great Britain)	Long-term value: 1920 mg/m³, 1000 ppm
AGW (Germany)	Long-term value: 960 mg/m³, 500 ppm 2(II);DFG, Y
74-98-6 propane	
AGW (Germany)	Long-term value: 1800 mg/m³, 1000 ppm 4(II);DFG
106-97-8 butane	
WEL (Great Britain)	Short-term value: 1810 mg/m³, 750 ppm Long-term value: 1450 mg/m³, 600 ppm Carc (if more than 0.1% of buta-1.3-diene)
AGW (Germany)	Long-term value: 2400 mg/m³, 1000 ppm 4(II);DFG
67-63-0 2-Propanol	
WEL (Great Britain)	Short-term value: 1250 mg/m³, 500 ppm Long-term value: 999 mg/m³, 400 ppm
AGW (Germany)	Long-term value: 500 mg/m³, 200 ppm 2(II);DFG, Y

· **DNELs**		
64-17-5 ethanol		
Dermal	Long-term - systemic effects, worker	343 mg/kg bw/day (worker)
Inhalative	Acute - local effects, worker	1,900 mg/m³ (worker)
	Long-term - systemic effects, worker	950 mg/m³ (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/m³ (worker)

· **PNECs**	
64-17-5 ethanol	
Aquatic compartment, freshwater	0.96 mg/L (freshwater)
Aquatic compartment - marine water	0.79 mg/L (marine water)

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Aquatic compartment - water intermittent releases	2.75 mg/L (intermittent release water)
Aquatic compartment- sediment in freshwater	3.6 mg/kg sed dw (sediment fresh water)
Aquatic compartment sediment in marine water	2.9 mg/kg sed dw (sediment marine water)
Terrestrial compartment - soil	0.63 mg/kg dw (soil)
Sewage treatment plant	580 mg/L (sewage treatment plant)
Oral secondary poisoning	0.72 mg/kg food (food secundary poisoning)
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 secundary 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:** Wash hands before breaks and at the end of work.
· **Respiratory protection:**
Filter AX
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:**
Check protective gloves prior to each use for their proper condition.
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**
Butyl rubber, BR
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.
· **Penetration time of glove material**
Value for the permeation: Level ≤ 6

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

· **Eye protection:** With danger of the eye contact closing eye protector.
· **Body protection:** Protective work clothing

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SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Aerosol
Colour:	Colourless
· **Odour:**	Characteristic
· **Odour threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	Not applicable, as aerosol.
· **Flash point:**	-97°C Basis: propellant
· **Flammability (solid, gas):**	Not applicable.
· **Ignition temperature:**	Not determined - aerosol.
· **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:	1,5Vol %
Upper:	15Vol %
· **Vapour pressure at 20°C:**	8.300hPa Basis: propellant
· **Density at 20°C:**	0,79g/cm³ Basis: active substance
· **Relative density**	Not determined.
· **Vapour density**	Not determined.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with water:**	Not miscible or difficult to mix.
· **Partition coefficient: n-octanol/water:**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.

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Organic solvents:	100,0%
VOC (EU)	100%
Solids content:	0,0%
· **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:**
Danger of bursting of the aerosol can during overheating
· **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.

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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:**		
64-17-5 ethanol		
Oral	LD50	7,060 mg/kg (rat)
Inhalative	LC50/4 h	20,000 mg/l (rat)
106-97-8 butane		
Inhalative	LC50/4 h	658 mg/l (rat)
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** Based on available data, the classification criteria are not met.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **CMR effects (carcinogenity, 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** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

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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.

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· **Additional ecological information:**
· **General notes:**
Do not allow product to reach ground water, water course or sewage system.
Water hazard class 1: weakly water-endangering
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Other adverse effects** No further relevant information available.

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SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Eliminate the pure, unchanged substance in accordance with local regulations.
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· **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.
The indications for Waste key reflect the pure unmodified product and are only a recommendation.

· **European waste catalogue**	
14 06 03*	other solvents and solvent mixtures

· **Uncleaned packaging:**
· **Recommendation:** Disposal must be made according to official regulations.

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SECTION 14: Transport information

· **14.1 UN-Number**	
· **ADR, IMDG, IATA**	UN1950
· **14.2 UN proper shipping name**	
· **ADR**	1950 AEROSOLS
· **IMDG**	AEROSOLS
· **IATA**	AEROSOLS, flammable
· **14.3 Transport hazard class(es)**	
· **ADR**	

· **Class**	2 5F Gases.
· **Label**	2.1
· **IMDG, IATA**	

· **Class**	2.1
· **Label**	2.1

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· **14.4 Packing group**	
· **ADR, IMDG, IATA**	Void
· **14.5 Environmental hazards:**	
· **Marine pollutant:**	No
· **14.6 Special precautions for user**	Warning: Gases.
· **Danger code (Kemler):**	-
· **EMS Number:**	F-D,S-U
· **Stowage Code**	SW1 Protected from sources of heat. SW22 For AEROSOLS with a maximum capacity of 1 litre: Category A. For AEROSOLS with a capacity above 1 litre: Category B. For WASTE AEROSOLS: Category C, Clear of living quarters.
· **Segregation Code**	SG69 For AEROSOLS with a maximum capacity of 1 litre: Segregation as for class 9. Stow "separated from" class 1 except for division 1.4. For AEROSOLS with a capacity above 1 litre: Segregation as for the appropriate subdivision of class 2. For WASTE AEROSOLS: Segregation as for the appropriate subdivision of class 2.
· **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **ADR**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E0 Not permitted as Excepted Quantity
· **Transport category**	2
· **Tunnel restriction code**	D
· **IMDG**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E0 Not permitted as Excepted Quantity
· **UN "Model Regulation":**	UN1950, AEROSOLS, 2.1

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SECTION 15: Regulatory information

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

· **Directive 2012/18/EU**
· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 150 t
· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 500 t
· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3

· **National regulations:**

· **Waterhazard class:**
Water hazard class 1: slightly hazardous for water.(In accordance with classification VwVwS,appendix 4)
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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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.
H220 Extremely flammable gas.
H225 Highly flammable liquid and vapour.
H280 Contains gas under pressure; may explode if heated.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H336 May cause drowsiness or dizziness.

· **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. Gas 1: Flammable gases – Category 1
Aerosol 1: Aerosols – Category 1
Press. Gas (Comp.): Gases under pressure – Compressed gas
Flam. Liq. 2: Flammable liquids – Category 2
Acute Tox. 3: Acute toxicity – Category 3
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

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