



## Safety Data Sheet according to (EC) No 1907/2006 as amended

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BONDERITE M-CR 1500 AERO known as Alodine 1500

SDS No. : 46698  
V014.0

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

#### 1.1. Product identifier

BONDERITE M-CR 1500 AERO known as Alodine 1500

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

Intended use:

Chromating Products for Metals

Surface treatment for applications in the aeronautics and aerospace industries, unrelated to functional chrome plating or functional chrome plating with decorative character, where any of the following key functionalities is necessary for the intended use: corrosion resistance / active corrosion inhibition, chemical resistance, hardness, adhesion promotion (adhesion to subsequent coating or paint), temperature resistance, resistance to embrittlement, wear resistance, surface properties impeding deposition of organisms, layer thickness, flexibility, and resistivity

#### 1.3. Details of the supplier of the safety data sheet

Henkel AG & Co. KGaA

Henkelstr. 67

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For Safety Data Sheet updates please visit our website <https://mysds.henkel.com/index.html#/appSelection> or [www.henkel-adhesives.com](http://www.henkel-adhesives.com).

[SDSinfo.Adhesive@henkel.com](mailto:SDSinfo.Adhesive@henkel.com)

#### 1.4. Emergency telephone number

The Henkel information service also provides an around-the-clock telephone service on phone no.+49-(0)211-797-3350 for exceptional cases.

**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

**Classification (CLP):**

Acute toxicity H302 Harmful if swallowed. Route of Exposure: Oral	Category 4
Acute toxicity H332 Harmful if inhaled. Route of Exposure: Inhalation	Category 4
Acute toxicity H312 Harmful in contact with skin. Route of Exposure: Dermal	Category 4
Skin corrosion H314 Causes severe skin burns and eye damage.	Category 1B
Serious eye damage H318 Causes serious eye damage.	Category 1
Respiratory sensitizer H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.	Category 1
Skin sensitizer H317 May cause an allergic skin reaction.	Category 1
Germ cell mutagenicity H340 May cause genetic defects.	Category 1B
Carcinogenicity H350 May cause cancer.	Category 1A
Toxic to reproduction H361f Suspected of damaging fertility.	Category 2
Specific target organ toxicity - single exposure H335 May cause respiratory irritation. Target organ: respiratory tract irritation	Category 3
Specific target organ toxicity - repeated exposure H373 May cause damage to organs through prolonged or repeated exposure.	Category 2
Chronic hazards to the aquatic environment H411 Toxic to aquatic life with long lasting effects.	Category 2

**2.2. Label elements**

**Label elements (CLP):**

**Hazard pictogram:**



**Contains**

Chromium trioxide

Dihydrogen hexafluorozirconate(2-)

**Signal word:**

Danger

<b>Hazard statement:</b>	H340 May cause genetic defects. H350 May cause cancer. H302 Harmful if swallowed. H312 Harmful in contact with skin. H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H332 Harmful if inhaled. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335 May cause respiratory irritation. H361f Suspected of damaging fertility. H373 May cause damage to organs through prolonged or repeated exposure. H411 Toxic to aquatic life with long lasting effects.
<b>Supplemental information</b>	Restricted to professional users.
<b>Precautionary statement: Prevention</b>	P201 Obtain special instructions before use. P260 Do not breathe mist/spray. P280 Wear protective gloves/protective clothing/eye protection/face protection.
<b>Precautionary statement: Response</b>	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. P310 Immediately call a POISON CENTER or doctor. P308+P313 IF exposed or concerned: Get medical advice/attention.

**Authorisation Numbers :** REACH/20/18/17

### 2.3. Other hazards

None if used properly.

Following substances are present in a concentration  $\geq$  the concentration limit for depiction in Section 3 and fulfill the criteria for PBT/vPvB, or were identified as endocrine disruptor (ED):

This mixture does not contain any substances in a concentration  $\geq$  the concentration limit for depiction in Section 3 that are assessed to be a PBT, vPvB or ED.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

**Declaration of the ingredients according to CLP (EC) No 1272/2008:**

Hazardous components CAS-No. EC Number REACH-Reg No.	Concentration	Classification	Specific Conc. Limits, M-factors and ATEs	Add. Information
Chromium trioxide 1333-82-0 215-607-8 01-2119458868-17	1- < 5 %	Aquatic Acute 1, H400 Aquatic Chronic 1, H410 Ox. Sol. 1, H271 Acute Tox. 3, Oral, H301 Acute Tox. 2, Dermal, H310 Acute Tox. 2, Inhalation, H330 Skin Corr. 1A, H314 Skin Sens. 1, H317 Resp. Sens. 1, H334 Muta. 1B, H340 Carc. 1A, H350 Repr. 2, H361f STOT RE 1, H372	STOT SE 3; H335; C >= 1 % ===== M acute = 1 M chronic = 1 ===== inhalation:ATE = 0,186 mg/l;dust/mist	SVHC EU OEL
Dihydrogen hexafluoro-zirconate(2-) 12021-95-3 234-666-0 01-2119978267-22	1- < 3 %	Acute Tox. 3, Oral, H301 Acute Tox. 3, Dermal, H311 Skin Corr. 1B, H314 Acute Tox. 3, Inhalation, H331 Met. Corr. 1, H290		EU OEL
ammonia, aqueous solution 1336-21-6 215-647-6 01-2119488876-14	0,1- < 1 %	Aquatic Acute 1, H400 Aquatic Chronic 2, H411 Skin Corr. 1B, H314 Acute Tox. 4, Inhalation, H332 STOT SE 3, H335	STOT SE 3; H335; C >= 5 % ===== M acute = 1 ===== inhalation:	EU OEL

If no ATE values are displayed, please refer to LD/LC50 values in Section 11.  
For full text of the H - statements and other abbreviations see section 16 "Other information".

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**Inhalation:**  
Fresh air, oxygen supply, warmth; seek specialist medical attention.

**Skin contact:**  
Immediately rinse with copious amounts of running water (for 10 minutes). Remove contaminated clothes. Put on a bandage with sterile gauze, seek medical attention in hospital.

**Eye contact:**  
Immediately flush eyes with soft jet of water or eye rinse solution for at least 15 minutes. Hold eyelid wide-open. Seek a doctor/hospital, eye flushing should continue during transportation to a doctor.

**Ingestion:**  
Rinse out mouth, drink 1-2 glasses of water, do not induce vomiting.  
Immediate medical treatment necessary.

**4.2. Most important symptoms and effects, both acute and delayed**  
RESPIRATORY: Irritation, coughing, shortness of breath, chest tightness.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

INGESTION: Nausea, vomiting, diarrhea, abdominal pain.

Causes burns.

**4.3. Indication of any immediate medical attention and special treatment needed**  
See section: Description of first aid measures

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media:

All common extinguishing agents are suitable.

#### Extinguishing media which must not be used for safety reasons:

None known

### 5.2. Special hazards arising from the substance or mixture

Formation of toxic gases is possible during heating or in fires.

### 5.3. Advice for firefighters

Wear protective equipment.

Wear self-contained breathing apparatus.

#### Additional information:

Cool endangered containers with water spray jet.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes.

Keep unprotected persons away.

### 6.2. Environmental precautions

Do not empty into drains / surface water / ground water.

### 6.3. Methods and material for containment and cleaning up

Dispose of contaminated material as waste according to Section 13.

Neutralize with acid-binding material (e.g. powdered limestone).

Take up with liquid-absorbing material (sand).

Do not use any organic materials (e.g. sawmill waste).

### 6.4. Reference to other sections

See advice in section 8

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

When diluting, always stir slowly the product into standing water.

Avoid skin and eye contact.

Ensure that workrooms are adequately ventilated.

See advice in section 8

#### Hygiene measures:

Wash hands before work breaks and after finishing work.

Do not eat, drink or smoke when using this product.

Wash contaminated clothing before reuse.

The workplace should be equipped with an emergency shower and eye-rinsing facility.

### 7.2. Conditions for safe storage, including any incompatibilities

Store only in the original container.

The alterations have no negative influence on the product quality and stability.

Alterations are reversible after warming to room temperature.

Do not use packing made of metal.

Keep container in a well ventilated place.

Keep container tightly sealed.

Store in a cool place.

Must be stored in a room with spill collection facilities.

Do not store near sources of heat or ignition, or reactive materials.

Do not store together with flammable substances/solutions.

Do not store together with substances which can be oxidized.

Do not store together with strong bases or very alkaline substances.

**7.3. Specific end use(s)**

Chromating Products for Metals

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational Exposure Limits

Valid for  
Germany

Ingredient [Regulated substance]	ppm	mg/m <sup>3</sup>	Value type	Short term exposure limit category / Remarks	Regulatory list
Chromium trioxide 1333-82-0 [CHROMIUM METAL, INORGANIC CHROMIUM(II) COMPOUNDS AND INORGANIC CHROMIUM(III) COMPOUNDS (INSOLUBLE)]		2	Time Weighted Average (TWA):	Indicative	ECLTV
Chromium trioxide 1333-82-0 [CHROMIUM (VI) COMPOUNDS]		0,005	Time Weighted Average (TWA):	This limit does not apply until: 17 January 2025	EU OELIII
Chromium trioxide 1333-82-0 [CHROMIUM (VI) COMPOUNDS, AS CHROMIUM, FUMES]		0,025	Time Weighted Average (TWA):		EU OELIII
Chromium trioxide 1333-82-0 [CHROMIUM (VI) COMPOUNDS]		0,01	Time Weighted Average (TWA):		EU OELIII
Chromium trioxide 1333-82-0 [CHROMIUM (VI) COMPOUNDS]		0,025	Time Weighted Average (TWA):		EU OELIII
Chromium trioxide 1333-82-0		2	Exposure limit(s):	1	TRGS 900
Chromium trioxide 1333-82-0			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
Chromium trioxide 1333-82-0 [Chromium VI compounds (Inhalable Fraction) (as Cr)]			Tolerance Concentration (4 x 10 <sup>-3</sup> ):		TRGS 910
Chromium trioxide 1333-82-0 [Chromium VI compounds (Inhalable Fraction) (as Cr)]			Excursion factor:	8 Factor by which the average shift value (SMW) can be exceeded four times per shift during a maximum. period of 15 minutes each.	TRGS 910
Dihydrogen hexafluorozirconate(2-) 12021-95-3 [FLUORIDES, INORGANIC]		2,5	Time Weighted Average (TWA):	Indicative	ECLTV
Dihydrogen hexafluorozirconate(2-) 12021-95-3			Short Term Exposure Classification:	Category II: substances with a resorptive effect.	TRGS 900
Dihydrogen hexafluorozirconate(2-) 12021-95-3			Skin designation:	Can be absorbed through the skin.	TRGS 900
Dihydrogen hexafluorozirconate(2-) 12021-95-3		1	Exposure limit(s):	4 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
Dihydrogen hexafluorozirconate(2-) 12021-95-3			Skin designation:	Can be absorbed through the skin.	TRGS 900
Dihydrogen hexafluorozirconate(2-) 12021-95-3		1	Exposure limit(s):	4 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
Dihydrogen hexafluorozirconate(2-) 12021-95-3			Short Term Exposure Classification:	Category II: substances with a resorptive effect.	TRGS 900
Ammonia, aqueous solution 1336-21-6 [AMMONIA, ANHYDROUS]	50	36	Short Term Exposure Limit (STEL):	Indicative	ECLTV
Ammonia, aqueous solution	20	14	Time Weighted Average	Indicative	ECLTV

1336-21-6 [AMMONIA, ANHYDROUS]			(TWA):		
Ammonia, aqueous solution 1336-21-6			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
Ammonia, aqueous solution 1336-21-6	20	14	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900

**Predicted No-Effect Concentration (PNEC):**

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
Chromium trioxide 1333-82-0	aqua (freshwater)		0,003 mg/l				
Chromium trioxide 1333-82-0	aqua (marine water)		0,003 mg/l				
Chromium trioxide 1333-82-0	sewage treatment plant (STP)		0,21 mg/l				
Chromium trioxide 1333-82-0	sediment (freshwater)				0,15 mg/kg		
Chromium trioxide 1333-82-0	sediment (marine water)					0,15 ng/kg	
Chromium trioxide 1333-82-0	Soil				0,031 mg/kg		
Chromium trioxide 1333-82-0	oral				17000000 mg/kg		
Dihydrogen hexafluorozirconate(2-) 12021-95-3	aqua (freshwater)		0,119 mg/l				
Dihydrogen hexafluorozirconate(2-) 12021-95-3	aqua (marine water)		0,119 mg/l				
Dihydrogen hexafluorozirconate(2-) 12021-95-3	aqua (intermittent releases)		0,078 mg/l				
Dihydrogen hexafluorozirconate(2-) 12021-95-3	sediment (freshwater)				21,1 mg/kg		
Dihydrogen hexafluorozirconate(2-) 12021-95-3	sediment (marine water)				4,22 mg/kg		
Dihydrogen hexafluorozirconate(2-) 12021-95-3	Soil				16,5 mg/kg		
Dihydrogen hexafluorozirconate(2-) 12021-95-3	Sewage treatment plant		1,29 mg/l				
ammonia, aqueous solution 1336-21-6	aqua (freshwater)		0,001 mg/l				
ammonia, aqueous solution 1336-21-6	aqua (marine water)		0,001 mg/l				
ammonia, aqueous solution 1336-21-6	aqua (intermittent releases)		0,0068 mg/l				
ammonia, aqueous solution 1336-21-6	Soil				0,022 mg/kg		



**Derived No-Effect Level (DNEL):**

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
Chromium trioxide 1333-82-0	Workers	Inhalation	Acute/short term exposure - local effects		0,01 mg/m <sup>3</sup>	
Chromium trioxide 1333-82-0	Workers	Inhalation	Long term exposure - local effects		0,01 mg/m <sup>3</sup>	
Dihydrogen hexafluorozirconate(2-) 12021-95-3	Workers	inhalation	Long term exposure - systemic effects		4,5 mg/m <sup>3</sup>	
Dihydrogen hexafluorozirconate(2-) 12021-95-3	Workers	inhalation	Acute/short term exposure - systemic effects		4,5 mg/m <sup>3</sup>	
Dihydrogen hexafluorozirconate(2-) 12021-95-3	Workers	inhalation	Long term exposure - local effects		4,5 mg/m <sup>3</sup>	
Dihydrogen hexafluorozirconate(2-) 12021-95-3	Workers	dermal	Long term exposure - systemic effects		65 mg/kg	
Dihydrogen hexafluorozirconate(2-) 12021-95-3	Workers	dermal	Acute/short term exposure - systemic effects		65 mg/kg	
ammonia, aqueous solution 1336-21-6	Workers	inhalation	Long term exposure - systemic effects		47,6 mg/m <sup>3</sup>	
ammonia, aqueous solution 1336-21-6	Workers	inhalation	Acute/short term exposure - systemic effects		47,6 mg/m <sup>3</sup>	
ammonia, aqueous solution 1336-21-6	Workers	inhalation	Long term exposure - local effects		14 mg/m <sup>3</sup>	
ammonia, aqueous solution 1336-21-6	Workers	Inhalation	Acute/short term exposure - local effects		36 mg/m <sup>3</sup>	
ammonia, aqueous solution 1336-21-6	Workers	dermal	Long term exposure - systemic effects		6,8 mg/kg	
ammonia, aqueous solution 1336-21-6	Workers	dermal	Acute/short term exposure - systemic effects		6,8 mg/kg	
ammonia, aqueous solution 1336-21-6	General population	inhalation	Long term exposure - systemic effects		23,8 mg/m <sup>3</sup>	
ammonia, aqueous solution 1336-21-6	General population	inhalation	Acute/short term exposure - systemic effects		23,8 mg/m <sup>3</sup>	
ammonia, aqueous solution 1336-21-6	General population	inhalation	Long term exposure - local effects		2,8 mg/m <sup>3</sup>	
ammonia, aqueous solution 1336-21-6	General population	inhalation	Acute/short term exposure - local effects		7,2 mg/m <sup>3</sup>	
ammonia, aqueous solution 1336-21-6	General population	dermal	Long term exposure - systemic effects		6,8 mg/kg	
ammonia, aqueous solution 1336-21-6	General population	dermal	Acute/short term exposure - systemic effects		6,8 mg/kg	
ammonia, aqueous solution 1336-21-6	General population	oral	Long term exposure - systemic effects		6,8 mg/kg	
ammonia, aqueous solution 1336-21-6	General population	oral	Acute/short term exposure - systemic effects		6,8 mg/kg	

**Biological Exposure Indices:**

Ingredient [Regulated substance]	Parameters	Biological specimen	Sampling time	Conc.	Basis of biol. exposure index	Remark	Additional Information
Dihydrogen hexafluorozirconate(2-) 12021-95-3 [Inorganic fluorine compounds (fluorides)]	Fluoride	Urine	Sampling time: End of shift.	4,0 mg/l	DE BGW		

**8.2. Exposure controls:****Engineering controls:**

Ensure good ventilation/suction at the workplace.

**Respiratory protection:**

In case of aerosol formation, we recommend wearing of appropriate respiratory protection equipment with ABEK P2 filter (EN 14387).

This recommendation should be matched to local conditions.

**Hand protection:**

Chemical-resistant protective gloves (EN 374). Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374): Polychloroprene (CR; >= 1 mm thickness) or natural rubber (NR; >=1 mm thickness) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Polychloroprene (CR; >= 1 mm thickness) or natural rubber (NR; >=1 mm thickness) This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

**Eye protection:**

Goggles which can be tightly sealed.

Protective eye equipment should conform to EN166.

**Skin protection:**

Protective clothing that covers arms and legs.

Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

**Advices to personal protection equipment:**

The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions. Personal protective equipment should conform to the relevant EN standard.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Delivery form	liquid
Colour	light red
Odor	slightly, ammoniacal
Physical state	liquid
Melting point	Not applicable, Product is a liquid
Solidification temperature	-4 - -2 °C (24.8 - 28.4 °F)
Initial boiling point	100 - 120 °C (212 - 248 °F)no method / method unknown
Flammability	The product is not flammable.
Explosive limits	Not applicable, The product is not flammable.
Flash point	> 93 °C (> 199.4 °F)
Auto-ignition temperature	Not applicable, The product is not flammable.
Decomposition temperature	Not applicable, Substance/mixture is not self-reactive, no organic peroxide and does not decompose under foreseen conditions of use
pH (20 °C (68 °F); Conc.: 1,0 % product; Solvent: Demineralised water)	2,3 - 2,7 None
pH	1,4 None

(20 °C (68 °F); Conc.: 1,0 % product; Solvent: Demineralised water)	
Viscosity (kinematic) (40 °C (104 °F); )	1 - 10 mm <sup>2</sup> /s
Solubility (qualitative) (20 °C (68 °F); Solvent: Water)	fully miscible
Partition coefficient: n-octanol/water	Not applicable
	Mixture
Vapour pressure (50 °C (122 °F))	102 - 132 mbar;no method / method unknown
Vapour pressure (20 °C (68 °F))	< 23 hPa
Density (20 °C (68 °F))	1,038 - 1,058 g/cm <sup>3</sup> None
Relative vapour density: (20 °C)	> 1
Particle characteristics	Not applicable Product is a liquid

## 9.2. Other information

Other information not applicable for this product

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reaction with strong bases

### 10.2. Chemical stability

Stable under recommended storage conditions.

### 10.3. Possibility of hazardous reactions

See section reactivity

### 10.4. Conditions to avoid

No decomposition if used according to specifications.

### 10.5. Incompatible materials

See section reactivity.

### 10.6. Hazardous decomposition products

None if used for intended purpose.

In case of fire toxic gases can be released.

## SECTION 11: Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Acute oral toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Chromium trioxide 1333-82-0	LD50	52 mg/kg	rat	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)

**Acute dermal toxicity:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Chromium trioxide 1333-82-0	LD50	57 mg/kg	rabbit	equivalent or similar to OECD Guideline 402 (Acute Dermal Toxicity)

**Acute inhalative toxicity:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Test atmosphere	Exposure time	Species	Method
Chromium trioxide 1333-82-0	Acute toxicity estimate (ATE)	0,186 mg/l	dust/mist	4 h		Expert judgement
ammonia, aqueous solution 1336-21-6	Acute toxicity estimate (ATE)	6570 ppm		4 h		Expert judgement

**Skin corrosion/irritation:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Chromium trioxide 1333-82-0	corrosive	24 h	rabbit	not specified
ammonia, aqueous solution 1336-21-6	corrosive	4 h	rabbit	equivalent or similar to OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

**Serious eye damage/irritation:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Chromium trioxide 1333-82-0	corrosive		rabbit	not specified
ammonia, aqueous solution 1336-21-6	corrosive			not specified

**Respiratory or skin sensitization:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Test type	Species	Method
ammonia, aqueous solution 1336-21-6	not sensitising	not specified	guinea pig	not specified

**Germ cell mutagenicity:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
Chromium trioxide 1333-82-0	positive	bacterial reverse mutation assay (e.g Ames test)	with and without		not specified
ammonia, aqueous solution 1336-21-6	negative	bacterial reverse mutation assay (e.g Ames test)	not specified		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
ammonia, aqueous solution 1336-21-6	negative	intraperitoneal		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

**Carcinogenicity**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Sex	Method
ammonia, aqueous solution 1336-21-6	not carcinogenic	oral: feed	104 w daily	rat		OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

**Reproductive toxicity:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Test type	Route of application	Species	Method
ammonia, aqueous solution 1336-21-6	NOAEL P 408 mg/kg	screening	oral: unspecified	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)

**STOT-single exposure:**

May cause respiratory irritation.

No substance data available.

**STOT-repeated exposure:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
Chromium trioxide 1333-82-0	NOAEL 0,0007 mg/l	inhalation	90 days täglich 20 Stunden	rat	not specified

**Aspiration hazard:**

No data available.

**11.2 Information on other hazards**

not applicable

## SECTION 12: Ecological information

### General ecological information:

Locally harmful for aquatic and landliving organisms because of low pH and corrosive properties.  
Do not empty into drains / surface water / ground water.

### 12.1. Toxicity

#### Toxicity (Fish):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Chromium trioxide 1333-82-0	LC50	52 mg/l	96 h	Carassius auratus	OECD Guideline 203 (Fish, Acute Toxicity Test)
Chromium trioxide 1333-82-0	NOEC	0,105 mg/l	60 d	Salvelinus namaycush	OECD Guideline 210 (fish early lite stage toxicity test)
Dihydrogen hexafluorozirconate(2-) 12021-95-3	LC50	172,4 mg/l	96 h	Danio rerio	OECD Guideline 203 (Fish, Acute Toxicity Test)
ammonia, aqueous solution 1336-21-6	LC50	0,16 - 1,1 mg/l	96 h	Salmo gairdneri (new name: Oncorhynchus mykiss)	OECD Guideline 203 (Fish, Acute Toxicity Test)
ammonia, aqueous solution 1336-21-6	NOEC	< 0,048 mg/l	31 d	Channel catfish	OECD Guideline 215 (Fish, Juvenile Growth Test)

#### Toxicity (aquatic invertebrates):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Dihydrogen hexafluorozirconate(2-) 12021-95-3	EC50	151,4 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
ammonia, aqueous solution 1336-21-6	EC50	25,4 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

#### Chronic toxicity (aquatic invertebrates):

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
ammonia, aqueous solution 1336-21-6	NOEC	0,79 mg/l	96 h	Daphnia magna	EPA OPPTS 850.1300 (Daphnid Chronic Toxicity Test)

#### Toxicity (Algae):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Chromium trioxide 1333-82-0	EC50	0,5 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Dihydrogen hexafluorozirconate(2-) 12021-95-3	EC50	10,66 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Dihydrogen hexafluorozirconate(2-) 12021-95-3	EC10	1,63 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
ammonia, aqueous solution 1336-21-6	EC50	> 1.000 mg/l	72 h	Skeletonema costatum	ISO 10253 (Water quality)
ammonia, aqueous solution 1336-21-6	NOEC	1.000 mg/l	72 h	Skeletonema costatum	ISO 10253 (Water quality)

#### Toxicity (microorganisms):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Chromium trioxide 1333-82-0	EC0	1 mg/l			not specified

#### 12.2. Persistence and degradability

No data available.

#### 12.3. Bioaccumulative potential

No data available.

**12.4. Mobility in soil**

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	LogPow	Temperature	Method
ammonia, aqueous solution 1336-21-6	-1,14		EU Method A.8 (Partition Coefficient)

**12.5. Results of PBT and vPvB assessment**

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	PBT / vPvB
Chromium trioxide 1333-82-0	According to Annex XIII of regulation (EC) 1907/2006 a PBT and vPvB assessment shall not be conducted for inorganic substances.
Dihydrogen hexafluorozirconate(2-) 12021-95-3	According to Annex XIII of regulation (EC) 1907/2006 a PBT and vPvB assessment shall not be conducted for inorganic substances.
ammonia, aqueous solution 1336-21-6	According to Annex XIII of regulation (EC) 1907/2006 a PBT and vPvB assessment shall not be conducted for inorganic substances.

**12.6. Endocrine disrupting properties**

not applicable

**12.7. Other adverse effects**

If acidic or alkaline products are discharged into wastewater installations care must be taken that the discharged wastewater has a pH in the range pH 6 - 10, as pH variations could cause disorders in wastewater channels and biological sewage treatment plants. The local discharge regulations take precedence.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods**

Product disposal:

In consultation with the responsible local authority, must be subjected to special treatment.

Waste code

060405

The valid EWC waste code numbers are source-related. The manufacturer is therefore unable to specify EWC waste codes for the articles or products used in the various sectors. The EWC codes listed are intended as a recommendation for users. We will be happy to advise you.



**SECTION 14: Transport information****14.1. UN number or ID number**

ADR	3264
RID	3264
ADN	3264
IMDG	3264
IATA	3264

**14.2. UN proper shipping name**

ADR	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Chromic acid,Hexafluoro zirconic acid)
RID	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Chromic acid,Hexafluoro zirconic acid)
ADN	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Chromic acid,Hexafluoro zirconic acid)
IMDG	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Chromic acid,Hexafluoro zirconic acid)
IATA	Corrosive liquid, acidic, inorganic, n.o.s. (Chromic acid,Hexafluoro zirconic acid)

**14.3. Transport hazard class(es)**

ADR	8
RID	8
ADN	8
IMDG	8
IATA	8

**14.4. Packing group**

ADR	II
RID	II
ADN	II
IMDG	II
IATA	II

**14.5. Environmental hazards**

ADR	Environmentally Hazardous
RID	Environmentally Hazardous
ADN	Environmentally Hazardous
IMDG	Marine Pollutant
IATA	not applicable

**14.6. Special precautions for user**

ADR	not applicable Tunnelcode: (E)
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

**14.7. Maritime transport in bulk according to IMO instruments**

not applicable

**SECTION 15: Regulatory information**

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

Ozone Depleting Substance (ODS) (Regulation (EC) No 1005/2009):	Not applicable
Prior Informed Consent (PIC) (Regulation (EU) No 649/2012):	Not applicable
Persistent organic pollutants (Regulation (EU) 2019/1021):	Not applicable

**Specific Conditions and Monitoring requirements for authorised uses**

Authorisation valid for

CAS 1333-82-0

Chromium trioxide

<p>Authorisation Numbers :</p> <p>Authorised Use</p>	<p><b>REACH/20/18/17</b></p> <p>Surface treatment for applications in the aeronautics and aerospace industries, unrelated to functional chrome plating or functional chrome plating with decorative character, where any of the following key functionalities is necessary for the intended use: corrosion resistance / active corrosion inhibition, chemical resistance, hardness, adhesion promotion (adhesion to subsequent coating or paint), temperature resistance, resistance to embrittlement, wear resistance, surface properties impeding deposition of organisms, layer thickness, flexibility, and resistivity</p>
<p>Monitoring Requirements</p>	<p>The authorisation holders and the downstream users shall implement the following monitoring programmes for chromium (VI):</p> <p>(a) At least annual air monitoring programmes on occupational exposure to chromium (VI) in accordance with Article 5(5)(e) of Directive 2004/37/EC. The first measurements shall be performed without delay and at the latest on 18 June 2021. Those programmes shall be based on relevant standard methodologies or protocols and be representative of:</p> <ul style="list-style-type: none"> <li>(i) the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers;</li> <li>(ii) the operational conditions and risk management measures typical for each of those tasks;</li> <li>(iii) the number of workers potentially exposed;</li> </ul> <p>(b) At least annual monitoring programmes for chromium (VI) emissions into wastewater and air from local exhaust ventilation. Those programmes shall be based on relevant standard methodologies or protocols and be representative of the operational conditions and risk management measures (such as waste water treatment systems, gaseous emission abatement techniques) used at the individual sites where relevant measurements are carried out.</p> <p>The downstream users shall make available to the Agency the information collected from the monitoring programmes as described above, including the contextual information related to each set of measurements, in the format of the template available on the ECHA website <a href="http://www.echa.europa.eu/web/guest/support/dossier-submission-tools/reach-it/downstream-user-authorized-use">www.echa.europa.eu/web/guest/support/dossier-submission-tools/reach-it/downstream-user-authorized-use</a>, for the first time by 18 December 2021, for transmission to the authorisation holders for the purpose of verifying and validating the exposure scenarios and for the preparation of the review report.</p>
<p>Conditions</p>	<p>The conditions set out in the following paragraphs shall apply to the authorisation bearing numbers REACH/20/18/0 to REACH/20/18/27.</p> <ol style="list-style-type: none"> <li>1. The authorisation holders shall make available the specific exposure scenarios to the downstream users to whom this Decision applies by virtue of Article 56(2) of Regulation (EC) No 1907/2006 ('downstream users'), in an updated safety data sheet, at the latest on 18 March 2021. The authorisation holders and the downstream users shall apply the risk management measures and operational conditions included in the specific exposure scenarios without undue delay.</li> <li>2. The authorisation holders shall verify and validate the specific exposure scenarios referred to in paragraph 2 at the latest on 18 June 2022 by making an analysis of tasks, using exposure and emission data measured by downstream users and related contextual information and by means of monitoring programmes of occupational exposure and environmental releases measurements, relating to all processes described for the authorised uses. The validated and verified exposure scenarios shall immediately be made available to the downstream users.</li> <li>3. The information to be made available to downstream users as referred to in paragraphs 1 and 2 shall include detailed guidance on how to select and apply risk management measures. The authorisation holders and the downstream users shall</li> </ol>

submit that information to the competent authorities of the Member States where the authorised uses take place upon request.

The authorisation bearing numbers REACH/20/18/14 to REACH/20/18/27 shall be subject to the following condition: as regards spraying operations, the downstream users shall apply the risk management measures and operational conditions set out in the Annex. The area in which spraying operations take place shall be restricted either physically by means of barriers and signalling or through the implementation of strict procedures during the activity, which shall continue being applied for a specified time after the spray application has ceased. Workers shall not remove the respiratory protective equipment (RPE) used in spraying operations until they have left the area of application.

The authorisation bearing numbers REACH/20/18/21 to REACH/20/18/27 shall be subject to the condition that the authorisation holders and the downstream users ensure that there is no chromium (VI) above the detectable level present in articles for supply to the general public.

VOC content (2010/75/EU) 0 %

**15.2. Chemical safety assessment**

A chemical safety assessment has been carried out.

**National regulations/information (Germany):**

WGK: WGK 3: highly hazardous to water (Ordinance on facilities for handling substances that are hazardous to water (AwSV) )  
 Classification according to AwSV, Annex 1 (5.2)

Storage class according to TRGS 510: 6.1D

General remarks (DE): This product is in scope of the German regulation "ChemikalienVerbotsVerordnung"

## SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:

H271 May cause fire or explosion; strong oxidizer.  
 H290 May be corrosive to metals.  
 H301 Toxic if swallowed.  
 H310 Fatal in contact with skin.  
 H311 Toxic in contact with skin.  
 H314 Causes severe skin burns and eye damage.  
 H317 May cause an allergic skin reaction.  
 H330 Fatal if inhaled.  
 H331 Toxic if inhaled.  
 H332 Harmful if inhaled.  
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 H335 May cause respiratory irritation.  
 H340 May cause genetic defects.  
 H350 May cause cancer.  
 H361f Suspected of damaging fertility.  
 H372 Causes damage to organs through prolonged or repeated exposure.  
 H400 Very toxic to aquatic life.  
 H410 Very toxic to aquatic life with long lasting effects.  
 H411 Toxic to aquatic life with long lasting effects.

ED:	Substance identified as having endocrine disrupting properties
EU OEL:	Substance with a Union workplace exposure limit
EU EXPLD 1:	Substance listed in Annex I, Reg (EC) No. 2019/1148
EU EXPLD 2	Substance listed in Annex II, Reg (EC) No. 2019/1148
SVHC:	Substance of very high concern (REACH Candidate List)
PBT:	Substance fulfilling persistent, bioaccumulative and toxic criteria
PBT/vPvB:	Substance fulfilling persistent, bioaccumulative and toxic plus very persistent and very bioaccumulative criteria
vPvB:	Substance fulfilling very persistent and very bioaccumulative criteria

### Further information:

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This information is based on our current level of knowledge and relates to the product in the state in which it is delivered. It is intended to describe our products from the point of view of safety requirements and is not intended to guarantee any particular properties.

Dear Customer,

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**Relevant changes in this safety data sheet are indicated by vertical lines at the left margin in the body of this document. Corresponding text is displayed in a different color on shadowed fields.**

## Annex - Exposure Scenarios:

Exposure Scenarios for chromium trioxide can be downloaded under the following link:  
<https://mysds.henkel.com/index.html#/appSelection>