

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

### 1.1 Product identifier

**Product name** BONDERITE M-CR 600 CHROMATE COATING KNOWN AS ALODINE 600 20KG  
**Synonym(s)** NSN: XXXX-00-811-3723  
169622 (20KG), 169621 (500G) - PRODUCT CODES • 600 ALODINE • HENKEL ALODINE 600

### 1.2 Uses and uses advised against

**Use(s)** CONVERSION COATING

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

**Supplier name** HENKEL AUSTRALIA PTY LTD  
**Address** 135 - 141 Canterbury Road, Kilsyth, Victoria, Australia, 3137  
**Telephone** (03) 9724 6444  
**Fax** (03) 9728 5877  
**Email** msds@au.henkel.com  
**Website** <http://www.loctite.com.au>

### 1.4 Emergency telephone number(s)

**Emergency** 1800 032 379; (03) 9724 6556

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

**GHS Classification(s)** Oxidizing Solids: Category 1  
Acute Toxicity: Oral: Category 3  
Acute Toxicity: Skin: Category 3  
Skin Corrosion/Irritation: Category 1A  
Skin Sensitization: Category 1  
Serious Eye Damage / Eye Irritation: Category 1  
Acute Toxicity: Inhalation: Category 2  
Respiratory Sensitization: Category 1  
Germ Cell Mutagenicity: Category 1B  
Carcinogenicity: Category 1A  
Toxic to Reproduction: Category 2  
Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 1  
Aquatic Toxicity (Chronic): Category 1

### 2.2 Label elements

**Signal word**

**DANGER**

**Pictograms**



**Hazard statement(s)**

H271 May cause fire or explosion; strong oxidizer.  
H301 Toxic if swallowed.  
H311 Toxic in contact with skin.  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.  
H330 Fatal if inhaled.

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H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 H340 May cause genetic defects.  
 H350 May cause cancer.  
 H361 Suspected of damaging fertility or the unborn child.  
 H372 Causes damage to organs through prolonged or repeated exposure.  
 H410 Very toxic to aquatic life with long lasting effects.

**Prevention statement(s)**

P202 Do not handle until all safety precautions have been read and understood.  
 P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
 P220 Keep/Store away from clothing/incompatible materials/combustible materials.  
 P221 Take any precaution to avoid mixing with combustibles/incompatible materials.  
 P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
 P264 Wash thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P271 Use only outdoors or in a well-ventilated area.  
 P272 Contaminated work clothing should not be allowed out of the workplace.  
 P273 Avoid release to the environment. This statement does not apply where this is the intended use.  
 P280 Wear protective gloves/protective clothing/eye protection/face protection.  
 P283 Wear fire/flame resistant/retardant clothing.  
 P284 Wear respiratory protection.

**Response statement(s)**

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
 P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P306 + P360 IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.  
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
 P310 Immediately call a POISON CENTER or doctor/physician.  
 P320 Specific treatment is urgent - see first aid instructions (applies if immediate administration of antidote is required).  
 P363 Wash contaminated clothing before reuse.  
 P370 + P378 In case of fire: Use appropriate media for extinction (applies if water increases risk).  
 P371 + P380 + P375 In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.  
 P391 Collect spillage.

**Storage statement(s)**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed (applies if the substance is volatile so as to generate a hazardous atmosphere).  
 P405 Store locked up.

**Disposal statement(s)**

P501 Dispose of contents/container in accordance with relevant regulations.

**2.3 Other Hazards**

No information provided.

### 3. COMPOSITION/ INFORMATION ON INGREDIENTS

**3.1 Substances / Mixtures**

Ingredient	CAS number	EC number	Content
CHROMIUM TRIOXIDE	1333-82-0	215-607-8	30-60%
POTASSIUM FLUOBORATE	14075-53-7	237-928-2	30-60%
POTASSIUM FLUOROZIRCONATE	16923-95-8	240-985-6	10-30%

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## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

<b>Eye</b>	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
<b>Inhalation</b>	If inhaled, remove from contaminated area. To protect rescuer, use a Full-face Class P3 (Particulate) respirator where an inhalation risk exists. Apply artificial respiration if not breathing.
<b>Skin</b>	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
<b>Ingestion</b>	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).
<b>First aid facilities</b>	Eye wash facilities and safety shower should be available.

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

No information provided.

### 4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

## 5. FIREFIGHTING MEASURES

### 5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

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

Non flammable. May evolve toxic hexavalent chromium oxides when heated to decomposition. Oxidising agent - supports combustion. May evolve toxic fluorides when heated to decomposition.

### 5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

### 5.4 Hazchem code

1W	1	Water Jets
	W	Full protective equipment including Self Contained Breathing apparatus.

## 6. ACCIDENTAL RELEASE MEASURES

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

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Ventilate area where possible. Contact emergency services where appropriate.

### 6.2 Environmental precautions

Prevent product from entering drains and waterways.

### 6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.

### 6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

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## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

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

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Contamination with incompatibles may cause fire or explosion. Ensure packages are adequately labelled, protected from physical damage and sealed when not in use.

### 7.3 Specific end use(s)

No information provided.

## 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

### 8.1 Control parameters

#### Exposure standards

Substance	Reference	TWA		STEL	
		ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Chromium (VI) Compounds (as Cr), water insoluble	SWA (AUS)	--	0.05	--	--
Fluorides (as F)	SWA (AUS)	--	2.5	--	--

#### Biological limits

Ingredient	Reference	Determinant	Sampling time	BEI
CHROMIUM TRIOXIDE	ACGIH BEI	Total chromium in urine	End of shift at end of workweek	25 µg/L
	ACGIH BEI	Total chromium in urine	Increase during shift	10 µg/L

### 8.2 Exposure controls

#### Engineering Controls

Avoid inhalation. In a laboratory situation use under a fume cupboard or other localised extraction ventilation equipment. Maintain dust levels below the recommended exposure standard.

#### PPE

- Eye/Face** Wear a faceshield and dust-proof goggles.
- Hand** Wear rubber or butyl gloves.
- Body** Wear coveralls.
- Respiratory** Where an inhalation risk exists, wear an Air-line respirator or a Full-face Class P3 (Particulate) respirator.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Appearance	RED TO BROWN POWDER
Odour	ACIDIC ODOUR
Odour Threshold	NOT AVAILABLE
pH	2 (Approximately)
Melting Point	NOT AVAILABLE
Boiling Point	NOT AVAILABLE
Flash Point	NOT RELEVANT
Evaporation Rate	NOT AVAILABLE
Flammability	NON FLAMMABLE
Upper Explosion Limit	NOT RELEVANT

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<b>Lower Explosion Limit</b>	NOT RELEVANT
<b>Vapour Pressure</b>	NOT AVAILABLE
<b>Vapour Density</b>	NOT AVAILABLE
<b>Solubility (water)</b>	SOLUBLE
<b>Partition Coefficient</b>	NOT AVAILABLE
<b>Autoignition Temperature</b>	NOT AVAILABLE
<b>Decomposition Temperature</b>	NOT AVAILABLE
<b>Viscosity</b>	NOT AVAILABLE
<b>Explosive Properties</b>	NOT AVAILABLE
<b>Oxidising Properties</b>	OXIDISING SOLID
<b>Specific Gravity</b>	NOT AVAILABLE
<b>9.2 Other information</b>	
<b>% Volatiles</b>	NOT AVAILABLE

## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

Carefully review all information in sections 10.2 to 10.6.

### 10.2 Chemical stability

Stable under recommended conditions of storage.

### 10.3 Possibility of hazardous reactions

Polymerization is not expected to occur.

### 10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

### 10.5 Incompatible materials

Oxidising agent. Incompatible with combustible materials, reducing agents (e.g. sulphites), acids (e.g. nitric acid), alkalis (e.g. sodium hydroxide), metals, heat and ignition sources.

### 10.6 Hazardous decomposition products

May evolve toxic hexavalent chromium oxides when heated to decomposition. May evolve toxic fluorides when heated to decomposition.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

<b>Health hazard summary</b>	Carcinogenic - corrosive. This product has the potential to cause serious adverse health effects. Use safe work practices to avoid eye or skin contact and inhalation. May cause sensitisation by inhalation and skin contact. Hexavalent chromium compounds are classified as carcinogenic to humans (IARC Group 1). Workers exposed to chromium III compounds have been reported to develop chronic bronchitis after five years of exposure and pneumoconiosis after nine years of exposure. Toxicological studies of an ingredient in this product have shown that prolonged exposure to high vapor concentration or ingestion of high dose may cause birth defects and decreased fertility in laboratory animals. Studies on rodents have suggested that an ingredient in this product, when fed at high levels in the diet, may have cancer-causing potential.
<b>Eye</b>	Highly corrosive. Contact may result in irritation, lacrimation, pain, redness and corneal burns with possible permanent eye damage.
<b>Inhalation</b>	Carcinogenic - corrosive. Over exposure may result in mucous membrane irritation of the respiratory tract, coughing, ulceration and perforation of the nasal septum. May cause sensitisation by inhalation. Chronic exposure may result in liver, kidney and lung damage. Hexavalent chromium compounds are classified as carcinogenic to humans (IARC Group 1).
<b>Skin</b>	Corrosive. Contact may result in irritation, redness, pain, rash, dermatitis, ulceration and burns. May cause sensitisation by skin contact. May be absorbed through skin with harmful effects.
<b>Ingestion</b>	Toxic - corrosive. Ingestion may result in burns to the mouth and throat, nausea, vomiting, abdominal pain and ulceration. Chronic exposure may result in liver and kidney damage.
<b>Toxicity data</b>	CHROMIUM TRIOXIDE (1333-82-0) LD50 (Ingestion): 80 mg/kg (rat) LD50 (Intraperitoneal): 14 mg/kg (mouse) LD50 (Intravenous): 9260 ug/kg (rat)

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LDLo (Skin): 55 mg/kg (rat)  
 LDLo (Subcutaneous): 20 mg/kg (mouse)  
 TCLo (Inhalation): 110 ug/m<sup>3</sup> (human)  
 TDLo (Intravenous): 5 mg/kg (hamster)  
 TDLo (Subcutaneous): 20 mg/kg (mouse)  
 POTASSIUM FLUOBORATE (14075-53-7)  
 LD50 (Intraperitoneal): 240 mg/kg (rat)  
 POTASSIUM FLUOROZIRCONATE (16923-95-8)  
 LD50 (Ingestion): 98 mg/kg (mouse)

## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

Do not empty into drains, soil or bodies of water. Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Chromium and chromium compounds have high toxicity for water living organisms.

### 12.2 Persistence and degradability

No information provided.

### 12.3 Bioaccumulative potential

No information provided.

### 12.4 Mobility in soil

No information provided.

### 12.5 Results of PBT and vPvB assessment

No information provided.

### 12.6 Other adverse effects

WATER: Chromium (VI) may be reduced to Chromium (III) by organic matter present in water, and may eventually deposit in sediments. Toxic to microorganisms. May bioaccumulate. SOIL: Chromium in the soil may be transported from soil through runoff and leaching of water. ATMOSPHERE: Chromium is primarily removed from the atmosphere by fallout and precipitation and may enter surface water or soil.

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Waste disposal

Wearing personal protective equipment, cover with a WEAK reducing agent (e.g. sodium bisulphite, thiosulphate, or ferrous salt; but NOT sulphur, carbon or strong reducing agent). Mix well and spray with water. Add 3M sulphuric acid if sulphite or ferrous salt is used. Add to container of water and neutralise with soda ash. Collect and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).

#### Legislation

Dispose of in accordance with relevant local legislation.

## 14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE



Land Transport  
(ADG)

Sea Transport  
(IMDG/IMO)

Air Transport  
(IATA/ICAO)

### 14.1 UN number

1463

1463

1463

### 14.2 UN proper shipping name

CHROMIUM TRIOXIDE, ANHYDROUS

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#### 14.3 Transport hazard classes

DG division	5.1	5.1	5.1
Subsidiary risk(s)	6.1 / 8	6.1 / 8	6.1 / 8

#### 14.4 Packing group

II	II	II
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#### 14.5 Environmental hazards

Marine Pollutant

#### 14.6 Special precautions for user

Hazchem Code	1W	
EMS		F-A, S-Q

## 15. REGULATORY INFORMATION

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

**Poison schedule** A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

#### Classifications

C - Corrosive  
 Carc. - Carcinogen  
 Muta. - Mutagen  
 N - Dangerous for the environment  
 O - Oxidising  
 Repr. - Reproductive toxin  
 T - Toxic  
 T+ - Very toxic  
 Xi - Irritant

#### Risk phrases

R9: Explosive when mixed with combustible material.  
 R24/25: Toxic in contact with skin and if swallowed.  
 R26: Very toxic by inhalation.  
 R35: Causes severe burns.  
 R41: Risk of serious damage to eyes.  
 R42/43: May cause sensitisation by inhalation and skin contact.  
 R45: May cause cancer.  
 R46: May cause heritable genetic damage.  
 R48/23: Toxic: danger of serious damage to health by prolonged exposure through inhalation.  
 R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
 R62: Possible risk of impaired fertility.

#### Safety phrases

S22: Do not breathe dust.  
 S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice  
 S27: Take off immediately all contaminated clothing.  
 S28: After contact with skin, wash immediately with plenty of water.  
 S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.  
 S45: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).  
 S53: Avoid exposure - obtain special instructions before use.  
 S61: Avoid release to the environment. Refer to special instructions/safety data sheets.

#### Inventory listing(s)

**AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**  
 All components are listed on AICS, or are exempt.

### 15.2 Chemical safety assessment

No information provided.

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## 16. OTHER INFORMATION

**Additional information** Product is used as a standard gold chromium chromate conversion coating process for aluminium by spray and dip process.

IARC GROUP 1 - CONFIRMED HUMAN CARCINOGEN. This product contains an ingredient for which there is sufficient evidence to have been classified by the International Agency for Research into Cancer as a human carcinogen. The use of products known to be human carcinogens should be strictly monitored and controlled.

CHROMATES - CHROMIUM PRODUCTS: Asthma sufferers, respiratory impaired or previously sensitised (respiratory or skin) individuals are advised to avoid all exposure to chromium or chromate based products.

CHROMIUM: The most common form of chromium found in nature and in biological materials is trivalent (III) chromium which is poorly absorbed into the body. Chromium (VI) is readily absorbed where it is converted intracellularly to the carcinogenic chromium (III) form. Chromium (VI) compounds are classified as carcinogenic to humans (IARC Group 1). Chromium (III) is not classifiable as to its carcinogenicity in humans (IARC Group 3).

### HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

### PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

COLOUR RATING SYSTEM: RMT has assigned all ChemAlert reports a colour rating of Green, Amber or Red for the sole purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all ChemAlert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline, a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

While all due care has been taken by RMT in the preparation of the Colour Rating System, it is intended as a guide only and RMT does not provide any warranty in relation to the accuracy of the Colour Rating System. As far as is lawfully possible, RMT accepts no liability or responsibility whatsoever for the actions or omissions of any person in reliance on the Colour Rating System.

<b>Abbreviations</b>	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m <sup>3</sup>	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	PEL	Permissible Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
	STEL	Short-Term Exposure Limit
	STOT-RE	Specific target organ toxicity (repeated exposure)



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STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

**Report Status** This ChemAlert report has been independently compiled by RMT's scientific department utilising the original Safety Data Sheet ('SDS') for the product provided to RMT by the manufacturer. The information is based on the latest chemical and toxicological research and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. It is an independent collation by RMT of information obtained from the original SDS for this product. Its content has not been authorised or verified by the manufacturer / distributor of the chemical to which it relates.

This ChemAlert report does not constitute the manufacturer's original SDS and is not intended to be a replacement for same. It is provided to subscribers of ChemAlert as a reference tool only, is not all-inclusive and does not represent any guarantee as to the properties of the product. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this ChemAlert report, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this ChemAlert report.

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**End of Report**