



Safety Data Sheet (SDS)

Baychem, Inc.

Alodine 600 Solution

SDS Number: 514

Revision Date: 1/31/2016

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1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

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Product Name: Alodine 600 Solution
Revision Date: 1/31/2016
Version: 1.00
SDS Number: 514
Common Name: Inorganic Salts
CAS Number: MIXTURE
Chemical Family: Inorganic Salt Solution
Chemical Formula: *** PROPRIETARY ***
Synonyms: Chemical Film for Aluminum and Aluminum Alloys
Emergency Phone: +1-800-424-9300 (CHEMTREC, 24 Hours, Acct. #794844)

2 HAZARDS IDENTIFICATION

NFPA:
HMIS III:

Health = 1, Fire = 0, Reactivity = 0
H*1/F0/PH0



HMIS III	
HEALTH	<input checked="" type="checkbox"/> 1
FLAMMABILITY	0
PHYSICAL HAZARDS	0
PERSONAL PROTECTION C Safety Glasses, Gloves, Apron	

PERSONAL PROTECTION INDEX			
A		G	
B		H	
C		I	
D		J	
E		K	
F		X	Consult your supervisor or S.O.P. for "SPECIAL" handling directions
A	n	o	p
t	u	w	y
z	Additional information		



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GHS Signal Word:

DANGER

GHS Hazard Pictograms:



GHS Classifications:

Health, Acute toxicity, 3 Oral
Health, Acute toxicity, 4 Dermal
Health, Skin corrosion/irritation, 2
Health, Skin sensitization, 1
Health, Serious Eye Damage/Eye Irritation, 2 A
Health, Respiratory sensitization, 1
Health, Germ cell mutagenicity, 1 B
Health, Carcinogenicity, 1 A
Health, Reproductive toxicity, 2
Health, Specific target organ toxicity - Repeated exposure, 1
Environmental, Hazards to the aquatic environment - Chronic, 1

GHS Phrases:

H301 - Toxic if swallowed
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
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

GHS Precautionary Statements:

P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P262 - Do not get in eyes, on skin, or on clothing.
P263 - Avoid contact during pregnancy/while nursing.
P264 - Wash skin 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.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P285 - In case of inadequate ventilation wear respiratory protection.
P301+310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P301+330+331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+361+353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+341 - IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.



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P305+351+338 - IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P309+311 - IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician.

P321 - Specific treatment (see supplemental first aid instructions on this label).

P333+313 - If skin irritation or a rash occurs: Get medical advice/attention.

P337+313 - If eye irritation persists: Get medical advice/attention.

P362 - Take off contaminated clothing and wash before reuse.

P403+233 - Store in a well ventilated place. Keep container tightly closed.

P405 - Store locked up.

P501 - Dispose of contents/container to an approved waste disposal plant.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name
N/A	>98.5%	Proprietary, non-hazardous, non-regulated
1333-82-0	<1%	Chromium oxide (CrO ₃)
16923-95-8	<0.5%	Zirconium potassium fluoride

4 FIRST AID MEASURES

Inhalation: If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. Give oxygen or artificial respiration if needed. Lie victim down in the recovery position; cover to keep warm. Physicians should treat chronic exposure as chemical pneumonia. A 2.5% calcium gluconate solution in normal saline administered by nebulizer, or by ippb with 100% oxygen may decrease pulmonary damage. Bronchodilators may also be administered. Monitor for hypocalcemia.

Skin Contact: Get immediate medical attention. Remove contaminated clothing immediately; wash before reuse. Promptly flush skin with water until all chemical is removed. Immediately apply Calcium Gluconate gel, 2.5%, and massage into the affected area using rubber gloves. Continue to massage while repeatedly applying gel until 15 minutes after pain is relieved. If fingers/finger nails are touched, even if there is not pain, dip them in a bath of 5% Calcium Gluconate for 15 to 20 minutes. More serious skin exposure may require subcutaneous calcium gluconate gel, except for digital areas (unless the physician is experienced in this technique) due to potential for tissue injury from increased pressure. Absorption can readily occur in subungual areas and should be considered during decontamination.

Eye Contact: Get immediate medical attention. Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Rinse to eyes with a calcium gluconate, 1%, solution in physiological serum (10 ml of Calcium Gluconate 10% in 90 ml of physiological serum). In the case of difficulty of opening eyelids, administer an analgesic eye wash (oxybuprocaine).

Ingestion: Call a physician immediately. Take victim immediately to hospital. Prevention of absorption of the Fluoride ion can be obtained by giving a source of Calcium or Magnesium.

If victim is conscious:

If swallowed, rinse mouth with water (only if the person is conscious). Give to drink one of the following: 3-4 glasses of milk, chewable calcium carbonate tablets, Milk of Magnesia or a 1% aqueous Calcium Gluconate solution. Do NOT induce vomiting. Artificial respiration and/or oxygen may be necessary.

If victim in unconscious, but breathing:

Artificial respiration and/or oxygen may be necessary.

General advice:

Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Even though this product



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contains less than one percent Hydrofluoric (HF) acid, symptoms may be delayed up to 24 hours depending on the concentration of HF. After initial decontamination with water, subsequent damage can occur due to penetration/absorption of the Fluoride (F⁻) ion. Treatment should be directed toward binding the Fluoride ion as well as the effects of exposure. Show this Safety Data Sheet to the doctor in attendance. If possible, call ahead to hospital or paramedics and make them aware of the Hydrofluoric acid exposure risk to themselves, and so they may prepare the proper first aid treatments ahead of time. Conditions such as hypocalcemia, hypomagnesemia, cardiac arrhythmias and hyperkalemia should be monitored for, since they can occur after exposure. Renal dialysis may be necessary in some cases.

Most important symptoms and effects, both acute and delayed:

The most important known symptoms and effects are described in the labelling (see Section 2) and/or Section 11.

Indication of any immediate medical attention and special treatment needed:

No data available.

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FIRE FIGHTING MEASURES

Flammability:	Not flammable
Flash Point:	DNA
Flash Point Method:	DNA
Burning Rate:	No data available
Autoignition Temp:	Not determined
LEL:	DNA
UEL:	DNA

Extinguishing Media:

Water Spray
Water Fog
Carbon Dioxide
Alcohol-Resistant Foam
Dry Chemical

Special Hazards Arising From the Substance or Mixture:

Boron Oxides/Borates
Chromium Oxides
Hydrofluoric acid gas
Potassium Oxides
Sodium Oxides
Zirconium Oxides

Advice for Firefighters:

Firefighters should wear full-face, positive-pressure respirators.

Further Information:

If incinerated, may release toxic fumes.

This product contains a small amount of Chromium Oxide (CrO₃), which is an oxidizer. Chromium Oxide (CrO₃) will release Oxygen gas upon thermal decomposition, which will intensify fires. Use extreme caution.

Use water spray to cool unopened containers.

If containers begin to blacken and violently vent, immediately evacuate the area.

See Section 7 for more information on safe handling.

See Section 8 for more information on personal protection equipment.

See Section 13 for disposal information.



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6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures:

Use personal protective equipment.
Keep from contacting skin or eyes.
Avoid breathing vapors, mist or gas.
Ensure adequate ventilation.
Evacuate personnel to safe areas.

Environmental Precautions:

Prevent further release (leakage/spillage) if safe to do so.
Do not allow product to enter drains.
Do not allow to drain to environment.

Methods and Materials for Containments and Cleaning Up:

Ensure adequate ventilation.
Absorb with liquid-binding material (sand, diatomite, universal binders, acid binders). Do NOT use sawdust.
Place contaminated material into suitable, closed containers for disposal.
After spillage has been collected, area may be flushed with water or wet-brushed.
Dispose of contaminated material according to Section 13.

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 information on proper disposal.

7 HANDLING AND STORAGE

Handling Precautions:

Wear protective clothing, including vapor respirator in the case of insufficient ventilation.
Avoid breathing vapors or mist.
Avoid contact with eyes, skin, or clothing.
Use approved, original containers only.
Keep containers closed when not in use.
Do not expose containers to open flame, excessive heat, or direct sunlight.
Avoid contamination of material. Contamination may cause decomposition and generation of Oxygen gas which could result in high pressures and possibly rupture containers.
Do not puncture or drop containers.
Handle with care and avoid spillage on the floor.
Keep material out of reach of children.
Keep material away from incompatible materials.
Wash thoroughly after handling.
Ensure adequate ventilation.
DO NOT CUT, DRILL, GRIND OR WELD ON OR NEAR THIS CONTAINER.

Storage Requirements:

Keep away from heat, sparks and flames.
Do not store in direct sunlight.
Store only in approved, original containers.
Store away from strong bases, strong oxidizing agents, strong reducing agents, organic materials, Phosphorus, metals, powdered metals, metal salts, Silicon, silicate-containing materials, Arsenic, ammonia, hydrogen sulfide, Alkali metals, Alkaline Earth metals, and Selenium.



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EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use local exhaust at filling zones and where leakage and dust formation is probable. Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure Limits in Air below TLV & PEL limits.

Personal Protective Equip: Eye/face protection:
When using material use safety glasses, gloves and apron according to HMIS PP, C. Use of a vapor respirator according to HMIS PP, U is highly recommended when using material in poorly ventilated spaces. All safety equipment should be tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin protection:

Handle with gloves made from PVC, neoprene, nitrile or fluorinated-rubber. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact. Dispose of contaminated gloves according to applicable laws and laboratory practices.

Body Protection:

Chemically resistant gloves and safety glasses are recommended. Type of protective equipment should be selected based on concentration amount and conditions of use of this material.

Respiratory protection:

Use of a vapor respirator is recommended when using material in poorly ventilated spaces. Full-face vapor respirator may be required as backup to engineering controls when proper engineering controls are not in place to keep TLV and PEL limits below defined thresholds.

Control of environmental exposure:

Prevent leakage or spillage if safe to do so. Do not let material enter drains.

Components with workplace control parameters:

Component(s): Chromium oxide (CrO₃)

CAS No(s): 1333-82-0

USA ACGIH (TWA/TLV): 0.05 mg/m³

USA NIOSH (TWA/REL): 0.0002 mg/m³

USA OSHA Specifically Regulated Chemicals/Carcinogens (PEL): 0.005 mg/m³

Component(s): Zirconium potassium fluoride

CAS No(s): 16923-95-8

USA ACGIH (TWA/TLV): 2.5 mg/m³

USA ACGIH (STEL/TLV): 5.0 mg/m³

USA NIOSH (TWA/REL): 5.0 mg/m³

USA NIOSH (ST/REL): 10.0 mg/m³

USA OSHA Occupational Exposure Limits Table Z-1 Limits for Air Contaminants (TWA): 2.5 mg/m³

USA OSHA Occupational Exposure Limits Table Z-2: 2.5 mg/m³

Biological occupational exposure limits:

Component(s): Chromium oxide (CrO₃)

CAS No(s): 1333-82-0

Parameters: Total Chromium; Total Chromium at the end of shift and end of workweek; Total Chromium increase during shift



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Biological Specimen: Urine
Basis: ACGIH Biological Exposure Indices (BEI)
Value: 25 ug/l; 10 ug/l; 25 ug/l

Component(s): Zirconium potassium fluoride
CAS No(s): 16923-95-8
Parameters: Fluoride prior to shift (16 hours after exposure ceases); Fluoride at the end of shift
Biological Specimen: Urine
Basis: ACGIH Biological Exposure Indices (BEI)
Value: 3 mg/g; 10 mg/g

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, Orange-Brown Liquid	Odor:	Odorless
Physical State:	Liquid	Molecular Formula:	MIXTURE
Odor Threshold:	Not determined	Solubility:	100%
Particle Size:	No data available	Softening Point:	Not determined
Spec Grav./Density:	1.0207 g/ml (8.518 lbs/gal)	Percent Volatile:	97.8%
Viscosity:	Not determined	Heat Value:	Not determined
Sat. Vap. Conc.:	Not determined	Freezing/Melting Pt.:	Not determined
Boiling Point:	> 100.0 °C (212.0 °F)	Flash Point:	DNA
Flammability:	(solid, gas): Not flammable	Octanol:	Not determined
Partition Coefficient:	Not determined	Vapor Density:	(air = 1): Not determined
Vapor Pressure:	(mm Hg @ 20 °C): Not determined	VOC:	DNA
pH:	@ 100%: 1.3	Bulk Density:	Not determined
Evap. Rate:	(N-Butyl Acetate = 1): Not determined	Auto-Ignition Temp:	Not determined
Molecular weight:	MIXTURE	UFL/LFL:	Not determined
Decomp Temp:	Not determined		

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal conditions.
Conditions to Avoid:	Incompatibilities, flames, ignition sources.
Materials to Avoid:	Strong bases, strong oxidizing agents, strong reducing agents, organic materials, Phosphorus, metals, powdered metals, metal salts, Silicon, silicate-containing materials, Arsenic, ammonia, hydrogen sulfide, Alkali metals, Alkaline Earth metals, and Selenium.
Hazardous Decomposition:	Boron Oxides/Borates, Chromium Oxides, Hydrofluoric acid gas, Potassium Oxides, Sodium Oxides and Zirconium Oxides.
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Component(s): Chromium oxide (CrO₃); Zirconium potassium fluoride
CAS No(s): 1333-82-0; 16923-95-8

Acute Toxicity:

LD50 Oral - Rat: 52 mg/kg
LD50 Oral - Mouse: 98 mg/kg
LD50 Dermal - Rabbit: 57 mg/kg
LC50 Inhalation - Rat: 217 mg/m³ (4 h)



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Skin Corrosion/Irritation: Rabbit skin - Corrosive.

Serious Eye Damage/Eye Irritation: Rabbit eyes - Corrosive to eyes.

Respiratory or Skin Sensitation: Mouse skin - May cause sensitization by skin contact.

Germ Cell Mutagenicity: May alter genetic material. *In vivo* tests showed mutagenic effects.

Carcinogenicity: This product is or contains a component that is classifiable as carcinogenic (Chromium oxide (CrO₃)) to humans based on its IARC, ACGIH, NTP, or OSHA classification.

IARC: 1 - Group 3: Carcinogenic to humans (Chromium oxide (CrO₃)).

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive Toxicity: Suspected reproductive toxicant. May cause reproductive disorders.

Specific Target Organ Toxicity - Single Exposure: Respiratory system - May cause respiratory irritation.

Specific Target Organ Toxicity - Repeated Exposure: No data available.

Aspiration Hazard: No data available.

Additional Information:

Component: Chromium oxide (CrO₃); RTECS: GB65650000

Component: Zirconium potassium fluoride; RTECS: GZH7028400

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ECOLOGICAL INFORMATION

Component(s): Chromium oxide (CrO₃); Zirconium potassium fluoride

CAS No(s): 1333-82-0; 16923-95-8

Toxicity:

Toxicity to fish:

LC50 - Tilapia mossambica (Mozambique Tilapia): 21.05 - 141.38 mg/l (96 h)

LC0 - Leuciscus idus (Golden Orfe): 100 mg/l (48 h)

Toxicity to daphnia and other aquatic invertebrates:

EC50 - Daphnia magna (Water Flea): 0.8 mg/l (48 h)

Persistence and Degradability:

No data available.

Bioaccumulative potential:

No data available.

Mobility in Soil:



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No data available.

Results of PBT and vPvB assessment:

Not required/conducted.

Other Adverse Effects:

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

13 DISPOSAL CONSIDERATIONS

Product: Hazardous wastes shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution, release into the environment or damage to people and animals. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated Packaging: Dispose of as unused product.

14 TRANSPORT INFORMATION

DOT Class: Corrosive (8) #8

UN #: UN 3264, Class: 8, Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Chromic Acid, Fluoboric Acid)

DOT (US)

UN Number: 3264

Class: 8

Packing Group: II

ERG #: 154

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Chromic Acid, Fluoboric Acid)

Reportable Quantity (RQ): 10 lbs

Marine Pollutant: No

IMDG

UN Number: 3264

Class: 8

Packing Group: II

EMS-No: F-A, S-B

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Chromic Acid, Fluoboric Acid)

Marine Pollutant: Yes

IATA

UN Number: 3264

Class: 8

Packing Group: II

ERG #: 154

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Chromic Acid, Fluoboric Acid)

Marine Pollutant: Yes





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15 REGULATORY INFORMATION

COMPONENT / (CAS/PERC) / CODES

*Chromium oxide (CrO₃) (1333820 <1%) MASS, NJHS, PA, PROP65, SARA311/312, SARA313, TSCA

*Zirconium potassium fluoride (16923958 <0.5%) CERCLA, CSWHS, MASS, NJHS, PA, SARA311/312, TSCA

REGULATORY KEY DESCRIPTIONS

CERCLA = Superfund clean up substance
CSWHS = Clean Water Act Hazardous substances
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
PA = PA Right-To-Know List of Hazardous Substances
SARA311/312 = SARA 311/312 Toxic Chemicals
SARA313 = SARA 313 Title III Chemicals
TSCA = Toxic Substances Control Act

16 OTHER INFORMATION

Disclaimer:

The data in this Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material in any process. The information set forth herein is furnished free of charge and is based on technical data that Baychem, Inc. believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside of Baychem, Inc.'s control, Baychem, Inc. makes no warranties, expressed or implied, and assumes no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under, or a recommendation to infringe upon, any patents.

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