

Material Safety Data Sheet for Desofin™

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I. PRODUCT IDENTIFICATION

CHEMICAL NAME: Trade Secret	CHEMICAL FAMILY: Inorganic halogen salts
TRADE NAME: Desofin™ brand Grain Refining Compound	FORMULA: Trade Secret

II. HAZARDOUS CONSTITUENTS

CONSTITUENTS	PERCENT	CAS NUMBER	NIOS RTECS NUMBER	EXPOSURE LIMITS(asMg/m)	
				OSHA TWA	ACGIH TLV
Inorganic Halogen Salt (Trade Secret)	90 to 99 %			2.5	2.5
Hygroscopic Inorganic Compound (Trade Secret)	1 to 10%			Not Listed	Not Listed

*Many substances do not have a unique exposure limit. The absence of an exposure limit does not lessen consideration for exposure risk.

In the absence of specific information, professional judgement may be required.

III. SARA TITLE III REPORTING REQUIREMENTS

ELEMENT	None
	N/A
SUBJECT TO SECTION 313 REPORTING	N/A

III. PHYSICAL PROPERTIES

FREEZING POINT: Not Applicable	VAPOR PRESSURE (mmHg): Not Applicable
MELTING POINT:530 C	VAPOR DENSITY (AIR=1): Not Applicable

BOILING POINT: Decomposes at 615 C	DENSITY(H₂O=1): 2.50-2.55
SUBLIMES @: Not Applicable	SOLUBILITY IN WATER: 0.45g/100cc @20 C
EVAPORATION RATE : Not Applicable	% VOLATILES BY VOLUME: NONE
FLASH POINT (WITH TEST METHOD)	None
FLAMMABLE (EXPLOSIVE) LIMITS V/V%	None LEL: None; UEL: None
EXTINGUISHING MEDIA	This material is noncombustible. Use extinguishing media surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES	If this material is involved in a fire-fighting task, use a full-face, air - supplied, positive pressure respiratory device to protect against exposure to hydrogen halogen and fumes of halogen salts.
UNUSUAL FIRE AND EXPLOSION HAZARDS	No unusual fire or explosion hazards are associated with this material.
GENERAL REACTIVITY	This product is a stable material.
INCOMPATIBILITY (MATERIALS TO AVOID)	Contact with acids liberates hydrogen halogen gas that is toxic and corrosive.
HAZARDOUS DECOMPOSITION PRODUCTS	During melting operations and at elevated temperatures, various fluoride compounds will be liberated including, but not limited to hydrogen halogen. Toxic fumes of Na ₂ O will also be emitted.
VI. HEALTH HAZARD INFORMATION	
PRIMARY ROUTE(S) OF EXPOSURE	<p>INHALATION: Inhalation halogen may result during blending, mixing, melting, pouring, crushing or grinding operations which generate airborne particulate during use of this metal.</p> <p>INGESTION: Hand, clothing and drink contact with halogen salts, dust or fume can cause ingestion of particulate during hand to mouth activities such as eating, drinking, smoking, nail biting, etc.</p> <p>SKIN: Skin contact with fluoride salts can cause irritation, redness, swelling of tissue and permanent scarring or disability.</p> <p>EYES: Particulate halogen salt dust or fume can cause severe burning and swelling to the eye and surrounding tissue. Airborne particulate is always a problem as well as inserting fingers into the eye socket if the hand or clothing is contaminated with halogen salts.</p>
TOXICITY	<p>Exposure to the dust or fume of halogen salts may present significant health hazards. Halogen salts can cause acute poisoning or death (principally by ingestion). Skin contact and exposure to mucous membranes can cause severe irritation and tissue damage.</p> <p>Nose bleeds and slow healing scars in the nasal passage have been reported. Crippling bone changes and mottling of tooth enamel are chronic effects of exposure although they are not common among current industrial employees.</p>

EFFECTS OF OVEREXPOSURE	<p>ACUTE: Ingestion halogen salts can cause severe gastric pain, internal bleeding, tissue damage and death. Acute poisoning from inhalation is not common. Nose bleeds, skin irritation, eye irritation, tissue damage and slow healing scars can result if exposure is excessive. Halogen salts are soluble in the body fluids and sweat and are corrosive to the skin and mucous membrane.</p> <p>CHRONIC: Chronic exposure to halogen compounds has been reported to cause a calcification of bone and ligaments known as osteosclerosis (hardening of the bone due to deposition of halogen) and mottling of tooth enamel although neither effect is common in industrial populations. Prolonged exposure to halogen salts may cause damage to the skin, eye and mucous membranes</p>
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CARCINOGENIC REFERENCES	The National Toxicology Program, International Agency, lists neither this product nor its ingredients as a carcinogen for Research on Cancer or United States Occupational Safety and Health Administration.
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MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE	Persons with pre-existing eye and skin disorders or damage to mucous membranes may be more susceptible to the effects of halogen exposure. Because halogen salt and fume can be a respiratory irritant and has been linked to skeletal abnormalities and gastric complications, proper screening or examinations should be conducted on individuals who may be exposed to further risk if handling and use of this material causes excessive exposure.
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VII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION	Local exhaust ventilation should be used to control exposure to airborne halogen compounds
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RESPIRATORY PROTECTION	Use NIOSH approved respirators as specified by an industrial Hygienist or qualified Safety recommended for users of negative pressure devices.
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PROTECTIVE GLOVES	Wear gloves to prevent hand contact with halogen compounds. Gauntlet-type gloves are containing solutions or acids are used, the gloves should be acid resistant.
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EYE PROTECTION	Wear safety glasses, chemical goggles (plastic lens) or full-face shield when handling halogen lenses.
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OTHER PROTECTIVE EQUIPMENT	Protective clothing such as uniforms, disposable coveralls, safety shoes, etc. may be required during handling operations as appropriate to the circumstances of exposure. For increased protection it may be advisable to wear acid resistant jacket, boots, trousers, etc. as appropriate.
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RECOMMENDED MONITORING PROCEDURES	<table border="1"> <tr> <td>ENVIRONMENTAL SURVEILLANCE: Exposure to the elements identified in Section II can be best determined by having air samples taken in the employees breathing zone, work area or department.</td> <td>MEDICAL SURVEILLANCE: Lung function tests, chest x-rays and routine physical examination may be useful to determine effects of dust or fume exposure.</td> </tr> </table>	ENVIRONMENTAL SURVEILLANCE: Exposure to the elements identified in Section II can be best determined by having air samples taken in the employees breathing zone, work area or department.	MEDICAL SURVEILLANCE: Lung function tests, chest x-rays and routine physical examination may be useful to determine effects of dust or fume exposure.
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IX. ENVIRONMENTAL PROTECTION INFORMATION

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	If the Desofin™ compound is spilled from its containing capsule, clean-up should be conducted with a vacuum system utilizing a high efficiency particulate air filtration system. Caution should be taken to minimize airborne avoid contamination of the air and water. Spills of halogen containing solutions or acids should be neutralized by careful additions
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of lime slurry, soda ash or other alkali. Small amounts may be treated by using excess water to reduce acidity. Caution must be taken during neutralization to avoid exposure to halogen gases or other halogen compounds generated.

WASTE DISPOSAL METHOD State or federal regulations may require specific labeling, packing, storage, transportation and Environmental Engineer or consultant familiar with waste disposal regulations.

ENVIRONMENTAL HAZARDS Halogen compounds may have significant impact on air and water quality. Airborne emissions, environment (discharge to streams, sewer systems, ground water, surface soil, etc.) should be controlled immediately. If such potential for a spill or release exists it is advisable to develop an emergency spill response plan. It is also advisable to consider monitoring ambient air as well as any effluent which may contain fluorides if potential exists for damage to aquatic or terrestrial ecosystems.

X. SPECIAL PRECAUTIONS

HANDLING PRECAUTIONS This product must be handled accordingly to the size, shape and quantity of material involved. cranes, etc. Powder or liquid handling should be conducted to minimize employee contact and spill release potential. Wash hands prior to eating or smoking.

STORAGE PRECAUTIONS Store this product in a dry area. Do not store adjacent to acids. Keep away from contact with food

ADDITIONAL INFORMATION

Desofin™ Brand Grain Refining Compound

Safety to Mankind and Our Environment:

Desofin™ as a non-hazardous formulation of chemicals which are encased in a non porous sealed aluminum metal case and no powder is handled by a user. This USA Trade Marked product called Desofin™ was tested by the German EPA in 1976 in Lahr, Germany at the ITT Grohe Faucet GmbH. This test was designed by the German EPA to measure the quantity of halogens emitted to the atmosphere in the chimney exit of the Baghouse which filtered out ash and metal oxides (like zinc oxide) and was measured three times and there was never more than one PPM (part per million) of halogen gases.

This non-hazardous chemical combination was only possible by addition of a caustic chemical(s) used to prevent escape of halogen hazardous gases which attacks the ionosphere.

Desofin™ has been sold worldwide since 1983 without a tragic occurrence in the use of this grain refiner and deoxidizer of copper and aluminum alloys.