Material Safety Data Sheet

Fingerprint resistant coating

In accordance with ANSI Z400.1-2004
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1. PRODUCT AND COMPANY IDENTIFICATION

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Product: Fingerprint resistant coating

NOTE: This MSDS concerns the fingerprint resistant coating only. Read the stainless steel MSDS 100, 110, 120, 130, 140 or 150 for information on the appropriate stainless steel grade.

2. HAZARDS IDENTIFICATION

CAUTION! Decomposition products are harmful if inhaled!

OSHA Regulatory status
Decomposition products are listed in OSHA Hazard Standard (29 CFR 1910.1000).

Potential health effects
Inhalation: Heating can generate gases that may cause headaches, nausea, vomiting and dizziness.

Dry sanding or grinding can create dust. Heat is generated in operations as grinding, polishing, abrasive blasting, hot rolling, hot forging, welding, brazing, thermal cutting, and laser cutting. Section 11 discusses health effects in more detail.

3. COMPONENTS/ INFORMATION ON INGREDIENTS

Table 1

Component	CAS No.	% by Weight
4.4' Isopropylidene diphenol epichloro-hydrin polymer with a molecular weight below 700 (epoxy)	25068-38-6	99.9+
Curing agent		0
Fillers		0

This fingerprint resistant coating is based on a one-component epoxy resin, produced by the condensation reaction of bisphenol-A and epichlorohydrin. These raw materials are consumed in the process.
After application of the liquid epoxy resin it is cured or hardened to a dry, solid coating.
No curing agents or fillers are used.
The finished, cured or hardened, fingerprint coating is non-toxic unless it is cut, sanded or burned.

4. FIRST AID MEASURES

Employ first aid techniques recommended by the American Red Cross.
Inhalation: Inhalation of dust and/or fumes from grinding, cutting and welding operations – If breathing is difficult remove person from exposed area to fresh air.

Eye Contact: In case of irritation from particulate, immediately flush with plenty of water for 15 minutes and call for medical assistance.
Skin contact: Wash with mild soap and water.
Ingestion: Accidental ingestion is unlikely. If ingested, drink 2 glasses of water and get medical attention.

5. FIRE FIGHTING MEASURES

This material does not burn, since it decomposes before igniting. However, the thermal decomposition products are combustible.
Extinguishing media: Use Carbon dioxide, foam, dry chemical or water spray or fog.
Hazardous decomposition products: Carbon monoxide and carbon dioxide
Fire fighting equipment: Use a self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Not applicable.

7. HANDLING AND STORAGE

There are no special technical measures involved for handling the fingerprint coating.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure guidelines
There are no occupational exposure limits for hardened epoxy coatings. Occupational exposure limits apply to decomposition products created on heating and to dust. Table 2 shows limits according to current US legislation.

Table 2 Occupational exposure limits 8-hour TWA, mg/m^3

Component	OSHA PEL	ACGIH TLV	Carcinogenetic listing		
			ACGIH	NTP	IARC
4.4' Isopropylidene diphenol epichloro-hydrin polymer	NE	NE	NE	NR	NE
Carbon dioxide, decomposition product ppm	5000	5000 STEL 30,000	NE	NR	NR
Carbon monoxide, decomposition product ppm	50	25	NE	NR	NR
Dust, total Dust, respirable	10 3	15 5	NE	NR	NR

TWA=Time Weighted Average, STEL= Short Term Exposure Limit NE=Not Established, NR=Not reviewed,

Engineering controls
Use local exhaust and dilution ventilation to control dust and/or fumes.
Dry sanding or grinding can create dust. Welding, brazing, thermal cutting, laser cutting, burning, sawing, or grinding of the hardened epoxy coating and the underlying stainless steel can generate a mixture of metal dust and fumes and toxic decomposition gases.
Factors influencing the efficiency of engineering controls are the volume of the work area, the quantity of welding consumables used, the design and amount of ventilation delivered, the position of the worker's head with respect to the fume plume, and the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from solvent, cleaning, or painting activities) which may decompose by the arc into toxic gases such as phosgene.

Welding, thermal cutting, laser cutting and related processes: Read American National Standard Z49.1, Safety in Welding and Cutting, published by the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida. 33126 and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington, D.C. 20402, for more details on exposure controls.

Eye/ face protection: Wear ANSI Z87.1 approved safety glasses with side shields or goggles where metal dust or fume is present.

Use appropriate eye protection, including welding helmets and/or face shields with protective filter lenses when welding, brazing, thermal cutting or laser cutting. Select welding lens shades from the American Welding Society (AWS) publication F2.2.

Skin protection:
Wear appropriate hand protection, gloves, when welding, brazing, thermal cutting, and laser cutting dry fingerprint coating and stainless steel.

Respiratory protection: OSHA standard 29 CFR 1910.134 requires the use of a NIOSH approved respirator for dust and fumes or an air-supplied respirator where local exhaust or general dilution ventilation does not keep exposures below the PEL or TLV for air contaminants and decomposition gases.

Protective clothing: Wear suitable protective clothing and equipment, such as hand and eye protection.
Wear appropriate hand and body protection during welding, brazing, and thermal cutting, laser cutting on stainless steel. Refer to ANSI Z49.1 for more information.

General Hygiene Considerations: Utilize good personal hygiene including washing hands and face prior to eating or drinking.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Clear, colorless
Odor:	Odorless
Odor threshold:	Not applicable
Physical state:	Solid
pH:	Not applicable
Melting point:	150 - 195ºF (65-90ºC)
Boiling point:	Not applicable
Flash point:	Not applicable
Evaporation rate:	Not known
Flammability:	Not flammable
Explosive limits:	Not applicable
Vapor pressure:	Not applicable
Vapor density:	Not applicable
Specific gravity:	1.19 (Water=1)
Solubility (water):	Insoluble
Solubility (other liquids)	Acetone, benzene
Partition coefficient:	Not available
Auto-ignition temperature:	Not applicable
Decomposition temperature:	390ºF (200ºC)
Thermal expansion:	Unknown
Thermal conductivity:	Unknown

10. STABILITY AND REACTIVITY

Chemical stability: Stable. Hazardous polymerization will not occur.

Conditions to avoid: High temperatures, dust generation.

Incompatible materials: May react in contact with strong oxidizers, strong acids, and strong bases.

Possibility of hazardous by-products:
The dry coating can develop carbon monoxide and carbon dioxide on heating.

Read the appropriate stainless steel MSDS. Decomposition products from welding, brazing, thermal cutting, and laser cutting of stainless steel will include those originating from the oxidation of the stainless steel, welding filler, welding fluxes and combustion of surface coatings and contaminants. Fumes generated during welding, brazing, or thermal cutting, laser cutting stainless steel may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

The employer is required by OSHA to limit the worker's level of exposure to chemicals for which OSHA has established a PEL in 29 CFR 1910 Subpart Z. The only way to determine a worker's exposure to welding, brazing or thermal cutting, laser cutting decomposition products is by sampling and analyses using accepted industrial hygiene techniques. The composition and quantity of the fumes and gases to which a worker is exposed can be established from an air sample(s) obtained from inside the welder's helmet, if worn, or in the worker's breathing zone. Review ANSI/AWS F1.l and F1.3 standards for further information on air sampling for welding and hot cutting decomposition products.

11. TOXICOLOGY INFORMATION

The dry, solid coating is not toxic unless it is heated.
Most information on epoxy systems concern uncured, liquid epoxy resin(s), hardening agent(s) and filler(s), but is not applicable on the dry, hardened coating.

Toxicological data
The molecular weight has an impact. This coating has a molecular weight below 700.

LC50 (rat): greater than 791 mg/m3 (4-hour exposure) (EPON Resin 2002 dust; molecular weight approximately 1300)
LD50 (oral, rat): 30000 mg/kg (EPON 1001; molecular weight 900)
LD50 (oral, mouse): 20000 mg/kg (EPON 1001)
LD50 (dermal, rabbit): greater than 23500 mg/kg (cited as 20 mL/kg) (an unspecified commercial DGEBPA-based epoxy resin)

Acute effects
In its solid form, the dry epoxy coating does not present an inhalation, absorption, or ingestion hazard.
On heating above the decomposition temperature the dry coating can generate carbon monoxide and carbon dioxide.
Carbon monoxide is an asphyxiate in humans. Inhalation of carbon monoxide causes tissue hypoxia by preventing the blood from carrying sufficient oxygen.
Mild carbon monoxide poisoning causes headache, nausea, vomiting, drowsiness, and poor coordination.
Moderate or severe carbon monoxide poisoning causes confusion, unconsciousness, chest pain, shortness of breath, and coma.

Chronic effects, inhalation
This product does not contain a curing agent.
Some persons develop asthma from the curing or hardening agents. Once a person becomes allergic to curing agents, even dust from dry sanding or grinding the hardened coating can cause an asthma attack.

Dermatological effects
Skin irritation: Low molecular weight epoxy polymers, like this coating, does not cause skin irritation.
Skin senzitation and allergy:
It is unclear whether the hardened epoxy coating may sensitize the skin.
Repeated skin contact with liquid epoxy resin can cause allergic skin sensitization in certain individuals. Once a person is sensitized to epoxy resins, contact with even a small amount causes outbreaks of dermatitis with symptoms such as skin redness, itching, rash and swelling. Lower molecular weights resins seem to be the sensitizer.

12. ECOLOGICAL INFORMATION

The dry solid coating is insoluble in water.
The coating is based on a one-component epoxy resin, produced by the condensation reaction of bisphenol-A and epichlorohydrin. These raw materials are consumed in the process. After application of the liquid epoxy resin it is cured or hardened to a dry, solid coating.
Most information on epoxy systems concern the uncured liquid epoxy resin, which is slightly soluble in water and is classified by the European Union as dangerous to aquatic life.

13. DISPOSAL CONSIDERATIONS

Waste Classification: Not a hazardous waste under RCRA (40 CFR 261).
The dry coating is a completely cured epoxy and can be disposed to a sanitary landfill.

14. TRANSPORT INFORMATION

Not regulated.

15. REGULATORY INFORMATION

Inventories

OSHA	United States	Included
TSCA	United States	Included
DSL	Canada	Included

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)
Not listed.

See Table 3 for EPCRA/SARA information.

EPCRA / SARA Section 302, 304, 311/312 and 313 **Table 3**

Component	CAS #	Section 302 EHS	Section 304 Spill	Section 311/312 Hazard classes	Section 312 SARA Tier II	Section 313 Form R
			Reporting Quantity, lbs.		Threshold Planning Quantity, lbs.	By weight %
4.4' Isopropylidene diphenol epichloro-hydrin polymer with a molecular weight below 700 (epoxy)	25068-38-6	Not listed	Not listed	Not listed	Not listed	99.9+

16. OTHER INFORMATION

Basic information used to draw up this information:

References to key data:

OSHA, Standards 29 CFR.1910.1000 –1200
OSHA Standard 29 CFR 1910.134
ANSI Z49.1: 2005, Safety in Welding and Cutting
EPA Consolidated List of Chemicals Subject to the Emergency Planning and Community-Right-to-Know Act (EPCRA) and section 112(r) of the Clean Air Act.
DOT, Standards 49 CFR.172.101-102
Canadian Centre for Occupational Health and Safety; CHEMINFO
National Toxicology Program, 11th Report on Carcinogens, 2005
ACGIH, TLVs and BEIs, 2007 edition
International Agency for Research on Cancer. 'IARC Monographs on the Evaluation of Carcinogenic Risks to Humans', vol. 1- 88
Akzo Nobel Nippon Paint AB, Sweden, MSDS "Klarlack P422", issued January 2006.

This MSDS replaces: Not applicable.

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Disclaimer

The information contained in this document is based on the present level of our knowledge and experience. The information applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other material than stainless steel or in any other product form.

Availability

All Outokumpu Stainless US MSDS are available at the Outokumpu website. To find them go to
http://www.outokumpu.com/About us/
Stainless/North America and click on the MSDS sidebar.
They are also available at
http://www.outokumpu.com /Home/
Outokumpu North America and click on the MSDS sidebar.