

# Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 01/08/2016

Revision: 01/08/2016

## 1 Identification

- **Product identifier**
- **Trade name:** X-RESTORE OXIDIZED METAL Part A
- **Other means of identification:** Alkoxysilane
- **Recommended use and restriction on use**
- **Recommended use:** Coating
- **Restrictions on use:** No relevant information available.
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**  
xGen, LLC  
118 Rochester Drive  
Louisville, KY 40214  
Phone: (502) 992-0670
- **Emergency telephone number:**  
ChemTel Inc.  
+1 (800)255-3924, +1 (813)248-0585

## 2 Hazard(s) identification

- **Classification of the substance or mixture**  
Flam. Liq. 3 H226 Flammable liquid and vapor.  
Acute Tox. 4 H302 Harmful if swallowed.  
Acute Tox. 4 H332 Harmful if inhaled.  
Skin Sens. 1 H317 May cause an allergic skin reaction.  
Repr. 2 H361 Suspected of damaging fertility or the unborn child.  
STOT RE 2 H373 May cause damage to the bladder through prolonged or repeated exposure. Route of exposure: Oral.

- **Label elements**
- **GHS label elements**  
The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms:**



GHS02 GHS07 GHS08

- **Signal word:** Warning
- **Hazard-determining components of labeling:**  
trimethoxyphenylsilane  
trimethoxy(methyl)silane  
methanol  
dimethoxydimethylsilane  
3,3,6,6-tetramethoxy-2,7-dioxo-3,6-disilaooctane
- **Hazard statements:**  
H226 Flammable liquid and vapor.

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H302+H332 Harmful if swallowed or if inhaled.

H317 May cause an allergic skin reaction.

H361 Suspected of damaging fertility or the unborn child.

H373 May cause damage to the bladder through prolonged or repeated exposure. Route of exposure: Oral.

### Precautionary statements:

P201 Obtain special instructions before use.

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.

P241 Use explosion-proof electrical/ventilating/lighting/equipment.

P260 Do not breathe mist/vapors/spray.

P264 Wash thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection.

P240 Ground/bond container and receiving equipment.

P233 Keep container tightly closed.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

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 must not be allowed out of the workplace.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P330 Rinse mouth.

P363 Wash contaminated clothing before reuse.

P370+P378 In case of fire: Use for extinction: CO2, powder or water spray.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

P403+P235 Store in a well-ventilated place. Keep cool.






P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards There are no other hazards not otherwise classified that have been identified.

## 3 Composition/information on ingredients

### Chemical characterization: Mixtures

#### Dangerous components:

|           |   |        |
|-----------|---|--------|
| 1185-55-3 | trimethoxy(methyl)silane<br> Flam. Liq. 2, H225<br> Skin Sens. 1, H317  | 25-50% |
| 2996-92-1 | trimethoxyphenylsilane<br> Flam. Liq. 3, H226<br> STOT RE 2, H373<br> Acute Tox. 4, H302 | 25-50% |

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|            |  |     |
|------------|--|-----|
| 67-56-1    | methanol<br>Flam. Liq. 2, H225<br>Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331<br>STOT SE 1, H370<br>Eye Irrit. 2B, H320 | <3% |
| 17865-54-2 | cyclohexyl trimethoxysilane<br>Skin Corr. 1B, H314   | <3% |
| 1112-39-6  | dimethoxydimethylsilane<br>Flam. Liq. 2, H225<br>Repr. 2, H361   | <3% |
| 18406-41-2 | 3,3,6,6-tetramethoxy-2,7-dioxa-3,6-disilaooctane<br>Acute Tox. 1, H330   | <1% |

**Additional information:**

For the wording of the listed Hazard Statements refer to section 16.

For the listed ingredient(s), the identity and exact percentage(s) are being withheld as a trade secret.

## 4 First-aid measures

**Description of first aid measures**
**General information:**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Take affected persons out into the fresh air.

**After inhalation:**

Supply fresh air; consult doctor in case of complaints.

Provide oxygen treatment if affected person has difficulty breathing.

In case of irregular breathing or respiratory arrest provide artificial respiration.

**After skin contact:**

Immediately remove any clothing soiled by the product.

Immediately rinse with water.

If skin irritation continues, consult a doctor.

**After eye contact:**

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

**After swallowing:**

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; immediately call for medical help.

**Most important symptoms and effects, both acute and delayed:**

Headache

Breathing difficulty

Dizziness

Coughing, dizziness, if inhaled.

Coughing

Allergic reactions

Irritant to skin and mucous membranes.

Gastric or intestinal disorders when ingested.

Nausea in case of ingestion.

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- Acidosis
- Unconsciousness
- **Danger:**
  - Danger of impaired breathing.
  - Danger of convulsion.
  - Danger of disturbed cardiac rhythm.
  - Vapours may cause drowsiness and dizziness.
  - Harmful if swallowed or if inhaled.
  - Suspected of damaging fertility or the unborn child.
- **Indication of any immediate medical attention and special treatment needed:**
  - Contains methanol. Consult literature for specific antidotes.
  - Contains trimethoxy(methyl)silane. May produce an allergic reaction.
  - Treat skin and mucous membrane with antihistamine and corticoid preparations.
  - If necessary oxygen respiration treatment.
  - Medical supervision for at least 48 hours.

## 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
  - Alcohol resistant foam
  - Water spray
  - Carbon dioxide
  - Gaseous extinguishing agents
- **For safety reasons unsuitable extinguishing agents:** None.
- **Special hazards arising from the substance or mixture**
  - Formation of toxic gases is possible during heating or in case of fire.
  - Can form explosive gas-air mixtures.
- **Advice for firefighters**
- **Protective equipment:**
  - Wear self-contained respiratory protective device.
  - Do not inhale explosion gases or combustion gases.
  - Wear fully protective suit.
- **Additional information:**
  - Eliminate all ignition sources if safe to do so.
  - Use large quantities of foam as it is partially destroyed by the product.
  - Cool endangered receptacles with water spray.

## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures:**
  - Use respiratory protective device against the effects of fumes/dust/aerosol.
  - Wear protective equipment. Keep unprotected persons away.
  - Ensure adequate ventilation.
  - Particular danger of slipping on leaked/spilled product.
  - Keep away from ignition sources.
  - Protect from heat.

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- **Environmental precautions:**

Do not allow to enter sewers/ surface or ground water.  
Inform respective authorities in case of seepage into water course or sewage system.

- **Methods and material for containment and cleaning up:**

Absorb with non-combustible liquid-binding material (sand, diatomite, acid binders, universal binders).  
Send for recovery or disposal in suitable receptacles.  
Used rags or other cleaning materials should be soaked with water and placed in a sealed container.

- **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 disposal information.

## 7 Handling and storage

- **Handling**

- **Precautions for safe handling:**

Prevent formation of aerosols.  
Use only in well ventilated areas.  
Rags, metal wools / cuttings / shavings and waste papers soaked with product must be placed in a sealed metal container rated for flammable waste.  
Avoid splashes or spray in enclosed areas.

- **Information about protection against explosions and fires:**

Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.  
Keep respiratory protective device available.  
Fumes can combine with air to form an explosive mixture.  
Flammable gas-air mixtures may be formed in empty containers/receptacles.

- **Conditions for safe storage, including any incompatibilities**

- **Storage**

- **Requirements to be met by storerooms and receptacles:**

Provide ventilation for receptacles.  
Store in a cool location.  
Avoid storage near extreme heat, ignition sources or open flame.

- **Information about storage in one common storage facility:**

Store away from foodstuffs.  
Store away from oxidizing agents.  
Do not store together with acids.

- **Further information about storage conditions:**

Store in cool, dry conditions in well sealed receptacles.  
Protect from humidity and water.

- **Specific end use(s):** No relevant information available.

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## 8 Exposure controls/personal protection

### · Control parameters

#### · Components with limit values that require monitoring at the workplace:

##### 67-56-1 methanol

|               |  |
|---------------|--|
| PEL (USA)     | Long-term value: 260 mg/m <sup>3</sup> , 200 ppm   |
| REL (USA)     | Short-term value: 325 mg/m <sup>3</sup> , 250 ppm<br>Long-term value: 260 mg/m <sup>3</sup> , 200 ppm<br>Skin      |
| TLV (USA)     | Short-term value: 328 mg/m <sup>3</sup> , 250 ppm<br>Long-term value: 262 mg/m <sup>3</sup> , 200 ppm<br>Skin; BEI |
| EL (Canada)   | Short-term value: 250 ppm<br>Long-term value: 200 ppm<br>Skin  |
| EV (Canada)   | Short-term value: 325 mg/m <sup>3</sup> , 250 ppm<br>Long-term value: 260 mg/m <sup>3</sup> , 200 ppm<br>Skin      |
| LMPE (Mexico) | Short-term value: 250 ppm<br>Long-term value: 200 ppm<br>PIEL, IBE   |

#### · Ingredients with biological limit values:

##### 67-56-1 methanol

|           |   |
|-----------|---|
| BEI (USA) | 15 mg/L<br>Medium: urine<br>Time: end of shift<br>Parameter: Methanol (background, nonspecific) |
|-----------|---|

### · Exposure controls

#### · Personal protective equipment:

#### · General protective and hygienic measures:

The usual precautionary measures for handling chemicals should be followed.  
Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing.  
Wash hands before breaks and at the end of work.  
Do not inhale gases / fumes / aerosols.  
Avoid contact with the eyes and skin.  
Pregnant women should strictly avoid inhalation or skin contact.

#### · Engineering controls: No relevant information available.

#### · Breathing equipment:

Suitable respiratory protective device recommended.  
Use suitable respiratory protective device when aerosol or mist is formed.

#### · Protection of hands:



Protective gloves

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The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

· **Eye protection:**



Safety glasses

· **Body protection:** Protective work clothing

· **Limitation and supervision of exposure into the environment**

No relevant information available.

· **Risk management measures** See Section 7 for additional information.

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **Appearance:**

· **Form:** Liquid

· **Color:** Clear

· **Odor:** Not determined.

· **Odor threshold:** Not determined.

· **pH-value:** Not determined.

· **Melting point/Melting range:** Not determined.

· **Boiling point/Boiling range:** Not determined.

· **Flash point:** 23 °C (73 °F)

· **Flammability (solid, gaseous):** Not applicable.

· **Auto-ignition temperature:** Not determined.

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not self-igniting.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· **Explosion limits**

· **Lower:** Not determined.

· **Upper:** Not determined.

· **Vapor pressure:** Not determined.

· **Density:** Not determined.

· **Relative density:** Not determined.

· **Vapor density:** Not determined.

· **Evaporation rate:** Not determined.

· **Solubility in / Miscibility with**

· **Water:** Not miscible or difficult to mix.

· **Partition coefficient (n-octanol/water):** Not determined.

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- **Viscosity**
  - Dynamic:** Not determined.
  - Kinematic:** Not determined.
  - VOC content:** 2.13%
  - VOC (California):** 21.24 g/L
- **Other information** No relevant information available.

## 10 Stability and reactivity

- **Reactivity:** No relevant information available.
- **Chemical stability:**
- **Thermal decomposition / conditions to be avoided:** Keep away from heat and direct sunlight.
- **Possibility of hazardous reactions:**
  - Flammable.
  - Used empty containers may contain product gases which form explosive mixtures with air.
  - Can form explosive mixtures in air if heated above flash point and/or when sprayed or atomized.
  - Toxic fumes may be released if heated above the decomposition point.
  - Reacts with strong oxidizing agents.
  - Reacts with water and acids.
- **Conditions to avoid:**
  - Keep ignition sources away - Do not smoke.
  - Store away from oxidizing agents.
  - Moisture.
- **Incompatible materials:** No relevant information available.
- **Hazardous decomposition products:**
  - Carbon monoxide and carbon dioxide
  - Hydrogen
  - Small quantities of formaldehyde may be formed.

## 11 Toxicological information

- **Information on toxicological effects**

- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

**2996-92-1 trimethoxyphenylsilane**

|      |      |                  |
|------|------|------------------|
| Oral | LD50 | 1049 mg/kg (rat) |
|------|------|------------------|

**18406-41-2 3,3,6,6-tetramethoxy-2,7-dioxa-3,6-disilaoctane**

|            |         |                  |
|------------|---------|------------------|
| Inhalative | LC50/4h | 2 ppm (rat) (4h) |
|------------|---------|------------------|

- **Primary irritant effect:**
- **On the skin:** Irritant to skin and mucous membranes.
- **On the eye:** Based on available data, the classification criteria are not met.
- **Sensitization:** Sensitization possible through skin contact.

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- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer):**

None of the ingredients are listed.

- **NTP (National Toxicology Program):**

None of the ingredients are listed.

- **OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

- **Probable route(s) of exposure:**

Ingestion.

Inhalation.

Eye contact.

Skin contact.

- **Acute effects (acute toxicity, irritation and corrosivity):** May be harmful if swallowed or if inhaled.

- **Repeated dose toxicity:** Repeated exposure may result in skin sensitivity.

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**  
Repr. 2

- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.

- **Carcinogenicity:** Based on available data, the classification criteria are not met.

- **Reproductive toxicity:** Suspected of damaging fertility or the unborn child.

- **STOT-single exposure:** Based on available data, the classification criteria are not met.

- **STOT-repeated exposure:**

May cause damage to the bladder through prolonged or repeated exposure. Route of exposure: Oral.

- **Aspiration hazard:** Based on available data, the classification criteria are not met.

## 12 Ecological information

- **Toxicity**

- **Aquatic toxicity** No relevant information available.

- **Persistence and degradability** Biodegradable.

- **Behavior in environmental systems**

- **Bioaccumulative potential:** No relevant information available.

- **Mobility in soil:** No relevant information available.

- **Additional ecological information**

- **General notes:**

Avoid release to the environment.

Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.

- **Other adverse effects:** No relevant information available.

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## 13 Disposal considerations

- **Waste treatment methods**

- **Recommendation:**

Can be disposed of with household garbage after solidification following consultation with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations.  
Can be burned with household garbage after consulting with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

- **Uncleaned packagings**

- **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

- **UN-Number**

- **DOT, ADR, IMDG, IATA**

UN1993

- **UN proper shipping name**



Limited Quantity for packages less than 30 kg (66 lb) and inner packagings less than 5 L (1.3 gal).

- **DOT**

Flammable liquids, n.o.s. (trimethoxy(methyl)silane, cyclohexyl trimethoxysilane)

- **ADR**

1993 FLAMMABLE LIQUID, N.O.S. (trimethoxy(methyl)silane, cyclohexyl trimethoxysilane)

- **IMDG**

FLAMMABLE LIQUID, N.O.S. (trimethoxy(methyl)silane, cyclohexyl trimethoxysilane)

- **IATA**

Flammable liquid, n.o.s. (trimethoxy(methyl)silane, cyclohexyl trimethoxysilane)

- **Transport hazard class(es)**

- **DOT**



- **Class**

3 Flammable liquids

- **Label**

3

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## · ADR



· Class 3 (F1) Flammable liquids  
 · Label 3

## · IMDG, IATA



· Class 3 Flammable liquids  
 · Label 3

## · Packing group

· DOT, ADR, IMDG, IATA III

## · Environmental hazards

· Marine pollutant: No

## · Special precautions for user

Warning: Flammable liquids

## · Danger code (Kemler):

38

## · EMS Number:

F-E, S-E

## · Transport in bulk according to Annex II of

**MARPOL73/78 and the IBC Code** Not applicable.

## 15 Regulatory information

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

## · United States (USA)

## · SARA

## · Section 302 (extremely hazardous substances):

None of the ingredients are listed.

## · Section 304 (emergency release notification):

None of the ingredients are listed.

## · Sections 311/312 (hazardous chemical threshold planning quantity in pounds):

None of the ingredients are listed.

## · Section 355 (extremely hazardous substances):

None of the ingredients are listed.

## · Section 313 (Specific toxic chemical listings):

67-56-1 | methanol

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**· TSCA (Toxic Substances Control Act)**

All ingredients are listed.

**· Proposition 65 (California)**
**· Chemicals known to cause cancer:**

None of the ingredients are listed.

**· Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**· Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**· Chemicals known to cause developmental toxicity:**

67-56-1 | methanol

**· Carcinogenic categories**
**· EPA (Environmental Protection Agency):**

None of the ingredients are listed.

**· IARC (International Agency for Research on Cancer):**

None of the ingredients are listed.

**· NIOSH-Ca (National Institute for Occupational Safety and Health):**

None of the ingredients are listed.

**· Canadian substance listings**
**· Canadian Domestic Substances List (DSL):**

All ingredients are listed.

**· Canadian Ingredient Disclosure list (limit 0.1%):**

None of the ingredients are listed.

**· Canadian Ingredient Disclosure list (limit 1%):**

1185-55-3 | trimethoxy(methyl)silane

67-56-1 | methanol

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**· Date of preparation / last revision** 01/08/2016 / -

**· Abbreviations and acronyms:**

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety &amp; Health

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TLV: Threshold Limit Value  
PEL: Permissible Exposure Limit  
REL: Recommended Exposure Limit  
BEI: Biological Exposure Limit  
Flam. Liq. 2: Flammable liquids, Hazard Category 2  
Flam. Liq. 3: Flammable liquids, Hazard Category 3  
Acute Tox. 3: Acute toxicity, Hazard Category 3  
Acute Tox. 4: Acute toxicity, Hazard Category 4  
Acute Tox. 1: Acute toxicity, Hazard Category 1  
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B  
Eye Irrit. 2B: Serious eye damage/eye irritation, Hazard Category 2B  
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1  
Repr. 2: Reproductive toxicity, Hazard Category 2  
STOT SE 1: Specific target organ toxicity - Single exposure, Hazard Category 1  
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

**Sources**

Website, European Chemicals Agency ([echa.europa.eu](http://echa.europa.eu))  
Website, US EPA Substance Registry Services ([ofmpub.epa.gov/sorinternet/registry/substreg/home/overview/home.do](http://ofmpub.epa.gov/sorinternet/registry/substreg/home/overview/home.do))  
Website, Chemical Abstracts Registry, American Chemical Society ([www.cas.org](http://www.cas.org))  
Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: ISBN: 978-0-470-07488-6  
Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaasen, Curtis D., ed., ISBN: 978-0-07-176923-5.  
Safety Data Sheets, Individual Manufacturers

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