

1 Identification

- **Product identifier**
- **Trade name: Super DESOX®**
- **Application of the substance / the preparation:** Catalyst additive
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
GRACE
W. R. Grace & Co.-Conn
7500 Grace Drive
Columbia MD 21044
U. S. A.
- **Information department:**
Health and Safety (9 AM to 5 PM-EST) 1-410-531-4000
MSDS.Davison@grace.com
- **Emergency telephone number:**
Chemtrec North America: +1-800-424-9300
Chemtrec International: +1-703-527-3887
Other Emergencies (24hr): +1-410-531-4000

2 Hazard(s) identification

- **Classification of the substance or mixture**
Product is classified based on test data for the mixture according to APPENDIX A TO §1910.1200–HEALTH HAZARD CRITERIA A.0.4.1(a)
The product is not classified, according to the Globally Harmonized System (GHS).
- **Label elements**
- **GHS label elements** None
- **Hazard pictograms** None
- **Signal word** None
- **Hazard statements** None
- **Precautionary statements**
Do not breathe dust.
Avoid release to the environment.
Collect spillage.
Store in accordance with local/regional/national/international regulations.
Dispose of contents/container in accordance with local/regional/national/international regulations.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



Health = 1
Fire = 0
Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**



Health = 1
Fire = 0
Reactivity = 0

* Product presents long-term adverse effects.

3 Composition/information on ingredients

- **Description:** Mixture: consisting of the following components.

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Trade name: **Super DESOX®**

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· CAS No. and description:		
1306-38-3	cerium oxide	10-25%
1309-48-4	magnesium oxide	25-50%
1344-28-1	aluminum oxide (non-fibrous forms)	25-50%
· List of Dangerous Components		
13573-13-2	magnesium vanadate	≤ 2.5%
⚠ Acute Tox. 2, H300; Acute Tox. 3, H331; ⚠ Carc. 2, H351; STOT RE 1, H372; ⚠ STOT SE 3, H335		

4 First aid measures

- **Description of first aid measures**
- **General information:**
Immediately remove contaminated clothing if necessary to prevent direct skin contact.
- **After inhalation:**
Seek medical treatment in case of complaints.
In case of unconsciousness place patient stably in the recovery position for transportation.
- **After skin contact:**
Immediately wash with water at least for 30 minutes and rinse thoroughly.
If skin irritation occur, consult a doctor.
- **After eye contact:**
Flush opened eye with large quantities of running water for at least 30 minutes. If symptoms occur, consult a doctor.
- **After swallowing:** Do not induce vomiting; immediately call for medical help.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed**
No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Hazardous combustion products**
In case of fire, the following can be released:
Toxic metal oxide smoke
- **Advice for firefighters**
- **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
- **Additional information**
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.

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- Wear respiratory protective device.
- **Environmental precautions:**
Do not allow to enter into sewers, surface water and/or groundwater.
Inform respective authorities in case of seepage into water course or sewage system.
In case of seepage into the ground inform responsible authorities.
- **Methods and material for containment and cleaning up:** Ensure adequate ventilation.
- **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**
Keep receptacles tightly sealed.
Store in cool, dry place in tightly closed receptacles.
Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** The product is not flammable.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Prevent any seepage into the ground.
- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Do not store together with oxidizing and acidic materials.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
At this time, the remaining constituent has no known exposure limits.

1309-48-4 magnesium oxide	
PEL	15* mg/m ³ fume; *total particulate
TLV	10* mg/m ³ *as inhalable fraction
1344-28-1 aluminum oxide (non-fibrous forms)	
PEL	15* 5** mg/m ³ *total dust **respirable fraction
TLV	1* mg/m ³ *as respirable fraction

- **Additional information:** Valid lists at time of creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.

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Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Prevent contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air. As appropriate for the employee exposure, use a NIOSH approved respirator and cartridge.

· **Protection of hands:**



Protective gloves

Wear gloves for the protection against mechanical hazards.
Use gloves of stable material (e.g. Nitrile)

· **Material of gloves**

Butyl rubber, BR
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.35 mm

· **For the permanent contact gloves made of the following materials are suitable:**

Butyl rubber, BR
Nitrile rubber, NBR

· **Not suitable are gloves made of the following materials:** Strong fabric gloves

· **Eye protection:**



Tightly sealed goggles

· **Body protection:** Protective work clothing

9 Physical and chemical properties

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

· **General Information**

· **Appearance:**

Form:	Powder
Color:	Yellow

· Odor:	Odorless
· Odor threshold:	Not available.

· pH-value:	5.0 - 11.5
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· **Change in condition**

Melting point/Melting range:	2000 °C (3,632 °F) (aluminum oxide)
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Boiling point/Boiling range:	2980 °C (5,396 °F) (aluminum oxide)
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· **Conditions of flammability**

Flash point:	Not applicable.
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· Flammability (solid, gaseous):	Product is not flammable.
· Ignition temperature:	Not available.

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- | | |
|---|---|
| · Decomposition temperature: | Not available. |
| · Auto igniting: | Product is not self-igniting. |
| · Danger of explosion: | Product does not present an explosion hazard. |
| · Explosion limits: | |
| Lower: | - Vol % |
| Upper: | - Vol % |
| · Vapor pressure at 20 °C (68 °F): | -- hPa |
| · Density: | Not determined. |
| · Bulk density at 20 °C (68 °F): | 890-950 kg/m ³ |
| · Vapor density | Not applicable. |
| · Evaporation rate | Not applicable. |
| · Solubility in / Miscibility with | |
| Water: | Insoluble. |
| · Coefficient of water/oil distribution: | Not available. |
| · Viscosity: | |
| Dynamic: | Not applicable. |
| · Other information | No further relevant information available. |

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
No decomposition if used and stored according to specifications.
To avoid thermal decomposition do not overheat.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid**
In case of thermal decomposition caused by smouldering and incomplete combustion toxic fumes may be developed.
- **Incompatible materials:** Protect from contamination.
- **Hazardous decomposition products:** Metal oxide smoke

11 Toxicological information

- **Information on the likely routes of exposure**
- **Delayed and immediate effects and chronic effects from short or long term exposure**
- **Information on toxicological effects**
- **Acute toxicity:**

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

1306-38-3 cerium oxide

Oral	LD50	>5,000 mg/kg (rat) (OECD 401)
Dermal	LD50	>5,000 mg/kg (rat) (OECD 402)
Inhalative	LC50 (4 h)	>5.05 mg/l (rat) (OECD 403)
	NOAEL	0.41-0.43 mg/m ³ /d (rat)
NTP Chemical Information Profile (02/2006)		

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Aluminium Magnesium Vandadium Oxide

Oral	LD50	>5,000 mg/kg (rat) (OECD 423) GRACE 2012
Inhalative	LC0	4,852 mg/l/4h (rat) (OECD 403) maximum attainable concentration GRACE 2012

• **Primary irritant effect:**

• **on the skin:**

1306-38-3 cerium oxide

Irritation of skin | IS | (rabbit) (OECD 404)

Aluminium Magnesium Vandadium Oxide

Irritation of skin | IS | 0 (rabbit) (OECD 404)
GRACE 2013

• **on the eye:**

1306-38-3 cerium oxide

Irritation of eyes | IS | (rabbit) (OECD 405)

Aluminium Magnesium Vandadium Oxide

Irritation of eyes | IS | <1.3 (rabbit) (OECD 405)
GRACE 2012

• **Respiratory sensitization** No further relevant information available.

• **Skin sensitization**

1306-38-3 cerium oxide

Sensitization | SI | (guinea pig) (OECD 406)

Aluminium Magnesium Vandadium Oxide

Sensitization | SI | <1.03 (Lymph Node) (OECD 429)
GRACE 2012

• **Additional toxicological information:**

• **Carcinogenic categories**

• **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

• **NTP (National Toxicology Program)**

None of the ingredients is listed.

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

None of the ingredients is listed.

• **Repeated dose toxicity**

1306-38-3 cerium oxide

Oral | NOAEL (90 d) | 1,000 mg/kg bw/day (rat) (OECD 422)

Inhalative | LOAEC (90d) | 50.5 mg/m³ (rat) (OECD 413)

Aluminium Magnesium Vandadium Oxide

Oral | NOAEL (28d) | >1,000 mg/kg bw (rat) (OECD 407)
GRACE 2015

• **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

• **Carcinogenicity** No further relevant information available.

• **Mutagenicity**

1306-38-3 cerium oxide

AMES Test | >5 mg/plate (Salmonella typhimurium) (OECD 471)
negative with and without metabolic activation

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Aluminium Magnesium Vandadium Oxide

AMES Test	>5 mg/plate (Salmonella typhimurium) (OECD 471) negative with and without metabolic activation
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· **Reproductive toxicity****1306-38-3 cerium oxide**

Oral	NOAEL (maternal toxicity)	1,000 mg/kg bw/day (rat) (OECD 422)
	NOAEL (teratogenicity)	1,000 mg/kg bw/day (rat) (OECD 422)

- **Specific target organ toxicity (single exposure)** No further relevant information available.
- **Specific target organ toxicity (repeated exposure)** No further relevant information available.

12 Ecological information· **Toxicity**· **Aquatic toxicity:**· **Fish toxicity****Aluminium Magnesium Vandadium Oxide**

NOELR (14d)	>100 mg/l (Gobiocypris rarus) (OECD 204) GRACE 2013
LC50 (96 h)	>100 mg/l (Gobiocypris rarus) (OECD 203) GRACE 2013

· **Water flea toxicity****1306-38-3 cerium oxide**

EC50 (48 h)	>1,000 mg/l (Daphnia magna) (OECD 202)
NOEC (21 d)	32 mg/l (Daphnia magna) (OECD 211)

Aluminium Magnesium Vandadium Oxide

EC50 (48 h)	15 mg/l (Daphnia magna) (OECD 202) GRACE 2013
NOELR (21d)	0.16 mg/l (Daphnia magna) (OECD 211) GRACE 2013

· **Algae toxicity****1306-38-3 cerium oxide**

EC50 (72 h)	>200 mg/l (zebra fish)
NOEC (72 h)	3.2 mg/l (Pseudokirchneriella subcapitata) (OECD 201)

Aluminium Magnesium Vandadium Oxide

EC50 (72 h)	>100 mg/l (Desmodesmus subspicatus) (OECD 201) GRACE 2013
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· **Bacterial toxicity****Aluminium Magnesium Vandadium Oxide**

EC10 (3 h)	>1,000 mg/l (sludge) (OECD 209) GRACE 2013
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- **Persistence and degradability** No further relevant information available.

· **Behavior in environmental systems:**

- **Bioaccumulative potential** May be accumulated in organism
- **Mobility in soil** No further relevant information available.

· **Additional ecological information:**

- **General notes:** Do not allow product to reach ground water, water course or sewage system.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

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- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

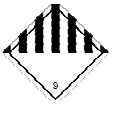

- **Recommendation:**
Disposal must be made according to official regulations.

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State/provincial and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state/provincial and local requirements.

14 Transport information

· UN-Number	
· DOT, ADR, IMDG, IATA	UN3077
· UN proper shipping name	
· DOT	Environmentally hazardous substances, solid, n.o.s. (Aluminium Magnesium Vandadium Oxide)
· ADR	3077 Environmentally hazardous substances, solid, n.o.s. (Aluminium Magnesium Vandadium Oxide)
· IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Aluminium Magnesium Vandadium Oxide), MARINE POLLUTANT
· IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Aluminium Magnesium Vandadium Oxide)

· Transport hazard class(es)	
· DOT	
	
· Class	9 Miscellaneous dangerous substances and articles
· Label	9

· ADR	
	 
· Class	9 (M7) Miscellaneous dangerous substances and articles
· Label	9

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Trade name: Super DESOX®

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· **IMDG, IATA**



· **Class** 9 Miscellaneous dangerous substances and articles
 · **Label** 9

· **Packing group**
 · **DOT, ADR, IMDG, IATA** III

· **Environmental hazards:** Product contains environmentally hazardous substances: Aluminium Magnesium Vandadium Oxide
 · **Special marking (ADR):** Symbol (fish and tree)
 · **Special marking (IATA):** Symbol (fish and tree)

· **Special precautions for user** Warning: Miscellaneous dangerous substances and articles
 · **Danger code (Kemler):** 90
 · **EMS Number:** F-A,S-F
 · **Stowage Category** A
 · **Stowage Code** SW23 When transported in BK3 bulk container, see 7.6.2.12 and 7.7.3.9.

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

· **Transport/Additional information:**
 · **DOT**
 · **Quantity limitations** On passenger aircraft/rail: no limit
 · **Remarks:** Emergency Guide Number: 171
 · **Additional remarks:** THE ABOVE TRANSPORTATION CLASSIFICATION IS PROVIDED FOR REFERENCE USE ONLY - THIS MATERIAL IS NOT REGULATED WHEN TRANSPORTED DOMESTICALLY BY RAIL OR ROAD. IF SHIPMENTS ARE MADE BY AIR PLEASE SEE THE IATA SECTION.

· **ADR**
 · **Excepted quantities (EQ)** Code: E1
 Maximum net quantity per inner packaging: 30 g
 Maximum net quantity per outer packaging: 1000 g

· **IATA**
 · **Remarks:** UN No. 3077
 Special provisions: A97, A158, A179
 Danger Code: 9L
 UN packing group: III

 PASSENGER AND CARGO AIRCRAFT:
 Excepted Quantities: E1

 Packing instruction: 956
 max. net quantity per package: 400 kg

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Trade name: Super DESOX®

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Limited Quantity:
Packing instruction: Y956
max. net quantity per package: 30 kg G

CARGO AIRCRAFT:
Packing instruction: 956
max. net quantity per package: 400 kg

GRACE recommends CARGO AIRCRAFT only.
A179: Assigned against UN 3077, Environmentally hazardous substance, solid, n.o.s. allows these substances to be shipped in intermediate bulk containers (IBCs) with a maximum net quantity not exceeding 1,000 kg as provided for in Packaging Instruction 956.

15 Regulatory information

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

· **SARA 302/304**

None of the ingredients is listed.

· **SARA 313**

None of the ingredients is listed.

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

1306-38-3	cerium oxide
1309-48-4	magnesium oxide
13573-13-2	magnesium vanadate
1344-28-1	aluminum oxide (non-fibrous forms)

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

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

None of the ingredients is listed.

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

1306-38-3	cerium oxide
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· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

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

None of the ingredients is listed.

· **Canadian DSL**

1306-38-3	cerium oxide
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1309-48-4	magnesium oxide	
1344-28-1	aluminum oxide (non-fibrous forms)	
• Canadian NDSL		
13573-13-2	magnesium vanadate	
• European EINECS		
All ingredients are listed or exempted from listing.		
• Philippines Inventory of Chemicals and Chemical Substances PICCS		
Inventory listing could not be confirmed for one or more substances.		
• Inventory of the Existing Chemical Substances manufactured or imported in China IECSC		
All ingredients are listed.		
• Australian Inventory of Chemical Substances AICS		
Inventory listing could not be confirmed for one or more substances.		
• Existing and New Chemical Substance List ENCS		
Solid solutions are considered for ENCS purposes to be mixtures of the oxides related to the manufacturing process.		
Solid solutions are exempted from listing and are represented by the individual metal oxides.		
Inventory listing could not be confirmed for one or more substances.		
• Korean Existing Chemical Inventory KECI		
Inventory listing could not be confirmed for one or more substances.		
• TCSCA (Taiwan)		
1306-38-3	cerium oxide	EPEP4A01714094
• New Zealand Inventory of Chemicals (NZIoC)		
1306-38-3	cerium oxide	
• GHS label elements None		
• Hazard pictograms None		
• Signal word None		
• Hazard statements None		
• Precautionary statements		
Do not breathe dust.		
Avoid release to the environment.		
Collect spillage.		
Store in accordance with local/regional/national/international regulations.		
Dispose of contents/container in accordance with local/regional/national/international regulations.		
• Information about limitation of use:		
Employment restrictions concerning young persons must be observed.		
Employment restrictions concerning pregnant and lactating women must be observed.		

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.

• Relevant phrases

H300 Fatal if swallowed.

H331 Toxic if inhaled.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

• Department issuing SDS: GRACE Safety & Health Department**• Contact:**

SALES OFFICES

USA:

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USA

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- **Date of preparation / last revision** 09/25/2018 / 3.9
- **The first date of preparation** 02/23/2015
- **Number of revision times and the latest revision date** 4.0 / 09/25/2018
- **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (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
ACGIH: American Conference of Governmental Industrial Hygienists
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)
NFPA: National Fire Protection Association (USA)
HMS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 2: Acute toxicity – Category 2
Acute Tox. 3: Acute toxicity – Category 3
Carc. 2: Carcinogenicity – Category 2

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STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

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· **Others** No further relevant information available.

· * **Data compared to the previous version altered.**

—USA—