

## Material Safety Data Sheet

- **1 Identification of substance**

- **Product details**
- **Trade name Praseodymium (III,IV) oxide**

- **2 Composition/Data on components:**

- **Chemical characterization:**
  - **Designation: (CAS#)**  
Praseodymium (III,IV) oxide (CAS# 12037-29-5), 100%
  - **Identification number(s):**
  - **EINECS Number:** 234-857-9

- **3 Hazards identification**

- **Hazard designation:** Xi Irritant
- **Information pertaining to particular dangers for man and environment**  
R 36/37 Irritating to eyes and respiratory system.

- **4 First aid measures**

- **After inhalation**  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. Seek immediate medical advice.
- **After skin contact**  
Instantly wash with water and soap and rinse thoroughly. Seek immediate medical advice.
- **After eye contact**  
Rinse opened eye for several minutes under running water. Then consult doctor.
- **After swallowing** Seek immediate medical advice.

- **5 Fire fighting measures**

- **Suitable extinguishing agents**

Use fire fighting measures that suit the environment.

- **Protective equipment:**

Wear self-contained breathing apparatus.

Wear full protective suit.

- **6 Accidental release measures**

- **Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

- **Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

- **Measures for cleaning/collecting:** Ensure adequate ventilation.

- **Additional information:**

See Section 7 for information on safe handling

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

- **7 Handling and storage**

- **Handling**

- **Information for safe handling:**

Keep containers tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation/exhaustion at the workplace.

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

The product is not flammable

- **Storage**

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

No special requirements.

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

Do not store together with oxidizing and acidic materials.

- **Further information about storage conditions:**

This product is hygroscopic.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

- **8 Exposure controls and personal protection**

- **Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

- **Components with critical values that require monitoring at the workplace:**

Not required.

- **Additional information:** No data

- **Personal protective equipment**

- **General protective and hygienic measures**

The usual precautionary measures should be adhered to in handling the chemicals.

Keep away from foodstuffs, beverages and food.

Instantly remove any soiled and impregnated garments.

Wash hands during breaks and at the end of the work.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

- **Breathing equipment:** Use breathing protection with high concentrations.

- **Protection of hands:** Impervious gloves

- **Eye protection:**

Safety glasses

Face protection

- **Body protection:** Protective work clothing.

- **9 Physical and chemical properties:**

- **General Information**

- **Form:** Lump

- **Colour:** Black

- **Smell:** Odourless

- **Value/Range Unit Method**

- **Change in condition**

- **Melting point/Melting range:** 2500 ° C

- **Boiling point/Boiling range:** 4200 ° C

- **Sublimation temperature / start:** Not determined

- **Flash point:** Not applicable

- **Ignition temperature:** Not determined

- **Decomposition temperature:** Not determined

- **Danger of explosion:** Product is not explosive.

- **Critical values for explosion:**

- **Lower:** Not determined

- **Upper:** Not determined
- **Steam pressure:** Not determined
- **Density** at 20 ° C 6.5 g/cm<sup>3</sup>
- **Solubility in / Miscibility with**
- **Water:** Insoluble
  
- **10 Stability and reactivity**
  - **Thermal decomposition / conditions to be avoided:**  
No decomposition if used and stored according to specifications.
  - **Materials to be avoided:**  
Acids  
Oxidizing agents  
Water/moisture
  - **Dangerous reactions:** No dangerous reactions known
  - **Dangerous products of decomposition:** None known.
  
- **11 Toxicological information**
  - **Acute toxicity:**  
**LD/LC50 values that are relevant for classification:**  
Oral: LD50: >5000 mg/kg (rat)
  - **Primary irritant effect:**
  - **on the skin:** Irritant for skin and mucous membranes.
  - **on the eye:** Irritant effect.
  - **Sensitization:** No sensitizing effect known.
  - **Additional toxicological information:**  
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.  
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
  
- **12 Ecological information:**
  - **General notes:**  
Do not allow material to be released to the environment without proper governmental permits.  
Generally not hazardous for water.

- **13 Disposal considerations**

- **Product:**
- **Recommendation**  
Consult state, local or national regulations for proper disposal.  
Hand over to disposers of hazardous waste.  
Must be specially treated under adherence to official regulations.
- **Uncleaned packagings:**
- **Recommendation:**  
Disposal must be made according to official regulations.

- **14 Transport information**

- **Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)**
- **ADR/RID-GGVS/E Class:** None
- **Maritime transport IMDG/GGVSea:**
- **IMDG/GGVSea Class:** None
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** None
- **Transport/Additional information:**  
Not dangerous according to the above specifications.

- **15 Regulatory information**

- **Designation according to EC guidelines:**
- **Code letter and hazard designation of product:** Xi Irritant
- **Risk phrases:** 36/37 Irritating to eyes and respiratory system.
- **Safety phrases:**  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- **National regulations**
- **Information about limitation of use:**  
For use only by technically qualified individuals.  
Employment restrictions concerning young persons must be observed.
- **Water hazard class:** Generally not hazardous for water.

- **16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

### Recent Research & Development for Praseodymium Oxide

- Modified rare earth semiconductor oxide as a new nucleotide probe.  
J Phys Chem B Condens Matter Mater Surf Interfaces Biophys. 2006 Dec 28;110(51):25633-7.
- Studies on the sorption of praseodymium (III), holmium (III) and cobalt (II) from nitrate medium using TVEX-PHOR resin.  
J Hazard Mater. 2006 Sep 1; [Epub ahead of print]
- Weaning pig performance and faecal microbiota with and without in-feed addition of rare earth elements.  
J Anim Physiol Anim Nutr (Berl). 2006 Oct;90(9-10):361-8.
- Numerical analysis and experimental results of high-power Er/Pr:ZBLAN 2.7 microm fiber lasers with different pumping designs.  
Appl Opt. 2006 Sep 20;45(27):7118-25.
- Synthesis, spectroscopic, thermal and antifungal studies on lanthanum(III) and praseodymium(III) derivatives of 1,1-diacetylferrocenyl hydrazones.  
Spectrochim Acta A Mol Biomol Spectrosc. 2006 Sep;65(1):139-42. Epub 2006 Jul 28.
- Photophysical properties of praseodymium complexes with aromatic carboxylic acids: Double light conversion both in ultraviolet and visible region.  
Spectrochim Acta A Mol Biomol Spectrosc. 2006 Jun 2; [Epub ahead of print]
- Self-assembly of PcOC8 and its sandwich lanthanide complex Pr(PcOC8)(2) with oligo(phenylene-ethynylene) molecules.  
J Phys Chem B Condens Matter Mater Surf Interfaces Biophys. 2005 Oct 27;109(42):19859-65.
- Electronic and chemical properties of nanostructured cerium dioxide doped with praseodymium.  
J Phys Chem B Condens Matter Mater Surf Interfaces Biophys. 2005 Mar 31;109(12):5728-38.
- Double fluorescence conversion in ultraviolet and visible region for some praseodymium complexes of aromatic carboxyates.  
J Fluoresc. 2006 Jul;16(4):495-500. Epub 2006 Jun 15.
- Praseodymium hydroxide and oxide nanorods and Au/Pr6O11 nanorod catalysts for CO oxidation.  
J Phys Chem B Condens Matter Mater Surf Interfaces Biophys. 2006 Feb 2;110(4):1614-20.