

Material Safety Data Sheet

acc. to OSHA and ANSI

NanoAmando (dispersed single-digit nano diamond)

1 Identification of substance:

- **Product details:** Hard gel: weak aggregates of dispersed single-crystals of diamond with single-digit nano-size, or nanodiamond particles. Readily re-dispersible in water or hydrophilic organic solvents by sonication to give colloidal solution of primary particles. Colloid: Dispersed single-crystals of single-digit nanodiamond.
- **Trade name:** NanoAmando
- **Manufacturer/Supplier:** NanoCarbon Research Institute Limited
AREC, Faculty of Textile and Technology, Shinshu University
3-15-1 Tokita, Ueda, Nagano, 386-8567 JAPAN Tel: +81-268-75-8381

2 Composition/Data on components:

- **Chemical characterization:**
Description: (CAS#)
diamond (CAS# 7782-40-3); >92%
- **EINECS Number:** 231-953-2

3 Hazards identification

- **Hazard description:** No positive indication of cytotoxicity, but in view of high penetration ability of dispersed nanoparticles expected, inhalation, skin contact and intake of colloids should be strictly avoided.
- **Information pertaining to particular dangers for man and environment**
Not applicable

4 First aid measures

- **General information** No special measures required.
- **After inhalation** Seek medical treatment in case of complaints.
- **After skin contact** Generally the product does not irritate the skin.
- **After eye contact**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing** Seek medical treatment.

5 Fire fighting measures

- **Suitable extinguishing agents**
Product is not flammable. Use fire fighting measures that suit the surrounding fire.
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Person-related safety precautions:** Not required.
- **Measures for environmental protection:**
Do not allow material to be released to the environment without proper governmental permits.
- **Measures for cleaning/collecting:** Pick up mechanically.
- **Additional information:**
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**
- **Information for safe handling:**
Keep container tightly sealed.
Store in cool, dry and dark place in tightly closed containers.
No special precautions are necessary if used correctly.
- **Information about protection against explosions and fires:**
No special measures required.
- **Storage**
- **Requirements to be met by storerooms and receptacles:**
No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** None.

8 Exposure controls and personal protection

- **Additional information about design of technical systems:**
No further data; see item 7.
Components with limit 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 for handling chemicals should be followed.
- **Breathing equipment:** Not required.
- **Protection of hands:** Not required.
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing.

9 Physical and chemical properties:

- **Form:** Powder
- **Color:** Black
- **Odor:** Odorless
- Value/Range Unit Method
- **Change in condition**
- **Melting point/Melting range:** 3727 °C
- **Boiling point/Boiling range:** Not determined
- **Sublimation temperature / start:** Not determined
- **Flash point:** Not applicable
- **Flammability (solid, gaseous)** Product is not flammable.
- **Ignition temperature:** ca 500 °C
- **Decomposition temperature:** Not determined
- **Danger of explosion:**
Product does not present an explosion hazard.
- **Explosion limits:**
- **Lower:** Not determined
- **Upper:** Not determined
- **Vapor pressure:** Not determined

- **Density:** 3.05-3.30 g/cm³ (at 20 °C)
- **Solubility in / Miscibility with** Insoluble in conventional solvent, but forms very stable and transparent colloidal solution due to small particle size.
- **Water:** Same as above.

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**
Decomposition will not occur if used and stored according to specifications.
- **Materials to be avoided:** None known.
- **Dangerous reactions** No dangerous reactions known
- **Dangerous products of decomposition:**
No dangerous decomposition products known

11 Toxicological information

- **Acute toxicity:** None.
- **Primary irritant effect:**
- **on the skin:** Generally the product does not irritate the skin.
- **on the eye:** Powder: irritant effect
- **Sensitization:** No sensitizing effects known.
- **Subacute to chronic toxicity:**
Elemental carbon/carbon black is mainly a nuisance dust. It is irritating to the eyes and may cause conjunctivitis, cornea damage, and inflammation of the eyelids.
- **Additional toxicological information:**
To the best of our knowledge nanodiamond particles have high biocompatibility. 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.

13 Disposal considerations

- **Product:**

- **Recommendation**
Consult state, local or national regulations for proper disposal.
- **Uncleaned packagings:**
- **Recommendation:**
Disposal must be made according to official regulations.

14 Transport information

Not a hazardous material for transportation.

- **DOT regulations:**
- **Hazard class:** None
- **Land transport ADR/RID (cross-border)**
- **ADR/RID class:** None
- **Maritime transport IMDG:**
- **IMDG Class:** None
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** None
- **Transport/Additional information:**
Not dangerous according to the above specifications.

15 Regulations

- **Product related hazard information:**
Observe the general safety regulations when handling chemicals
- **National regulations**
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory.
- **Information about limitation of use:**
For use only by technically qualified individuals.

16 Other information: Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment 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.