

SAFETY DATA SHEETS (SDS)

1. PRODUCT IDENTIFICATION

PRODUCT NAME: **NorZon NV - Alumina Zirconia**

SYNONYMS: NorZon Fused Zirconia Alundum Grain, NorZon NV-1610 & 1612 (Bonded Applications), NorZon NV -1620 & 1622 (Coated Applications), NorZon NV-40% Zirconia.

FORMULA: Al₂O₃ (57-62%) ZrO₂ (37-45%)

RECOMENDED USES: NorZon NV is a very tough and sharp abrasive grain. The unique microstruture and chemical composition of this high performance grain ensures a longer life and faster cut rate, which results in especially enhanced grinding capabilities for coated and bonded abrasives.

DISTRIBUTER: **Graystar LLC**
ADDRESS: 9 Simmonsville Road
Bluffton, SC 29910
PHONE: 843-815-5600

2. HAZARD IDENTIFICATION

Classification of a Substance or Mixture:

- The substance is not classified as hazardous according to the Globally Harmonized System (GHS) regulations within the USA.
- The substance is not classified as hazardous according to the CLP regulation.

Label Element:

GHS Label Elements

- The substance is not classified as hazardous according to the Globally Harmonized System (GHS) regulations within the USA.
- The substance is not classified as hazardous according to the CLP regulation.

Hazard Pictogram: Not Regulated

Signal Word: Not Regulated

Hazard-determining Component of Labeling: None.

Hazard Statements: Not Regulated

Precautionary Statements: Not Regulated

Hazard Description:

Classification System:

NFPA ratings (scale 0 - 4):



Health = 1

Fire = 0

Reactivity = 0

HMIS-Ratings (scale 0 - 4):

HEALTH	**1
FIRE	0
REACTIVITY	0

* Indicates a long term health hazard from repeated or prolonged exposures.

HMIS Long Term Health Hazard Substances: None of the ingredients are listed.




Other Hazards:

- **Results of PBT and vPvB Assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Mixtures:

Components:

CAS No. 1344-28-1: EINECS: 215-691-6 Reg.nr: 01-2119529248-35-XXXX	<u>Aluminum Oxide</u> Substance with a Community workplace exposure limit.	<u>57-62%</u>
CAS No. 1314-23-4: EINECS: 215-227-2 Reg.nr: 01-2119486976-14-XXXX	<u>Zirconia Dioxide</u> Substance with a Community workplace exposure limit.	<u>37-45%</u>
CAS No. 13463-67-7: EINECS: 236-675-5 Reg.nr: 01-2119489379-17-XXXX	<u>Titanium Dioxide</u> Substance with a Community workplace exposure limit	<u>0-2%</u>
CAS No. 919-30-2: EINECS: 213-048-4 Reach nr: 01-2119480479-24-XXXX	<u>3-aminopropyltriethoxysilane</u>  Skin Corr. 1B, H314  Acute Tox. 4, H302	<u>< 1%</u>
CAS No. 12055-23-1: EINECS: 235-013-2 Reg.nr: 01-2119967820-31-XXXX	<u>Hafnium Dioxide</u> Substance with a Community workplace exposure limit	<u>< 1%</u>
CAS No. 1344-09-8: Reg.nr: 01-2119448725-31-XXXX	<u>Silicic acid, sodium salt</u>  Met. Corr.1, H290; Skin Corr. 1B, H314; Eye Dam. 1, H318	<u>< 1%</u>
CAS No. 1314-36-9: EIECS: 215-233-5 Reg.nr: 01-2119971254-36-XXXX	<u>Yttrium Oxide</u> Substance with a Community workplace exposure limit.	<u>< 1%</u>

Additional Information:

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

TiO₂ forms a solid solution with ZrO₂. Discreet particles of TiO₂ cannot be released, therefore, a carcinogenic classification of the product is not warranted.

Gamma-Aminopropyltriethoxysilane (CAS 919-30-2) and silicic acid, sodium salt (CAS 1344-09-8) are present only in NV Treated Code 1612.

This product contains trace quantities of naturally occurring radioactive material (NORM). The low level of radioactivity in NV grains is attributed to the naturally occurring raw material zircon sand that has trace quantities of naturally occurring radioactive uranium and thorium. The Uranium and Thorium level in the sand used for producing NV grains is below 500 parts per million (ppm), which is the threshold level established by the United States Nuclear Regulatory Commission for exempt quantities of source material.

4. FIRST-AID MEASURES

Description of First Aid Measures (No special measures required):

- **If Swallowed:** Rinse out mouth and drink plenty of water. Do not induce vomiting; immediately call for medical help.
- **If on Skin:** Brush off loose particles. Wash with soap and water. If skin irritation is experienced, consult a doctor.
- **If in Eyes:** Remove contacts if possible if worn. Rinse opened eye for several minutes under running water.
- **If Inhaled:** If breathing is difficult - Remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms or feels unwell - Seek immediate medical attention.

Most important symptoms and effects, both acute and delayed:

- Slight irritant effect on eyes.

Indication of any immediate medical attention and special treatment needed:

- Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLASH POINT: Not Applicable

FLAMMABLE LIMITS: LEL: Not Applicable UEL: Not Applicable (Product is NOT flammable)

AUTO IGNITION TEMPERATURES: Not Applicable.

EXTINGUISHING MEDIA: Use media appropriate for surrounding fire and that suit the environment.

FIRE AND EXPLOSION HAZARDS: Non-flammable, non-combustible. Product will not burn.

HAZARDOUS DECOMPOSITION PRODUCTS: None

FIRE FIGHTING INSTRUCTIONS: Wear self-containing respiratory protective device. Wear fully protective suit.

NFPA CLASSIFICATION:

HEALTH: 1

FLAMMABILITY: 0

REACTIVITY: 0

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

- Use personal protective equipment as required.
- Ensure adequate ventilation.
- Avoid formation of dust. Do not breathe dust.
- Wear appropriate respirator when ventilation is inadequate and occupational exposure limits are exceeded.
- For large spills, used protective clothing.

Environmental precautions: No special measures required.

Methods and material for containment and cleaning up:

- Pick up mechanically.
- Send for recovery or disposal in suitable receptacles

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 dust.
- Any deposit of dust which cannot be avoided must be regularly removed.

- Use only in well ventilated areas.
- Avoid breathing dust.
- Do not dry clean dust covered objects and floors. Wash thoroughly with plenty of water.

Information about protection against explosions and fires: No special measures required.

Conditions for safe storage, including any incompatibilities:

Storage:

Requirements to be met by storerooms and receptacles:

- Storage area should be dry and well ventilated.

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.

Specific end use(s) No further relevant information available.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS:

Ingredients with Limit Values That Require Monitoring at the Workplace:

Aluminum Oxide (Cas# 1344-28-1):

PEL (USA)	Long-term value: 15*; 5** mg/m ³ *Total dust; ** Respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m ³ as Al*Total dust**Respirable/pyro powd./welding f.
TLV (USA)	Long-term value: 1* mg/m ³ as Al; *as respirable fraction

Zirconium dioxide (Cas# 1314-23-4):

PEL (USA)	Long-term value: 5 mg/m ³ as Zr
REL (USA)	Short-term value: 10 mg/m ³ Long-term value: 5 mg/m ³ as Zr
TLV (USA)	Short-term value: 10 mg/m ³ Long-term value: 5 mg/m ³ as Zr

Yttrium Oxide (Cas# 1314-36-9):

PEL (USA)	Long-term value: 1 mg/m ³ (as Y)
REL (USA)	Long-Term Value: 1 mg/m ³ (as Y)
TLV (USA)	Long-Term Value: 1 mg/m ³ (as Y)

Titanium Dioxide (CAS# 13463-67-7):

PEL (USA)	Long-term value: 15*mg/m ³ *Total dust
REL (USA)	See Pocket Guide App. A
TLV (USA)	Long-term value: 10 mg/m ³ . Withdrawn from NIC

Hafnium dioxide (Cas# 12055-23-1):

PEL (USA)	Long-term value: 0.5 mg/m ³ as Hf
REL (USA)	Long-term value: 0.5 mg/m ³ as Hf
TLV (USA)	Long-term value: 0.5 mg/m ³ as Hf

DNELs: No further relevant information available.

PNECs: No further relevant information available.

Additional information: The lists that were valid during the creation were used as basis.

EXPOSURE CONTROLS:

Personal Protective Equipment (PPE):

General Protective and Hygienic measures:

- The usual precautionary measures for handling chemicals should be followed.
- Keep away from foodstuffs, beverages and feed.
- Wash hands before breaks and at the end of work.
- Avoid contact with the eyes.
- Avoid close or long term contact with the skin.
- Do not inhale dust.

Respiratory Protections:

- Use suitable respiratory protective when grinding or cutting material.
- For spills, respiratory protection may be advisable.
- Wear appropriate NIOSH approved respirator when ventilation is inadequate and occupational exposure limits are exceeded.

Protection of hands:

- Wear gloves for the protection against mechanical hazards according to OSHA, NIOSH or EN 388 rules.
- Gloves are advised for repeated or prolonged contact.
- Glove material has to be impermeable and resistant to the product, the substance, the preparation.

Eye protection:

- Follow relevant national guidelines concerning the use of protective eyewear.
- Use safety glasses or goggles as necessary to prevent dust and particles from entering the eye.

Body protection:

- Not required under normal conditions of use.
- Protection may be required for spills.

Limitation and supervision of exposure into the environment: No special requirements.

Risk management measures: No special requirements (see section 7 for additional information.).

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

GENERAL INFORMATION:

- **Appearance:**
 - **Form:** Granulate
 - **Color:** Grey
- **Odor:** Odorless
- **Odor threshold:** Not determined.
- **pH-value at 20 °C (68 °F):** Not applicable.
- **Change in condition**
 - **Melting point/Melting range:** >1980 °C (3596 °F)
 - **Boiling point/Boiling range:** Not determined.
- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Not determined.
- **Auto-ignition temperature:** Not determined.
- **Decomposition temperature:** Not determined.
- **Self igniting:** Product is not.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Explosion limits:**
 - **Lower:** Not determined.
 - **Upper:** Not determined.
- **Oxidizing properties:** Non-oxidizing.
- **Vapor pressure:** Not applicable.
- **Relative density** 4.6 g/cc.
- **Vapor density** Not applicable.
- **Evaporation rate** Not applicable.
- **Solubility in / Miscibility with water:** Insoluble.
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
 - **Dynamic:** Not applicable.
 - **Kinematic:** Not applicable.

OTHER INFORMATION: No further relevant information available.

10. STABILITY AND REACTIVITY

Reactivity: No further relevant information available.

Chemical Stability:

- **Thermal decomposition / conditions to be avoided:** No decomposition if used and stored according to specifications.

Possibility of hazardous reactions: Reacts with strong acids and alkali.

Conditions to avoid: Prevent formation of dust.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: Possible in traces.

11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS:

Acute toxicity: Based on available data, the classification criteria are not met.

LD/LC50 values that are relevant for classification: None.

Primary irritant effect:

- **Skin corrosion/irritation:** Based on available data, the classification criteria are not met.
- **On the eye:** Based on available data, the classification criteria are not met.
- **Respiratory or skin sensitization:** Based on available data, the classification criteria are not met.

Carcinogenic Categories:

- **IARC (International Agency for Research on Cancer):** 13463-67-7, Titanium dioxide – 2B
- **NTP (National Toxicology Program):** None of the ingredients are listed.
- **OSHA-Ca (Occupational Safety & Health Administration):** None of the ingredients are listed.
- **Probable routes of exposure:** Eye contact & skin contact.

Repeated Dose Toxicity: Repeated or long term inhalation of product dust may cause pulmonary disease.

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

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

TiO₂ (Titanium dioxide) is bound in a solid solution and will not be released as discrete particles of TiO₂.

Reproductive toxicity: Based on available data, the classification criteria are not met.

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

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

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

12. ECOLOGICAL INFORMATION

TOXICITY:

Aquatic Toxicity: No further relevant information available.

Persistence & Degradability: No further relevant information available.

BEHAVIOR IN ENVIRONMENTAL SYSTEM:

Bio accumulative Potential: No further relevant information available.

- **Mobility In Soil:** No further relevant information available

General Notes: Not known to be hazardous to water.

12.5 Results of PBT and vPvB assessment:

- **PBT:** Not applicable.
- **vPvB:** Not applicable

Other Adverse Effects: No further relevant information available

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Recommendation:

- Contact the waste processors for recycling information.
- 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 Packaging:

Recommendation:

- Disposal must be made according to official regulations.

14. TRANSPORT INFORMATION

UN-Number DOT, ADR, IMDG, IATA:	Not Regulated
UN proper shipping name DOT, ADR, IMDG, IATA	Not Regulated
Transport hazard class(s) DOT, ADR, IMDG, IATA Class	Not Regulated
Packing group DOT, ADR, IMDG, IATA	Not Regulated
Environmental hazards: Marine pollutant:	No
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of MARPOL 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 355 (extremely hazardous substances):** None of the ingredients are listed.
- **Section 313 (Specific toxic chemical listings):** 1344-28-1 Aluminum Oxide
- **TSCA (Toxic Substances Control Act):** All ingredients are listed..

Proposition 65 (California):

- **Chemicals known to cause cancer:** Reference to Titanium dioxide is based on unbound particles and not generally applicable to product as supplied. 13463-67-7 Titanium dioxide
- **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:** None of the ingredients are listed.

Carcinogenic Categories:

- **EPA (Environmental Protection Agency):** None of the ingredients are listed.
- **IARC (International Agency for Research on Cancer):** Reference to chemical component(s) listed below are based on unbound particles and not generally applicable to product as supplied. 13463-67-7 Titanium dioxide – 2B.
- **NIOSH-Ca (National Institute for Occupational Safety and Health):** 13463-67-7 Titanium dioxide.

Canadian Domestic Substance List (DSL): All ingredients are listed.

National Regulations:

Water hazard class: Generally not hazardous for water.

Other regulations, limitations and prohibitive regulations:

- **Substances of Very High Concern (SVHC) according to REACH, Article 57:** None of the ingredients are listed.
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16. OTHER INFORMATION & LAST REVISION DATE

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

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.

Abbreviation and acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS	Chemical Abstracts Service
DOT	Department of Transportation
EINECS:	European Inventory of Existing Commercial Chemical Substances
ELINCS:	European List of Notified Chemical Substances
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
SVHC	Substance of Very High Concern
SARA	Superfund Amendment and Reauthorization Act
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
DNEL:	Derived No-Effect Level (REACH)
PNEC:	Predicted No-Effect Concentration (REACH)
LC50:	Lethal concentration, 50 percent
LD50:	Lethal dose, 50 percent
PBT:	Persistent, Bioaccumulative and Toxic
vPvB:	Very Persistent and very Bioaccumulative
LDLo:	Lowest Lethal Dose Observed
Met. Corr.1:	Corrosive to metals – Category 1
Acute Tox. 4:	Acute toxicity – Category 4
Skin Corr. 1B:	Skin corrosion/irritation – Category 1B
Eye Dam. 1:	Serious eye damage/eye irritation – Category 1

NOTICE:

This material safety data sheet complements the technical data sheets but does not replace them. The information it contains is based on our present knowledge of the product on the date indicated. It is given in good faith. Users should be warned about the risks associated with using the product for a different purpose than that for which it was developed, and particularly for uses for which we are not qualified to give advice.

These regulatory prescriptions are provided with a view to helping users meet their obligations when using this product. This list should not be considered exhaustive and does not exempt users from ensuring that they are not required to comply with any further prescriptions other than those mentioned above concerning product possession and handling for which they are solely responsible.

Prepared By:

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LAST REVISION DATE: 12-06-17