SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 1.0
Revision Date 30.11.2012

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers
   - Product name: Nafen Alumina Powder
   - Brand: Nafen
   - CAS-No.: 1344-28-1

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Identified uses: Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet
   - Company: ANF Technology Ltd
   - Viru Väljak 2
   - Tallinn 10111
   - Estonia
   - Telephone: +372 5345 6955
   - E-mail: info@nafen.eu

1.4 Emergency telephone number
   - Emergency Phone #: +372 5345 6955

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
   Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008. This substance is not classified as dangerous according to Directive 67/548/EEC.

2.2 Label elements
   - The product does not need to be labelled in accordance with EC directives or respective national laws.

2.3 Other hazards
   - Hazardous potential not completely determined

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
   - Synonyms: Alumina
   - Formula: Al₂O₃
   - Molecular Weight: 101.96 g/mol
   - Hazard Symbol: Xi irritant (Company recommendation)
   - R-Phrases: 20, 37
   - S-Phrases: 7, 18, 22, 36/37/39

4. FIRST AID MEASURES

4.1 Description of first aid measures
   - **If inhaled**
     - If breathed in, move person into fresh air. If respiratory irritation persists, seek medical help.
   - **In case of skin contact**
     - Wash off with soap and plenty of water.
   - **In case of eye contact**
Flush eyes with water as a precaution.

**If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water.

### 4.2 Most important symptoms and effects, both acute and delayed

Cough, chest pain, Difficulty in breathing, Gastrointestinal disturbance

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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### 5. FIREFIGHTING MEASURES

#### 5.1 Extinguishing media

**Suitable extinguishing media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### 5.2 Special hazards arising from the substance or mixture

- Aluminum oxide

#### 5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

#### 5.4 Further information

Do not use halocarbon extinguishers. The product itself does not burn.

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### 6. ACCIDENTAL RELEASE MEASURES

#### 6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing vapors, mist or gas.

#### 6.2 Environmental precautions

No special environmental precautions required.

#### 6.3 Methods and materials for containment and cleaning up

Sweep up and shovel. Keep in suitable, closed containers for disposal.

#### 6.4 Reference to other sections

For disposal see section 13.

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### 7. HANDLING AND STORAGE

#### 7.1 Precautions for safe handling

Provide appropriate exhaust ventilation at places where dust is formed.

#### 7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

- Strongly hygroscopic

#### 7.3 Specific end uses

No data available

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### 8. EXPOSURE CONTROLS/PERSOAL PROTECTION

#### 8.1 Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide</td>
<td>1344-28-1</td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>UK. EH40 WEL – Workplace Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks For the purposes of these limits, respirable dust and inhalable dust are those fractions of the airborne dust which</td>
</tr>
</tbody>
</table>
will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, as amended by the ISO/CEN convention.

The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg/m³ 8-hour TWA of inhalable dust or 4 mg/m³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Advice on control is given in EH44 and in the great majority of workplaces reasonable control measures will normally keep exposure below these levels. However some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit.

Most of industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed ‘inhalable’ and ‘respirable’.

Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS 14/3.

Where dusts contain components that have their own assigned workplace exposure limits, all the relevant limits should be complied with.

Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used.

<table>
<thead>
<tr>
<th>TWA</th>
<th>4 mg/m³</th>
<th>UK. EH40 WEL – Workplace Exposure Limits</th>
</tr>
</thead>
</table>

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8.2 Exposure controls

**Appropriate engineering controls**
General industrial hygiene practice.

**Personal protective equipment**

**Eye/face protection**
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

**Skin protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Body Protection**
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Respiratory protection is necessary when exposure limits for airborne contaminants are exceeded during handling. Used approved dust respirator like type N95 (US) or type P1 (EN 143) dust masks.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Form: powder</td>
</tr>
<tr>
<td>Odour</td>
<td>no data available</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>no data available</td>
</tr>
<tr>
<td>pH</td>
<td>9.4 - 10.1 at 20 °C</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Melting point/range: 2,040 °C - lit.</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>2,980 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>no data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>no data available</td>
</tr>
</tbody>
</table>
9.2 Other safety information
    no data available

10. STABILITY AND REACTIVITY
10.1 Reactivity
    no data available
10.2 Chemical stability
    no data available
10.3 Possibility of hazardous reactions
    no data available
10.4 Conditions to avoid
    Exposure to moisture.
10.5 Incompatible materials
    Strong acids, Strong bases, Chlorine trifluoride, Ethylene oxide, Halogenated hydrocarbon,
    Oxygen difluoride, Sodium nitrate, Vinyl compounds
10.6 Hazardous decomposition products
    Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION
11.1 Information on toxicological effects
    Acute toxicity
    no data available
    Skin corrosion/irritation
    no data available
    Serious eye damage/eye irritation
    no data available
    Respiratory or skin sensitization
    no data available
    Germ cell mutagenicity
    no data available
    Carcinogenicity
    This product is or contains a component that is not classifiable as to its carcinogenicity based
    on its IARC, ACGIH, NTP, or EPA classification.
    IARC: No component of this product present at levels greater than or equal to 0.1% is
    identified as probable, possible or confirmed human carcinogen by IARC.
    Reproductive toxicity
Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation  May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion   May be harmful if swallowed.
Skin       May be harmful if absorbed through skin. May cause skin irritation.
Eyes       May cause eye irritation.

Signs and Symptoms of Exposure
Cough, chest pain, Difficulty in breathing, Gastrointestinal disturbance

Additional Information
RTECS: BD1200000

12. ECOLOGICAL INFORMATION
12.1 Toxicity
no data available

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS
13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION
14.1 UN number

ADR/RID: -  IMDG: -  IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG:    Not dangerous goods
IATA:    Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: -  IMDG: -  IATA: -

14.4 Packaging group
14.5 Environmental hazards ADR/RID:
    ADR/RID: no  IMDG: Marine pollutant: no  IATA: no

14.6 Special precautions for user
    no data available

15. REGULATORY INFORMATION
    This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.
    15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
        no data available
    15.2 Chemical Safety Assessment
        no data available

16. OTHER INFORMATION
    Further information
    Copyright 2012 ANF Technology Ltd. License granted to make unlimited paper copies for internal use only.
    The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. ANF Technology Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.