MATERIAL SAFETY DATA SHEET
in accordance with (EG) no 1907/2006

Brynpasta
Revised: 2015-10-09 Gäller fr.o.m. 2015-06-01 Ersätter dat. 2012-11-19

1. Identification of substance / preparation and company

1.1. Identification of substance or preparation
Trade name: Brynpasta
Suppliers article no: 11483

1.2. Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses: Abrasive/Polishing.
Uses advised against: None known.

1.3. Details of the supplier of the material safety data sheet

SUPPLIER
Company: Tormek AB
Address: Torphyttevägen 40
Area code / City: 711 34 Lindesberg
Country: Sverige
E-mail: info @ tormek.se
Web page: www. tormek.com
Telephone: +46 581 14790
Fax: +46 581 10930

Contact:
Name E-mail Telephone
Robert Karlsson info @ tormek.se +46 581 14790

1.4. Emergency telephone
+46-581-14790 kl. 8:00 - 16:00

2. Hazards identification
2.1. Classification of the substance or mixture
The mixture is not classified as dangerous according to regulation (EG) 1272/2008 (CLP).

2.2. Label elements
The product has no duty to mark.

2.3. Other hazards
No known.

3. Composition / information on ingredients
3.2. Mixture composed of binder / polishing compound / grinding compound

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>REACH no.</th>
<th>EC no.</th>
<th>CAS no.</th>
<th>Weight</th>
<th>(EG) 1272/2008 (CLP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>01-20119529248-35-xxxx</td>
<td>215-691-6</td>
<td>1344-28-1</td>
<td>30-40%</td>
<td>–</td>
</tr>
<tr>
<td>Petroleum distillates</td>
<td>01-2119456620-43-xxxx</td>
<td>265-149-8</td>
<td>64742-47-8</td>
<td>15–&lt;25%</td>
<td>Aap. Tox.1; H304, EUH 066</td>
</tr>
<tr>
<td>Ammonium hydroxide 25%</td>
<td>-</td>
<td>215-647-6</td>
<td>1336-21-6</td>
<td>&lt;1%</td>
<td>Skin Corr. 1B: H314 Aquatic Acute 1: H400</td>
</tr>
</tbody>
</table>
4. First aid measures
4.1 Description of first aid measures
Inhalation: Move to fresh air.
Ingestion: Rinse the mouth with water. Get medical advice if larger quantity has been swallowed. Do not induce vomiting.
Skin contact: Wash the skin with soap and water. Get medical advice if symptoms persist.
Eye contact: Rinse immediately with plenty of water. Get medical advice if irritation persists.

4.2. Most important symptoms and effects, both acute and delayed
Long or repeated exposure may degrease the skin.

4.3. Indication of immediate medical attention and special treatment needed
Unknown.

5. Fire-fighting measures
5.1. Extinguishing media
Suitable extinguishing media: Use extinguish foam, powder or carbon dioxide.
Unsafe extinguishing media: Do not use water with full jet.

5.2. Special hazards arising from the substance or mixture
When heated to temperature at or above the flash point, the product can be ignited.

5.3. Advice for firefighters
Avoid inhalation of fumes, use respiratory protection equipment.

6. Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures
Wear appropriate protective equipment, see section 8.

6.2. Environmental precautions
Prevent entry into drains, water courses or soil.

6.3. Methods and materials for containment and cleaning up
Absorbe with suitable material and collect the spillage.
Collected material to be handled in accordance with regulations.

6.4 Reference to other sections
See section 8 and 13.

7. Handling and storage
7.1. Precautions for safe handling
Containners should be kept well closed, make sure the ventilation is good at the factory premises.

7.2. Conditions for safe storage, including any incompatibilities
Store at frostless, cool place and in well closed packing.

7.3. Specific end use(s)
See section 1.2.
Bryn pasta

Revised: 2015-10-09

8. Exposure controls / personal protection
8.1. Control parameters

Exposure limit values

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS no.</th>
<th>Interval</th>
<th>ppm</th>
<th>mg / m³</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide (respirable dust)</td>
<td>1344-28-1</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1996</td>
</tr>
<tr>
<td>Aluminum oxide (total dust)</td>
<td>1344-28-1</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>1996</td>
</tr>
<tr>
<td>Petroleum distillates</td>
<td>64742-47-8</td>
<td>50</td>
<td>50</td>
<td>300</td>
<td>1989</td>
</tr>
<tr>
<td>Ammonium hydroxide</td>
<td>1336-21-6</td>
<td>20</td>
<td>20</td>
<td>14</td>
<td>2011</td>
</tr>
</tbody>
</table>

Other information on limit values and monitoring
No other information.

8.2. Exposure controls
Prevention actions
Ensure adequate ventilation on workstation.

Eye protection: Your own glasses or safety glasses.
Respiratory protection: Respirator with filter A2 P2 if exceeding exposure limits.
Hand protection: Impervious protective gloves of Nitrile rubber.
Skin protection: Normal work clothes with long sleeves and legs.
Environmental exposure controls: Do not flush into surface water or sanitary sewer system.

9. Physical and chemical properties
9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value / unit</th>
<th>Method/Ref</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Creme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>White-grey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic light ammonia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH concentrate</td>
<td>9-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The pH of the solution</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting point</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freezing point</td>
<td>Below 0°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 65°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition limits</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosion limits</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>&gt; 20.5 mm²/s</td>
<td>40°C</td>
<td></td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not oxidizing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MATERIAL SAFETY DATA SHEET
in accordance with (EG) no 1907/2006

Brynpasta
Revised: 2015-10-09

9.2. Other information
None.

10. Stability and reactivity
10.1. Reactivity
No known, if used properly.

10.2. Chemical stability
Stable at recommended storage and handling conditions.

10.3. Possibility of hazardous reactions
Reacts with oxidizing agents.

10.4. Conditions to avoid
Avoid high temperatures.

10.5. Incompatible materials
Oxidizing agents.

10.6. Hazardous decomposition products
No dangerous decomposition products known.

11. Toxicological information
11.1. Information on toxicological effects
The following data are applicable for Petroleum distillates CAS-no. 64742-47-8

Acute toxicity:
- LD50 orally > 5000 mg/kg (rat) (OECD 401)
- LD50 dermal > 3160 mg/kg (rabbit) (OECD 402)
- LC50 inhalation > 4950 mg/l (vapor), (rat) 4 hours (OECD 403)

Inhalation:
In high concentrations, vapors are narcotic and may cause headache, fatigue, dizziness and nausea. Gas or vapor in high concentrations may irritate the respiratory system.

Skin contact:
Prolonged or repeated contact may cause redness, itching and eczema/cracking. Degreases the skin.

Eye contact:
May irritate and cause redness and pain.

Ingestion:
Danger at aspiration: Chemical pneumonia can occur when vomiting results in that the liquid reaches the lungs. Ingestion of larger amounts may cause unconsciousness. However, ingestion can cause nausea, headache, dizziness and intoxication. Ingestion can cause irritation of the stomach/intestinal tract, vomiting and diarrhea.

Delayed effects / repeated exposure
Sensitization: Not known.
Chronic effects: No known.

Carcinogenic, Mutagen and Reproductive toxicity
Carcinogenicity: None.
Germ cell mutagenicity: None.
Properties harmful to the fetus: Not known.
Reproductive toxicity: Not known.

Aspiration hazard:
The liquid can enter the lungs and cause damage (chemical pneumonia, potentially fatal).
The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6

Acute toxicity:

Ingestion: Causes severe corrosive injuries with burning pain, vomiting, stomach pain, eventually a severe general effect (shock) and kidney damage. Corrosive injuries can occur already with ingestion of small amounts. Great risk of permanent damage due to scarring corrosion injuries in the esophagus or stomach.

Inhalation: Inhalation may cause burning in the nose and throat, sneezing, coughing and breathing difficulties. Risk of lung damage at high levels. Inhalation of vapors in high concentrations can cause unconsciousness. Inhalation of aerosols/vapors can over the course of a few hours cause effusion on the lungs (pulmonary edema).

Skin contact: With skin contact, corrosive injuries with burning, redness and wounds may occur.

Serious eye damage/eye irritation: Splashes in the eyes may cause pain and burns. Risk of permanent eyesight damage.

Sensitization: Not sensitizing (guinea pig).

Germ cell mutagenicity: Animal testings did not show any mutagenic effects.

Carcinogenicity: Animal testings did not show any carcinogenic effects (rat).

Toxicity at repeated exposure: No data.

Reproductive toxicity: Animal testings did not show any effects on fertility (rat, orally).

Single exposure (STOT):

Inhalation: Target organs: Respiratory system. May cause respiratory irritation.

Remark: The substance or mixture is nor classified as specific target organ toxicant, repeated exposure.

Repeated exposure (STOT): No classification.

Other toxicological properties:

Toxicity at repeated exposure:

NOAEL: 0,035 mg/l (rat, male. Test topic: Ammonia. Inhalation, 50 days)

Aspiration hazard: No classification for aspiration toxicity.

12. Ecological information

12.1 Toxicity

The following data are applicable for Petroleum distillates CAS-no. 64742-47-8

Acute aquatic, fish Value: 1000 mg/l
Test method: LC50 (OECD 203)
Duration: 96 h

Acute aquatic, algae Value: 1000 mg/l
Test method: NOELR (OECD 201)
Duration: 72 h

Acute aquatic,Daphnia Value: 1000 mg/l
Test method: EL0 (OECD 202)
Duration: 48 h
The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6

**Acute toxicity**
- LC50 fish 0,89 mg/l, Species: Oncorhynchus mykiss (rainbow trout), 96h. Test topic: Ammonia.
- LC50 Daphnia/aquatic invertebrates 101 mg/l, Species: Daphnia magna (water flea), 48h. Test topic: Ammonia. (ASTM E 729-80)
- EC50 2700mg/l, Species: Chlorella vulgaris (freshwater green algae), 18d. Test topic: Ammonium sulfate. (static test)
- Bacteria: Studies are scientifically not justified.

**Chronic toxicity**
- LOEC fish 0,022 mg/l, Species: Oncorhynchus mykiss (rainbow trout), 73 d. Test topic: Ammonium chloride (flow through test).
- NOEC Aquatic invertebrates 0,79 mg/l, Species: Daphnia magna (water flea), 96h. Test topic: Ammonium chloride. (OPPTS 850.1300)

12.2 Persistence and degradability
The following data are applicable for Petroleum distillates CAS-no. 64742-47-8
- Biodegradability: BOD>=60% after 28 days.

12.3 Bioaccumulative potential
The following data are applicable for Petroleum distillates CAS-no. 64742-47-8
- Ingredients in the product has log Pow2-7. Therefore it can’t be excluded that the product bioaccumulate.

12.4 Mobility
The following data are applicable for Petroleum distillates CAS-no. 64742-47-8
- The product is insoluble in water and spread on the water surface.

12.5 Result of PBT and vPvB assessment
The following data are applicable for Petroleum distillates CAS-no. 64742-47-8
- The product is not, or does not contain, a substance considered to be PBT or vBvP.

12.6 Other adverse effects
The following data are applicable for Petroleum distillates CAS-no. 64742-47-8
- Spills may form a film on the water surface and the film can physically harm aquatic organisms and reduce oxygen turnover.

12.5 Result of PBT and vPvB assessment
The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6
- Harmful effect on aquatic organisms due to pH change.

The following data are applicable for Petroleum distillates CAS-no. 64742-47-8
- Biodegradability: BOD>=60% after 28 days.

The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6
- Easily biodegradable.

12.3 Bioaccumulative potential
The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6
- Ingredients in the product has log Pow2-7. Therefore it can’t be excluded that the product bioaccumulate.

12.4 Mobility
The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6
- The product is movable in the aquatic environment. Absorbed by the soil.

12.5 Result of PBT and vPvB assessment
The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6
- The product is not, or does not contain, a substance considered to be PBT or vBvP.

12.6 Other adverse effects
The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6
- Harmful effect on aquatic organisms due to pH change.

The following data are applicable for Petroleum distillates CAS-no. 64742-47-8
- Spills may form a film on the water surface and the film can physically harm aquatic organisms and reduce oxygen turnover.

The following data are applicable for Ammoniumhydroxid 25%CAS-no.1336-21-6
- Harmful effect on aquatic organisms due to pH change.
Brynpasta

13. Disposal considerations
13.1. Waste treatment methods
Generally: Empty packaging is sent for recycling. Local regulations and EU regulations shall be followed for disposal. Remains and used product that can not be reused must be treated as hazardous waste.
Waste group: Suggested waste code: EWC 12 01 12

14. Transport information
Product classified as dangerous goods: No.

<table>
<thead>
<tr>
<th></th>
<th>Land transport (ADR / RID)</th>
<th>Inland waterway transport (AND)</th>
<th>Maritime transport (IMDG)</th>
<th>Air transport (ICAO-TI / IATA-DGR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>14.1. UN number</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>14.2. Proper shipping name</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>14.3. Transport hazard class(es)</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Hazard label(s)</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Hazard number</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>14.4. Packing group</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>14.5. Environmental hazards</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Tunnel restriction code</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Environmental risk of tankers</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Sub risk</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>IMDG-code</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>segregation group</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Marine pollution</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>EMS</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Hazard label(s)</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Bryn pasta

14.6. Special precautions for use
None.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code
None.

15. Current regulations
15.1. Safety, health and environmental regulations / legislation specific for the substance or mixture
Other information on regulations:
Work environment constitution "Exposure limits and actions against air pollution", AFS 2011:18.


15.2. Chemical safety assessment
Information: Chemical safety assessment is not done.

16. Other information
Issued: 2015-10-09
Replaces version made 2012-11-19. Changed in all sections.

<table>
<thead>
<tr>
<th>List of relevant H-phrases</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H304</td>
<td>May be fatal if swallowed and enters airways.</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>H400</td>
<td>Very toxic to aquatic organisms.</td>
</tr>
</tbody>
</table>