SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Name of the substance: UG1 Activated Alumina
Identification number: -
Registration number: Due by May 2018
Synonyms: Actal * Aluminium oxide
Issue date: 22-July-2008
Version number: 07
Revision date: 16-February-2015
Supersedes date: 10-October-2013

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Actal UG1 has a variety of uses. These include but are not limited to applications as a desiccant, catalyst or catalyst support
Uses advised against: None known.

1.3. Details of the supplier of the safety data sheet

Company: BYK-Chemie GmbH
Address: Abelstrasse 45, 46483 Wesel, Germany
Telephone number: +49 281 670-0
Fax: +49 281 65735
Information: Regulatory Affairs
Telephone number: +49 281 670-23532
Fax: +49 281 670-23533
e-mail: GHS.BYK@altana.com, MSDSInfo.BYK.Additives@altana.com
Website: www.byk.com

1.4 Emergency telephone number

GBK Gefahrgutbuero GmbH: +49 6132 84463

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

This substance does not meet the criteria for classification according to Directive 67/548/EEC as amended.

Physical hazards: Not classified for physical hazards.
Health hazards: Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects.
Environmental hazards: Not classified for hazards to the environment.

Classification according to Regulation (EC) No 1272/2008 as amended

This substance does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

Hazard summary

Specific hazards: The principle risk to human health is related to the concentration of dust in the air acting as a nuisance dust. For additional information on inhalation hazards, see Section 11 of this safety data sheet.
Main symptoms: May cause skin irritation and/or dermatitis. Dust may irritate the eyes and the respiratory system. Irritation of eyes and mucous membranes. Skin irritation.
2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

- **Hazard pictograms**: None.
- **Signal word**: None.
- **Hazard statements**: The substance does not meet the criteria for classification.

**Precautionary statements**

- **Prevention**: Not required
- **Response**: Not required
- **Storage**: Not required
- **Disposal**: Not required

**Supplemental label information**: None.

2.3. Other hazards

Material can be slippery when wet.

**SECTION 3: Composition/information on ingredients**

3.1. Substances

**General information**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>%</th>
<th>CAS-No. / EC No.</th>
<th>REACH Registration No.</th>
<th>INDEX No.</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide</td>
<td>100</td>
<td>1344-28-1</td>
<td>01-2119529248-35-xxxx</td>
<td>215-691-6</td>
<td></td>
</tr>
</tbody>
</table>

**Classification**: DSD: -  
CLP: -

List of abbreviations and symbols that may be used above

- DSD: Directive 67/548/EEC.
- #: This substance has workplace exposure limit(s).

**Composition comments**: Contains no hazardous ingredients according to GHS

**SECTION 4: First aid measures**

4.1. Description of first aid measures

- **Inhalation**: If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.
- **Skin contact**: Wash off with soap and water. Get medical attention if irritation develops and persists. Take off contaminated clothing and wash before reuse.
- **Eye contact**: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists.
- **Ingestion**: Rinse mouth with water. Rinse mouth. Get medical attention if symptoms occur. If ingestion of a large amount does occur, seek medical attention.

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

None known. Irritation of eyes and mucous membranes. Skin irritation.

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

Treat symptomatically.

**SECTION 5: Firefighting measures**

4.1. Description of first aid measures

- **Suitable extinguishing media**: Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

The product itself does not burn. No unusual fire or explosion hazards noted. Material can be slippery when wet.

5.3. Advice for firefighters

Special protective equipment for firefighters

Wear self-contained breathing apparatus and protective clothing.

Special fire fighting procedures

No unusual fire or explosion hazards noted.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Avoid inhalation of dust from the spilled material. Wear a dust mask if dust is generated above exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. For personal protection, see section 8.

For emergency responders

Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Collect dust using a vacuum cleaner equipped with HEPA filter. Minimise dust generation and accumulation. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water Sweep up or vacuum up spillage and collect in suitable container for disposal.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust from this material. Avoid contact with skin and eyes. Avoid prolonged exposure. In case of insufficient ventilation, wear suitable respiratory equipment. Practice good housekeeping.

7.2. Conditions for safe storage, including any incompatibilities

Protect from moisture. Avoid dust formation. Keep container tightly closed. Store in a well-ventilated place. Guard against dust accumulation of this material. Store away from incompatible materials (see Section 10 of the SDS).

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

UK. EH40 Workplace Exposure Limits (WELs)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Inhalable dust.</td>
</tr>
<tr>
<td>(1344-28-1)</td>
<td></td>
<td>4 mg/m³</td>
<td>Respirable dust.</td>
</tr>
</tbody>
</table>

Biological limit values

No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures

Follow standard monitoring procedures.

Derived no-effect level (DNEL)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Route</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide (CAS 1344-28-1)</td>
<td>Consumer</td>
<td>Oral</td>
<td>3.29 mg/kg bw/day</td>
<td>long term, systemic</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>Inhalation</td>
<td>15.63 mg/m³</td>
<td>long term, local</td>
</tr>
</tbody>
</table>

Predicted no effect concentrations (PNECs)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Route</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide (CAS 1344-28-1)</td>
<td>Not applicable</td>
<td>STP</td>
<td>20 mg/l</td>
<td></td>
</tr>
</tbody>
</table>
Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL (occupational exposure limit), suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment

General information

Wear personal protective equipment. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. Eye wash fountain is recommended. Material can be slippery when wet. Launder contaminated clothing before reuse.

Eye/face protection

Wear safety glasses with side shields. Use tight fitting goggles if dust is generated.

Skin protection

- Hand protection

Wear appropriate chemical resistant gloves. Use protective skin cream before handling the product. Prolonged and/or repeated skin contact with this product may cause irritation/dermatitis.

- Other

Wear suitable protective clothing. Normal work clothing (long sleeved shirts and long pants) is recommended.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Wear respirator with dust filter.

Thermal hazards

Not applicable.

Hygiene measures

Do not breathe dust. Avoid contact with eyes. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls

Avoid release to the environment. Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Powder.

Physical state

Solid.

Form

Powder.

Colour

Not available.

Odour

Not available.

Odour threshold

Not applicable

pH

10.0, as a 10% suspension

Melting point/freezing point

Not applicable

Initial boiling point and boiling range

Not applicable

Flash point

Not applicable

Evaporation rate

Not applicable

Flammability (solid, gas)

Not applicable

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not applicable

Flammability limit - upper (%)

Not applicable

Vapour pressure

Not applicable

Vapour density

Not applicable

Relative density

Not available.
Solubility(ies)

Solubility (water) Not available.
Solubility (other) Not available.

Auto-ignition temperature Not applicable
Decomposition temperature Not applicable
Viscosity Not applicable
Explosive properties Not applicable
Oxidizing properties Not applicable

9.2. Other information

Bulk density 1000.00 kg/m3
Percent volatile 0 % estimated

SECTION 10: Stability and reactivity

10.1. Reactivity
Material is stable under normal conditions. The product is stable and non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
Material is stable under normal conditions.

10.3. Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use. Hazardous polymerisation does not occur.

10.4. Conditions to avoid
Avoid spread of dust. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products
No dangerous reaction known under conditions of normal use. No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information
Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation
Inhalation of dusts may cause respiratory irritation. Prolonged inhalation may be harmful.

Skin contact
No adverse effects due to skin contact are expected.

Eye contact
Dust in the eyes will cause irritation.

Ingestion
May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms
Irritation of eyes and mucous membranes. Skin irritation.

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide (CAS 1344-28-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td>LC50</td>
<td>Rat</td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>Rat</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation
Due to partial or complete lack of data the classification is not possible.

Serious eye damage/eye irritation
Dust in the eyes will cause irritation.

Respiratory sensitisation
Due to partial or complete lack of data the classification is not possible.

Skin sensitisation
Due to partial or complete lack of data the classification is not possible.

Germ cell mutagenicity
Due to partial or complete lack of data the classification is not possible.

Carcinogenicity
Due to partial or complete lack of data the classification is not possible.

Reproductive toxicity
Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - single exposure
Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity - repeated exposure
Due to partial or complete lack of data the classification is not possible.

Aspiration hazard
Due to partial or complete lack of data the classification is not possible.

Mixture versus substance information
No information available.

Other information
Not available.

SECTION 12: Ecological information

12.1. Toxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide (CAS 1344-28-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Fish</td>
</tr>
<tr>
<td></td>
<td>NOEC</td>
<td>Fish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 218.6 mg/l, 96 hours as Al</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37.2 mg/l, 96 hours as Al</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

12.2. Persistence and degradability
No data is available on the degradability of this product.

12.3. Bioaccumulative potential
No data available.

12.4. Mobility in soil
No data available.

12.5. Results of PBT and vPvB assessment
Not available.

12.6. Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Residual waste
Material should be recycled if possible.
Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Dispose of in accordance with local regulations. Can be landfilled, when in compliance with local regulations.

Contaminated packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

EU waste code
The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Disposal methods/information
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Special precautions
Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR
Not regulated as dangerous goods.

RID
Not regulated as dangerous goods.

ADN
Not regulated as dangerous goods.
IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations
- Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex I
  Not listed.
- Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex II
  Not listed.
  Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1
  Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2
  Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3
  Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V
  Not listed.
  Not listed.
- Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA
  Not listed.

Authorisations
- Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended
  Not listed.

Restrictions on use
- Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use
  Not regulated.
- Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work
  Not listed.
- Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work
  Not regulated.
- Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding.
  Not regulated.

Other EU regulations
- Directive 96/82/EC (Seveso II) on the control of major-accident hazards involving dangerous substances
  Not regulated.
- Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.
  Always applicable.
- Directive 94/33/EC on the protection of young people at work
  Not listed.

Other regulations
This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006. The product is classified and labelled in accordance with EC directives or respective national laws. This product is in compliance with Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronics equipment (RoHS).
National regulations
Follow national regulation for work with chemical agents.

15.2. Chemical safety assessment
No Chemical Safety Assessment has been carried out.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of New and Existing Chemicals (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

A “Yes” indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

SECTION 16: Other information

List of abbreviations
Not available.

References
Not available.

Information on evaluation method leading to the classification of mixture
Not applicable.

Full text of any statements or R-phrases and H-statements under Sections 2 to 15
None.

Revision information
This document has undergone significant changes and should be reviewed in its entirety.

Training information
Follow training instructions when handling this material.

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