Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name: Urosin® 4633
Additional Name: Aqueous UV-cure urethane copolymer dispersion
Company Name: Wanhua Chemical Group Co., LTD
Address: No.17, Tianshan Rd, YEDA, Yantai, China
Telephone: 0086-535-3388160 Fax: 0086-535-338222-1150
Emergencies Telephone:
WANHUA +86 535-8203123
China +86 532-83889090
EU +31 20 20 65132/65130、+44 780 183 7343
NA 800-424-9300、+1-703-527-3887

Recommended uses:
Waterborne coatings for wood.

Section 2 - HAZARDS IDENTIFICATION

GHS Classification of the substance or mixture
Skin Corrosion/Irritation Category 2, H315
Eye Irritation Category 2A, H319
Skin Sensitizer Category 1, H317

Label elements:

Pictogram: ![Exclamation Mark]
Signal words: WARNING
Risk description:
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.

Precautionary statements:
Preventive measures:
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P261 Avoid breathing dust/fumes.
P272 Contaminated work clothing should not be allowed out of the workplace.

Accident response:
P302+P352 IF ON SKIN: Wash with plenty of water and soap.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
Storage:
Please store the product in sealed original packaging, cool and dry condition. Storage temperature should be maintained between 5°C and 30°C. The product should be protected from freezing during storage. Immediately seal the package after use.

Disposal:
P501 Dispose of contents/container in accordance with local regulations.

Physical and chemical hazards: May cause pollution to water and soil.

Health hazard:

Inhaled
The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. No report of respiratory illness in humans as a result of exposure to multifunctional acrylates has been found. Similarly evidence of systemic damage does not appear to exist.

Ingestion
The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

Skin Contact
Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. The material may accentuate any pre-existing dermatitis condition. Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.

All multifunctional acrylates (MFA) produce skin discomfort and are known or suspected skin sensitisers. Aerosols generated in the industrial process are reported to produce dermatitis - vapours generated by the heat of milling may also occur in sufficient concentration to produce dermatitis. Because exposure to industrial aerosols of MFA may also include exposure to various resin systems, photo-initiators, solvents, hydrogen-transfer agents, stabilisers, surfactants, fillers and polymerisation inhibitors, toxic effects may arise due to a range of chemical actions.
Eye
Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

Chronic
Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.

All multifunctional acrylates (MFA) produce skin discomfort and are known or suspected skin sensitisers. Aerosols generated in the industrial process are reported to produce dermatitis - vapours generated by the heat of milling may also occur in sufficient concentration to produce dermatitis. Because exposure to industrial aerosols of MFA may also include exposure to various resin systems, photo-initiators, solvents, hydrogen-transfer agents, stabilisers, surfactants, fillers and polymerisation inhibitors, toxic effects may arise due to a range of chemical actions.

Sensitisation may give severe responses to very low levels of exposure, in situations where exposure may occur.

Environmental hazards: See Section 12

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>CAS RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyurethane/Polyacrylate copolymer</td>
<td>N/A</td>
<td>23-26%</td>
</tr>
<tr>
<td>Trimethylolpropane triacrylate</td>
<td>15625-89-5</td>
<td>8-9%</td>
</tr>
<tr>
<td>Pentaerythritol triacrylate/Tetraacrylate</td>
<td>3524-68-3</td>
<td>4-6%</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>61-63%</td>
</tr>
</tbody>
</table>

There is no GHS hazards classification for Polyurethane/Polyacrylate copolymer.

Section 4 - FIRST AID MEASURES

Description of first aid measures

General advice: In case of accident or unwellness, seek medical attention immediately (show directions for use or safety data sheet if possible).

If inhaled: No special measures are necessary. In case of irritation, seek medical advice.

In case of skin contact: Wash with plenty of water/soap. In case of skin reactions, consult a physician.

In case of eye contact: Rinse cautiously with water for at least 20 minutes. Tilt the head in order to avoid contact with the other eye. Contact an ophthalmologist.

If swallowed: If uncertain or if experiencing adverse symptoms, seek medical advice immediately.
Most important symptoms and effects, both acute and delayed
Symptoms: May cause irritation by skin contact.

Indication of any immediate medical attention and special treatment needed
Immediate medical attention: First Aid, decontamination, treatment of symptoms.

Section 5 - FIRE FIGHTING MEASURES
Hazards characteristics: Burning conditions will release toxic smoke

Hazards during fire-fighting: Carbon monoxide, Carbon dioxide, Oxynitride

Suitable extinguishing media: Water fog, foam, dry extinguishing media

Protective equipment for fire-fighters: Fire-fighter must wear the filtration mask, wear whole body fire protective clothing, fire in the wind. Transfer the vessels to an open area as far as possible. In case a fire occurs in a surrounding environment, sprinkling water into the surrounding equipment to make it cool.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Personal precautions: Use personal protection equipment. Keep unauthorized persons away.

Environmental precautions
Do not empty into drains.

Methods and material for containment and cleanup
Methods for cleanup: Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as described in the section on waste disposal.

Reference to other sections
Reference to other sections: Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

Section 7 - HANDLING AND STORAGE
Control parameters
The product does not contain any relevant quantities of materials with critical values that have to be mentioned at the workplace.

Handling
Necessary precautions required in the handling of volatile solvents must be taken. Ensure adequate ventilation and, if necessary, exhaust ventilation when handling or transferring the product. Protection against explosions is required.

Storage
The product will keep stable for six months when stored in its sealed original packaging at temperatures between 5°C and 30°C. Storage at temperatures below 5°C will make the product frozen and cause irreversible damage. The product should therefore be protected from freezing during storage. Temperatures higher than 30°C should be avoided in order
to prevent the evaporation of water, which will result in the formation of a non-redispersible polymer film.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION
Exposure controls
Respiratory protection: Respiratory equipment required in an insufficiently ventilated working areas and during spraying.
Hand protection: Suitable materials for safety gloves. Nitrile rubber – NBR: thickness >=0.35mm; breakthrough time >=480min. Recommendation: contaminated gloves should be disposed of.
Eye protection: Wear eye/face protection.
Body protection: Wear suitable protective clothing.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES
9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Status</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Translucent to milky white</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Misible</td>
</tr>
<tr>
<td>Odour</td>
<td>Slight inherent odour</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour pressure (kPa)</td>
<td>Not established</td>
</tr>
<tr>
<td>pH</td>
<td>6.0-8.0</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not established</td>
</tr>
<tr>
<td>n-octanol / water (logkow)</td>
<td></td>
</tr>
<tr>
<td>Flash point (℃)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Density (g/cm3)</td>
<td>ca. 1.04 at 20 ℃</td>
</tr>
<tr>
<td>Upper Explosive Limit[%(v/v)]</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lower Explosive Limit[%(v/v)]</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point (℃)</td>
<td>Not established</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Auto-ignition temperature (℃)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not established</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Molecular weight(g/mol)</td>
<td>Not established</td>
</tr>
<tr>
<td>Vapour density (Air = 1)</td>
<td>Not established</td>
</tr>
<tr>
<td>Relative density (Water = 1)</td>
<td>1.04</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>5-200 mPa.s at 25 ℃</td>
</tr>
<tr>
<td>VOC</td>
<td>Not established</td>
</tr>
</tbody>
</table>

9.2 Other information
The indicated values do not necessarily correspond to the product specification. Please refer to the technical information sheet for specification data.
Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

10.1 Stability
- No decomposition when used and stored properly.

10.2 Materials to avoid
- Acids, bases, and electrolytic solutions.

10.3 Conditions to avoid
- Strong light, high temperature and low temperature.

10.4 Hazardous decomposition products
- On drying of the coating release of neutralizing agent.

Section 11 - TOXICOLOGICAL INFORMATION

Toxicological studies on the product are not yet available.
Please find below the toxicological data available to us for the components (hazardous components).

Trimethylolpropane triacrylate

**TOXICITY**
- Dermal (rabbit) LD50: >=5000 mg/kg
- Oral (rat) LD50: >5000 mg/kg

**IRRITATION**
- Eye (rabbit): 100 mg Moderate
- Skin (human): 1% Primary Irritant
- Skin (rabbit): 500 mg/24h Moderate

Pentaerythritol tri-, tetraacrylate

**TOXICITY**
- Dermal (rabbit) LD50: 4000 mg/kg
- Oral (rat) LD50: 1830 mg/kg

**IRRITATION**
- Not Available

Water

**TOXICITY**
- Oral (rat) LD50: >90000 mg/kg

**IRRITATION**
- Not Available

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicological studies of the product are not available.
Do not allow to product to escape into waterways, wastewater or soil.
Please find below the ecotoxicological data available for the components.

**Toxicity**

**Trimethylolpropane triacrylate**
- LC50 96h Fish 0.87mg/L
- EC50 96h Algae or other aquatic plants 1.123mg/L
- NOEC 96h Fish 0.89mg/L

**Pentaerythritol tri-, tetraacrylate**
LC50 96h Fish 3.2mg/L
EC50 48h Crustacea 13mg/L
EC50 96h Algae or other aquatic plants 33mg/L
EC0 48h Crustacea 10.3mg/L
NOEC 96h Fish 2.2mg/L

**Water**
LC50 96h Fish 897.520mg/L
EC50 96h Algae or other aquatic plants 8768.874mg/L

**Persistence and degradability**
- trimethylolpropane triacrylate: LOW (Water/Soil), LOW (Air)
- pentaerythritol tri-, tetraacrylate: LOW (Water/Soil), LOW (Air)
- Water: LOW (Water/Soil), LOW (Air)

**Bioaccumulative potential**
- trimethylolpropane triacrylate: LOW (LogKOW = 2.8628)
- pentaerythritol tri-, tetraacrylate: LOW (LogKOW = 2.267)
- Water: LOW (LogKOW = -1.38)

**Mobility in soil**
- trimethylolpropane triacrylate: LOW (KOC = 1916)
- pentaerythritol tri-, tetraacrylate: LOW (KOC = 57.97)
- Water: LOW (KOC = 14.3)

---

**Section 13 - DISPOSAL CONSIDERATIONS**

**Waste treatment methods**

**Disposal considerations:** Do not dispose of with household waste. Do not allow to enter drains. Dispose of waste according to applicable legislation.

**Uncleaned empty packaging:** Handle contaminated packages in the same way as the substance itself.

**Suitable cleaning agents:** Water (with cleaning agent). Retain contaminated washing water and dispose it.

---

**Section 14 - TRANSPORTATION INFORMATION**

**ADR/RID**

- 14.1 UN number: Not dangerous goods
- 14.2 UN proper shipping name: Not dangerous goods
- 14.3 Transport hazard class: Not dangerous goods
- 14.4 Packing group: Not dangerous goods
- 14.5 Environment hazards: Not dangerous goods
### ADN

<table>
<thead>
<tr>
<th>14.1 UN number</th>
<th>Not dangerous goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 UN proper shipping name</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.3 Transport hazard class</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.5 Environment hazards</td>
<td>Not dangerous goods</td>
</tr>
</tbody>
</table>

### IATA

<table>
<thead>
<tr>
<th>14.1 UN number</th>
<th>Not dangerous goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 UN proper shipping name</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.3 Transport hazard class</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.5 Environment hazards</td>
<td>Not dangerous goods</td>
</tr>
</tbody>
</table>

### IMDG

<table>
<thead>
<tr>
<th>14.1 UN number</th>
<th>Not dangerous goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2 UN proper shipping name</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.3 Transport hazard class</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>Not dangerous goods</td>
</tr>
<tr>
<td>14.5 Environment hazards</td>
<td>Not dangerous goods</td>
</tr>
</tbody>
</table>

### 14.6 Special precautions for user

See section 6-8.

Additional information : Not dangerous cargo.

- Avoid heat above 30°C or lower than 5°C, keep away from food, acids and bases. According to the latest IATA DGR, this product is not dangerous.

### Section 15 - REGULATORY INFORMATION

15.1 The product is classified and labeled according to Regulation (EC) No. 1272/2008 (GHS/CLP).

15.2 Safety, health and environmental regulation/legislation specific for the substance or mixture Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances. Not applicable
15.3 All ingredients are listed in IECSC, or exempted, or confirmed by suppliers.

### Section 16 - OTHER INFORMATION

<table>
<thead>
<tr>
<th>Legend</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
</tr>
</tbody>
</table>

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guideline for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.