Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name: Lacper® 4221

Additional Name: Aqueous modified polyurethane dispersion

Company Name: Wanhua Chemical Group Co., LTD

Address: No.17, Tianshan Rd, YEDA, Yantai, 264006, China

Telephone: 0086-535-3388160
Fax: 0086-535-6875138

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

2.1 GHS Classification of the substance or mixture
Serious eye irritation 2, H319
Reproductive toxicity 1B, H360

2.2 Label elements

Pictogram

Signal word: Danger

Hazard statements
H319 Causes eye irritation
H360 May damage the unborn child. Suspected of damaging fertility.

Precautionary statements
P280 wear protective gloves/ eye protection/ face protection
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several mintues.
Remove contact lenses, if present and easy to do. Continue rinsing.

2.3 Other hazards
No information available
Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>NAME</th>
<th>CAS RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixture</td>
<td>Polyurethane</td>
<td>N/A</td>
<td>39-41%</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>7732-18-5</td>
<td>56.7-58.7%</td>
</tr>
<tr>
<td></td>
<td>N-Ethyl-2-pyrrolidone</td>
<td>2687-91-4</td>
<td>2.3</td>
</tr>
</tbody>
</table>

There is no GHS hazardous classification for polyurethane.

Section 4 - FIRST AID MEASURES

Description of first aid measures
- General advice: In case of accident or unwellness, seek medical advice 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: In all cases of doubt, or when symptoms persist, 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

Extinguishing media
- Suitable extinguishing media: Carbon dioxide (CO$_2$), Foam, Extinguishing powder, Water spray jet
- In case of major fire and large quantities: Water spray jet, alcohol resistant foam
- Co-ordinate fire-fighting measures to the fire surroundings.

Advice for firefighters
- Firefighters have to wear self-contained breathing apparatus.

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

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 cleaning up
- Methods for cleaning up: Absorb with liquid-binding material (e.g. sand, diatomaceous
earth, acid- or universal binding agents). Treat the recovered material as prescribed 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

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**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**
The precautions required in the handling of solvents must be taken. Ensure adequate ventilation and, if necessary, exhaust ventilation when handling or transferring the product. Explosion protection required.

**Storage**
The product will keep stable for six months when stored in its sealed original packaging at temperatures between 5°C and 35°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 35°C should be avoided in order to prevent the evaporation of water, which will result in the formation of a non-redispersible polymer film.

**Remarks**
The values for density and viscosity are guide values. Please see the product information sheet.

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**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**8.1 Control parameters**
N-Ethyl-2-pyrrolidone

**Derived No Effect Level (DNEL)**

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Exposure routes</th>
<th>Health effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>11 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>4 mg/kg BW/d</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>13 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute local effects</td>
<td>26 mg/m³</td>
</tr>
</tbody>
</table>

**Predicted No Effect Concentration (PNEC)**

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>0.235 mg/kg</td>
</tr>
<tr>
<td>Marine water</td>
<td>0.025 mg/l</td>
</tr>
<tr>
<td>Fresh water</td>
<td>0.25 mg/l</td>
</tr>
<tr>
<td>Marine sediment</td>
<td>0.191 mg/kg</td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>1.91 mg/kg</td>
</tr>
<tr>
<td>Onsite sewage plant</td>
<td>10 mg/l</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

**Respiratory protection**: Respiratory equipment required in insufficiently ventilated working areas and during spraying.

**Hand protection**: Suitable materials for safety gloves; EN 374:
Butyl rubber – IIR: thickness >=0.5mm; breakthrough time >=480min.

**Recommendation**: contaminated gloves should be disposed of.
Conditionally suitable materials for protective gloves; EN 374:
Nitrile rubber – NBR (>=0.35mm)
Breakthrough time not tested; dispose of immediately after contamination.

**Eye protection**: Wear eye/face protection.

**Body protection**: Wear suitable protective clothing.

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**Section 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>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>Translucent to milky white</td>
</tr>
<tr>
<td>Odour</td>
<td>Slight inherent odour</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>Not established</td>
</tr>
<tr>
<td>pH</td>
<td>7.0-9.0</td>
</tr>
<tr>
<td>Pour point</td>
<td>Not established</td>
</tr>
<tr>
<td>Initial boiling point</td>
<td>approx. 100 °C(water)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not established</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not established</td>
</tr>
<tr>
<td>Flammability(solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Burning number</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>Not established</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not established</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not established</td>
</tr>
<tr>
<td>Density</td>
<td>ca. 1.04 g/cm³ at 20 °C</td>
</tr>
<tr>
<td>Miscibility with water</td>
<td>Miscible at 20 °C</td>
</tr>
<tr>
<td>Surface tension</td>
<td>Not established</td>
</tr>
<tr>
<td>Partition coefficient(n-octanol/water)</td>
<td>Not established</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not established</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>10 – 200 mPa.s at 25 °C</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not established</td>
</tr>
<tr>
<td>Dust explosion class</td>
<td>Not applicable</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 properly.

10.2 Materials to avoid
Acids, bases and electrolyte solution.

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

Please find below the toxicological data available to us for the components (hazardous components).

11.1 Information on toxicological effects

Acute toxicity
N-Ethyl-2-pyrrolidone
LD50 Oral - Rat - male and female – 3,200 mg/kg
LC50 Inhalation - Rat - male and female - 4 h - > 5.1 mg/l
(OECD Test Guideline 403)
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)

Skin corrosion/irritation
N-Ethyl-2-pyrrolidone
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
N-Ethyl-2-pyrrolidone
Eyes - Rabbit
Result: Risk of serious damage to eyes.
(OECD Test Guideline 405)

Respiratory or skin sensitization
N-Ethyl-2-pyrrolidone
in vivo assay - Mouse
Result: Does not cause skin sensitisation.
(OECD Test Guideline 429)

Germ cell mutagenicity
N-Ethyl-2-pyrrolidone
Ames test
S. typhimurium
Result: negative
Mutagenicity (micronucleus test)
Mouse - male
Result: negative

**Carcinogenicity**
N-Ethyl-2-pyrrolidone
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**
N-Ethyl-2-pyrrolidone
Some evidence of adverse effects on development, based on animal experiments.
In animal testing, risk of impaired fertility was shown only after administration of very high doses of this substance.

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Developmental Toxicity - Rat - Oral
Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

**Specific target organ toxicity – single exposure**
N-Ethyl-2-pyrrolidone
No data available

**Specific target organ toxicity – repeated exposure**
N-Ethyl-2-pyrrolidone
No data available

**Aspiration hazard**
N-Ethyl-2-pyrrolidone
No data available

11.2 other information

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Section 12 - ECOLOGICAL INFORMATION

DO not allow to escape into waterways, wastewater or soil.
Please find below the ecotoxicological data available for the components.

**12.1 Toxicity**
N-Ethyl-2-pyrrolidone
Toxicity to fish static test LC50 - Danio rerio (zebra fish) - > 464 - 999 mg/l - 96 h
(OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates: static test EC50 - Daphnia magna (Water flea) - > 104 mg/l - 48 h
(OECD Test Guideline 202)
Toxicity to algae static test EC50 - Desmodesmus subspicatus (green algae) - > 101 mg/l - 72 h
(OECD Test Guideline 201)
12.2 persistence and degradability

Biodegradability

N-Ethyl-2-pyrrolidone
Aerobic - Exposure time 28 d
Result: 90 - 100 % - Readily biodegradable
(OECD Test Guideline 301A)

12.3 bioaccumulative potential

Bioaccumulation

N-Ethyl-2-pyrrolidone
No data available

12.4 mobility in soil

N-Ethyl-2-pyrrolidone
No data available

12.5 Results of PBT and vPvB assessment

N-Ethyl-2-pyrrolidone
Contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

No data available

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

14.1 UN number Not dangerous goods
### 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

#### 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>
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<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 35°C or lower than 5°C, stay away from food, acids and bases. According to 57th of IATA DGR 2016, 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

Revision Date: 2019/09/09  
Version: 3
**Legend**

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

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