Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Substance Name: Water Dispersible Polyisocyanate
Product Name: Aquolin® 166
Additional Name:

- Hydrophilic aliphatic polyisocyanate
- Hydrophilic hexamethylene diisocyanate oligomer
- Hydrophilically modified, aliphatic polyisocyanate based on hexamethylene diisocyanate
- Hydrophilically modified, aliphatic hexamethylene diisocyanate oligomer

Company Name: Wanhua Chemical Group Co., LTD
Address: No.17, Tianshan Rd, YEDA, Yantai, 264006, China
Telephone: 0086-535-3388160
Fax: 0086-535-338222-1150
Emergency 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: Hardener for coating materials or adhesives

Section 2 - HAZARDS IDENTIFICATION

GHS Classification of the substance or mixture
Acute Tox., Inhalative, Category 4 (H332)
Sensitization of the Skin, Sub-category 1B (H317)
Chronically hazardous to the aquatic environment, Category 3 (H412)
Specific target organ toxicity (single exposure), Category 3 (H335)

Label elements

GHS-Labelling

Signal word: Warning

Hazardous components which must be listed on the label
Aliphatic Polyisocyanate

Hazard statements
H332 Harmful if inhaled
H317 May cause an allergic skin reaction
H335 May cause respiratory irritation
H412 Harmful to aquatic life with long lasting effects
Precautionary statements
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P271 Only use outdoors or in a well-ventilated area
P272 Contaminated work clothing should not be allowed out of the workplace
P280 Wear protective gloves/protective clothing/eye protection/face protection

Emergency statements
P302+P352 If ON SKIN: Wash with plenty of soap and water
P333+P313 If skin irritation or rash occurs: Get medical advice/attention
P362+P364 Take off contaminated clothing and wash it before reuse
P304+P312 If INHALED: Call a POISON CENTER or doctor/physician if you feel unwell
P312 Call a POISON CENTER or doctor/physician if you feel unwell
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal measures
P501 Dispose of contents/container to an approved waste disposal plant
P502 Refer to us for information on recovery or recycling

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS
Type of product: Mixture

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrophilic Polyisocyanate</td>
<td>NA</td>
<td>Ca. 100%</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

Description of first aid measures
General advice: Take off all contaminated clothing immediately.
If inhaled: Take the person into the fresh air and keep him warm, let him rest; if there is difficulty in breathing, medical advice is required.
In case of skin contact: In case of skin contact wash affected areas thoroughly with soap and plenty of water. Consult a doctor in the event of a skin reaction.
In case of eye contact: Hold the eyes open and rinse with preferably lukewarm water for a sufficiently long period of time (at least 10 minutes). Contact an ophthalmologist.
If swallowed: DO NOT induce the patient to vomit, medical advice is required.

Section 5 - FIRE FIGHTING MEASURES
Suitable extinguishing media: Carbon dioxide (CO2), Foam, extinguishing powder, in cases of larger fires, water spray should be used.

Unsuitable extinguishing media: High volume water jet
Special hazards arising from the substance or mixture:
Burning releases carbon monoxide, carbon dioxide, oxides of nitrogen, isocyanate vapors and traces of hydrogen cyanide. In the event of fire and/or explosion do not breathe fumes.

Advice for fire-fighters:
During fire-fighting respirator with independent air-supply and airtight garment is required. Do not allow contaminated extinguishing water to enter the soil, ground-water or surface waters.

Section 6 - ACCIDENTAL RELEASE MEASURES
Personal precautions, protective equipment and emergency procedures: Put on protective equipment (see section 8). Ensure adequate ventilation/exhaust extraction. Keep unauthorized persons away.

Environment related measures: Do not allow to escape into waterways, wastewater or soil.

Methods and material for containment and cleaning up: Remove mechanically; cover the remainder with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO2!). Keep damp in a safe ventilated area for several days.

Reference to other sections: For further disposal measures see section 13.

Section 7 - HANDLING AND STORAGE
Precautions for safe handling:
Provide sufficient air exchange and/or exhaust in work rooms. Exhaust ventilation necessary if product is sprayed.

The threshold limit values noted in Chapter 8 must be monitored. In all areas where isocyanate aerosols and/or vapor concentrations are produced in elevated concentrations, exhaust ventilation must be provided in such a way that the workplace exposure limits (WEL) is not exceeded. The air should be drawn away from the personnel handling the product

The personal protective measures described in Chapter 8 must be observed. The precautions required in the handling of isocyanates must be taken. Avoid contact with skin and eyes and the inhalation of vapor.

Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at end of work and use skin-protecting ointment. Keep working clothes separately. Take off all contaminated clothing immediately.

Conditions for safe storage, including any incompatibilities:
Keep container dry and tightly closed in a cool and well ventilated place. Further information on the storage conditions which must be observed to preserve quality can be found in our product information sheet. The product will keep stable for at least 12 months when stored in its sealed original packaging at temperatures between 5°C and 35°C.
Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure controls

Respiratory protection:
Respiratory protection required in insufficiently ventilated working areas and during spraying. An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter is recommended.
In case of hypersensitivity of the respiratory tract and skin (e.g. asthmatics and those who suffer from chronic bronchitis and chronic skin complaint) it is inadvisable to work with the product.

Hand protection:
Suitable materials for safety gloves; EN 374:
Butyl rubber - IIR: thickness >=0.5mm; breakthrough time >=480min.
Fluorinated rubber - FKM (>= 0.4 mm)
Recommendation: contaminated gloves should be disposed of.

Eye protection:
Wear eye/face protection.

Skin and body protection:
Wear suitable protective clothing.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties.

<table>
<thead>
<tr>
<th>Physical state</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Transparent to light yellow</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>Not applicable</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>ca. -24°C</td>
</tr>
<tr>
<td>Initial boiling point</td>
<td>&gt;300°C (at 1,013 hPa)</td>
</tr>
<tr>
<td>Flash point</td>
<td>ca. 226°C (at 1,013 hPa)</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>Vapor pressure</td>
<td>ca. 1.8 kPa (at 20°C); ca. 3.0 kPa (at 50°C)</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not established</td>
</tr>
<tr>
<td>Density</td>
<td>ca. 1.16 g/cm³ at 20°C</td>
</tr>
<tr>
<td>Miscibility with water</td>
<td>Not established</td>
</tr>
</tbody>
</table>
Surface tension | Not established  
Partition coefficient (n-octanol/water) | Not established  
Auto-ignition temperature | Not applicable  
Ignition temperature | ca. 430°C  
Decomposition temperature | Not established  
Viscosity | ca. 700 - 1700 mPa.s (at 25°C)  
Explosive properties | Not established  
Dust explosion class | Not applicable  
Oxidising properties | Not established  
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

Possibility of hazardous reactions: Exothermic reaction with amines and alcohols; reacts slowly with water forming CO2, in closed containers risk of bursting owing to increase of pressure.

Hazardous decomposition products: On drying of the coating / hardening release of neutralising agent. (see section 3).

Section 11 - TOXICOLOGICAL INFORMATION

Toxicological studies on the product are not yet available.

Please find below the data available to us:

Acute toxicity, oral:
Hydrophilic Polyisocyanate
LD50 rat: >= 5.000 mg/kg
Method: OECD Test Guideline 423
Toxicological studies of a comparable product.

Acute toxicity, dermal
No data available.

Acute toxicity, inhalation
No data available.

Primary skin irritation
Hydrophilic Polyisocyanate
Species: rabbit
Result: An irritant effect cannot be distinguished from a mechanical load caused by the removal of the test specimen.
Classification: No skin irritation
Method: OECD Test Guideline 404
Toxicological studies of a comparable product.

**Primary mucosae irritation**
Hydrophilic Polysocyanate
Species: rabbit
Result: slight irritant
Classification: No eye irritation
Method: OECD Test Guideline 405
Toxicological studies of a comparable product.

**Sensitisation**
Hydrophilic Polysocyanate
Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact (Sub cat. 1B)
Method: OECD Test Guideline 429
Toxicological studies of a comparable product.

**Subacute, subchronic and prolonged toxicity**
No data available.

**Carcinogenicity**
No data available.

**Reproductive toxicity/Fertility**
No data available.

**Reproductive toxicity/Teratogenicity**
No data available.

**Genotoxicity in vitro**
Hydrophilic Polysocyanate
Test type: Salmonella/microsome test (Ames test)
Result: No indication of mutagenic effects.
Method: OECD Test Guideline 471
Toxicological studies of a comparable product.

**Genotoxicity in vivo**
No data available.

**STOT evaluation – one-time exposure**
Hydrophilic Polysocyanate
May cause respiratory irritation.
Studies of a comparable product.

**STOT evaluation – repeated exposure**
No data available.

**Aspiration toxicity**
No data available.

**Additional information**
Special properties/effects: Over-exposure entails the risk of concentration-dependent irritating effects on eyes, nose throat, and respiratory tract. Delayed appearance of the complaints and development of hypersensitivity (difficult breathing, coughing, asthma) are possible. Hypersensitive persons may suffer from these effects even at low isocyanate concentrations, including concentrations below the occupational exposure limit.

Prolonged contact with the skin may cause tanning and irritant effects.

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**Section 12 - ECOLOGICAL INFORMATION**

Ecotoxicological studies of the product are not available.

Do not allow to escape into waterways, wastewater or soil.

Please find below the data available to us:

**Acute Fish toxicity**
Hydrophilic Polyisocyanate
LC50 35.2 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203
Ecotoxicological reports on a comparable product

**Acute toxicity for daphnia**
Hydrophilic Polyisocyanate
EC50 > 100 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202
Ecotoxicological reports on a comparable product

**Acute toxicity for algae**
Hydrophilic Polyisocyanate
ErC50 72 mg/l  
Species: Desmodesmus subspicatus (Green algae)  
Exposure duration: 72 h  
Method: OECD Test Guideline 201  
Ecotoxicological reports on a comparable product

**Acute bacterial toxicity**  
Hydrophilic Polyisocyanate  
EC50 > 10.000 mg/l  
Species: activated sludge  
Method: OECD Test Guideline 209  
Ecotoxicological reports on a comparable product

**Biodegradability**  
Hydrophilic Polyisocyanate  
Biodegradation: 0 %, 28 d, i.e. not readily degradable  
Method: OECD Test Guideline 301 F  
Ecotoxicological reports on a comparable product

**Bioaccumulative potential**  
No data available.

**Mobility in soil**  
No data available.

**Results of PBT and vPvB assessment**  
This substance does not meet the criteria for classification as PBT or vPvB.

**Other adverse effects**  
Isocyanate reacts with water at the interface forming CO2 and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.

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**Section 13 - DISPOSAL CONSIDERATIONS**

Dispose in accordance with applicable international, national and local laws, ordinances and statutes. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

Waste treatment methods  
After final product withdrawal, all residues must be removed from containers (drip-free, powder-free or paste-free). Once the product residues adhering to the walls of the containers have been rendered harmless, the product and hazard labels must be invalidated. These containers can be returned for
recycling to the appropriate centres set up within the framework of the existing take-back scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.
None disposal into waste water.

Section 14 – Transport information

ADR/RID
UN number          Not dangerous goods
UN proper shipping name  Not dangerous goods
Transport hazard class  Not dangerous goods
Packing group        Not dangerous goods
Environment hazards  Not dangerous goods
AND
UN number          Not dangerous goods
UN proper shipping name  Not dangerous goods
Transport hazard class  Not dangerous goods
Packing group        Not dangerous goods
Environment hazards  Not dangerous goods
IATA
UN number          Not dangerous goods
UN proper shipping name  Not dangerous goods
Transport hazard class  Not dangerous goods
Packing group        Not dangerous goods
Environment hazards  Not dangerous goods
IMDG
UN number          Not dangerous goods
UN proper shipping name  Not dangerous goods
Transport hazard class  Not dangerous goods
Packing group        Not dangerous goods
Environment hazards  Not dangerous goods
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
Safety, health and environmental regulations/legislation specific for the substance or mixture
Schedule 6 (Standard for the Uniform Scheduling of Medicines and Poisons)
Any existing national regulations on the handling of isocyanates must be observed.

All ingredients are listed in IECSC, or exempted, or confirmed by suppliers.

Section 16 - OTHER INFORMATION

Indication of changes
This version replaces all previous versions.

Further information
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of publication. The information given is designed only as guide 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.