Section 1 - PRODUCT AND COMPANY IDENTIFICATION

**Substance Name:** Water Dispersible Polyisocyanate  
**Product Name:** Aquolin® 278  
**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:** 0086-535-6875138  

**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>&gt;=99.8%</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 twelve 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>Translucent colorless to slightly yellowish</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. -22°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. 196°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. 17 hPa (at 20°C); ca. 26 hPa (at 50°C)</td>
</tr>
<tr>
<td></td>
<td>ca. 28 hPa (at 55°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>
</tbody>
</table>
Miscibility with water  Not established
Surface tension  Not established
Partition coefficient (n-octanol/water)  Not established
Auto-ignition temperature  Not applicable
Ignition temperature  ca. 425°C (at 1,013 hPa)
Decomposition temperature  Not established
Viscosity  ca. 1500 - 3500 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 Polysocyanate
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 Polysocyanate
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 Polyisocyanate
Species: rabbit
Result: slight irritant
Classification: No eye irritation
Method: OECD Test Guideline 405
Toxicological studies of a comparable product.

**Sensitisation**
Hydrophilic Polyisocyanate
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 Polyisocyanate
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 Polyisocyanate
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.

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.

**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

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.

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.