

SAFETY DATA SHEET



Atlac® 580

Section 1. Chemical product and company identification

GHS product identifier	: Atlac® 580	
GHS product identifier	: Atlac® 580	
Product code	: 001610WW18172	
Chemical formula	: Not applicable.	
Other means of identification	: Not available.	
Product type	: Liquid.	
Recommended use	: Resins system used in the production of fibre reinforced plastics or non-reinforced filled products.	
Supplier	: Jinling AOC Resins Co., Ltd. Zone F, 3/F, Block A Fenghuo Building No. 88 Yun Long Shan Road Jian Ye District Nanjing, Jiangsu Province 210019 P.R. China	Tel: +86 25 85493888 www.aocresins.com
e-mail address of person responsible for this SDS	: product.safety@aocresins.com	(Communication in English only please)
Emergency telephone number	: National Emergency Response Telephone Number for Chemical Accident (signed agreement) 0086-532-83889090 (24h)	

Section 2. Hazards identification

Classification of the substance or mixture according to GB 13690-2009 and GB 30000-2013

Emergency overview

Liquid. [Hazy liquid.]
 Yellow.
 Characteristic.
 Flammable liquid and vapour.
 Causes serious eye irritation.
 Causes skin irritation.
 May cause an allergic skin reaction.
 Suspected of damaging fertility or the unborn child.
 Suspected of causing cancer.
 May cause respiratory irritation.
 Causes damage to organs through prolonged or repeated exposure. (hearing organs)
 Toxic to aquatic life.
 Harmful to aquatic life with long lasting effects.
 Gas/vapour is heavier than air and may travel along the floor to a source of ignition and flash back.
 Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Call a POISON CENTER or physician if you feel unwell. If skin irritation or rash occurs: Get medical attention. If eye irritation persists: Get medical attention.

See Section 12 for environmental precautions.

Classification of the substance or mixture	: FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A SKIN SENSITISATION - Category 1 CARCINOGENICITY - Category 2 REPRODUCTIVE TOXICITY (Fertility) - Category 2 REPRODUCTIVE TOXICITY (Unborn child) - Category 2 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract)
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irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 1
 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2
 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: H226 - Flammable liquid and vapour.
 H319 - Causes serious eye irritation.
 H315 - Causes skin irritation.
 H317 - May cause an allergic skin reaction.
 H361 - Suspected of damaging fertility or the unborn child.
 H351 - Suspected of causing cancer.
 H335 - May cause respiratory irritation.
 H372 - Causes damage to organs through prolonged or repeated exposure.
 (hearing organs)
 H401 - Toxic to aquatic life.
 H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements - Code

Prevention

: P201 - Obtain special instructions before use.
 P202 - Do not handle until all safety precautions have been read and understood.
 P280 - Wear protective gloves: 4 - 8 hours (breakthrough time): fluor rubber (Viton) (0.70 mm); < 1 hour (breakthrough time): Chloroprene Nitril rubber (0.2 mm). Wear eye or face protection. Wear protective clothing.
 P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.
 P242 - Use only non-sparking tools.
 P243 - Take precautionary measures against static discharge.
 P233 - Keep container tightly closed.
 P271 - Use only outdoors or in a well-ventilated area.
 P273 - Avoid release to the environment.
 P260 - Do not breathe vapour.
 P270 - Do not eat, drink or smoke when using this product.
 P264 - Wash hands thoroughly after handling.
 P272 - Contaminated work clothing should not be allowed out of the workplace.

Response

: P314 - Get medical attention if you feel unwell.
 P308 + P313 - IF exposed or concerned: Get medical attention.
 P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P302 + P352 + P362+P364 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse.
 P333 + P313 - If skin irritation or rash occurs: Get medical attention.
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337 + P313 - If eye irritation persists: Get medical attention.

Storage

: P405 - Store locked up.
 P403 - Store in a well-ventilated place.
 P235 - Keep cool.

Disposal

: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Physical/chemical hazards

: Flammable liquid and vapour. Gas/vapour is heavier than air and may travel along the floor to a source of ignition and flash back.

Human health hazards

: Causes serious eye irritation. Causes skin irritation. May cause an allergic skin reaction. Suspected of damaging fertility or the unborn child. Suspected of causing cancer. May cause respiratory irritation. Causes damage to organs through prolonged or repeated exposure. (hearing organs)

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced foetal weight
increase in foetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
reduced foetal weight
increase in foetal deaths
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations
- Environmental hazards** : Toxic to aquatic life. Harmful to aquatic life with long lasting effects.
- Other hazards which do not result in classification** : Gas/vapour is heavier than air and may travel along the floor to a source of ignition and flash back.

Section 3. Composition/information on ingredients

- Substance/mixture** : Mixture
- Other means of identification** : Not available.

Ingredient name	%	CAS number
styrene [stable]	25 - 50	100-42-5
Methacrylic acid, monoester with propane-1,2-diol	<1	27813-02-1
1,4-dihydroxybenzene	<1	123-31-9

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.
Inhalation : Harmful if inhaled. May cause respiratory irritation.
Skin contact : Causes skin irritation. May cause an allergic skin reaction.
Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eyes : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced foetal weight
increase in foetal deaths
skeletal malformations

Skin : Adverse symptoms may include the following:
irritation
redness
reduced foetal weight
increase in foetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable : Use dry chemical, CO₂, water spray (fog) or foam.

Not suitable : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Gas/vapour is heavier than air and may travel along the floor to a source of ignition and flash back.

Hazardous thermal decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide (dense) black smoke aldehydes organic acids
Special precautions for fire-fighters	: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Remark	: None.
Remarks	: Combustible when exposed to heat or flame.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Environmental precautions	: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and material for containment and cleaning up

Small spill	: Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Absorb spill with inert material (e.g. dry sand or earth) and place in a chemical waste container.
Large spill	: Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures	: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
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Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Do not store above the following temperature: 30°C (86°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store in original container, protected from direct sunlight. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Keep away from heat and direct sunlight.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
styrene [stable]	GBZ 2.1 (China, 4/2007). Absorbed through skin. PC-TWA: 50 mg/m ³ 8 hours. PC-STEL: 100 mg/m ³ 15 minutes.
1,4-dihydroxybenzene	GBZ 2.1 (China, 4/2007). PC-TWA: 1 mg/m ³ 8 hours. PC-STEL: 2 mg/m ³ 15 minutes.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety glasses with side shields.

Skin protection

Hand protection

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. 4 - 8 hours (breakthrough time): fluor rubber (Viton) (0.70 mm)
< 1 hour (breakthrough time): Chloroprene Nitril rubber (0.2 mm)

Body protection

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection

: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
- Remarks** : Replace damaged gloves.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid. [Hazy liquid.]
- Colour** : Yellow.
- Odour** : Characteristic.
- Odour threshold** : 0.15 to 25 ppm
- pH** : 7 [Conc. (% w/w): 0.02%]
- Melting point** : <25°C (<77°F)
- Boiling point** : 145°C (293°F)
- Softening range** : Not available.
- Flash point** : Closed cup: 33°C (91.4°F) [Pensky-Martens.]
- Evaporation rate** : 12.4 (butyl acetate = 1)
- Flammability (solid, gas)** : Combustible when exposed to heat or flame.
- Lower and upper explosive (flammable) limits** : Lower: 1.1%
Upper: 6.1%
- Vapour pressure** : 0.67 kPa
- Vapour density** : 3.6 [Air = 1]
- Relative density** : 1.074
- Density (g/cm³)** : 1.07 g/cm³ (23°C)
- Bulk density** : 1.07 kg/m³
- Solubility** : Insoluble in the following materials: cold water and hot water.
- Solubility in water** : <0.02 g/100 ml (23°C)
- Solubility at room temperature** : <0.02 g/l
- Partition coefficient: n-octanol/water** : >2
- Auto-ignition temperature** : 490°C (914°F)
- Decomposition temperature** : Not applicable.
- Conductivity** : Not available.
- Molecular weight** : Not applicable.
- Instability temperature** : Not available.
- Minimum ignition temperature** : Not available.
- Minimum ignition energy** : Not available.
- VOC content** : Not available.
- Dust explosion class** :
- Critical pressure** : Not available.
- Critical temperature** : Not available.
- Viscosity** : Dynamic (room temperature): 400 to 500 mPa·s (400 to 500 cP)
Kinematic (room temperature): >2.73 cm²/s (>273 cSt)
Kinematic (40°C (104°F)): >0.205 cm²/s (>20.5 cSt)

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable. Stable under recommended storage and handling conditions (see Section 7).
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas. Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials Strong acids
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
styrene [stable]	LC50 Inhalation Vapour	Rat	11800 mg/m ³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Methacrylic acid, monoester with propane-1,2-diol	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Dermal	Rabbit - Male	>5000 mg/kg	-
	LD50 Oral	Rat - Male, Female	>2000 mg/kg (LD0 2000 mg/kg)	-
1,4-dihydroxybenzene	LD50 Dermal	Mammal	5970 mg/kg	-
	LD50 Dermal	Rabbit - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat	302 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
styrene [stable]	Respiratory - Irritant	Mammal - species unspecified	-	-	-
	Skin - Irritant	Rabbit	-	-	-
	Eyes - Irritant	Rabbit	-	-	-
Methacrylic acid, monoester with propane-1,2-diol	Skin - Oedema	Rabbit	<0.00000001	24 hours 0.5 ml	24 to 72 hours
	Skin - Erythema/Eschar	Rabbit	<0.00000001	24 hours 0.5 ml	24 to 72 hours
	Eyes - Iris lesion	Rabbit	<0.00000001	0.1 ml	24 to 72 hours
	Eyes - Cornea opacity	Rabbit	1	0.1 ml	24 to 72 hours

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
Methacrylic acid, monoester with propane-1,2-diol	skin	Mouse	Sensitising
1,4-dihydroxybenzene	skin	Mouse	Sensitising

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Methacrylic acid, monoester with propane-1,2-diol	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: Without & ^ with metabolic activation	Negative
	OECD 476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic Metabolic activation: Without & ^ with metabolic activation	Negative
1,4-dihydroxybenzene	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Negative
	-	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: with and without	Positive
	OECD 483 Mammalian Spermatogonial Chromosome Aberration Test	Experiment: In vivo Subject: Mammalian-Animal	Positive
	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Metabolic activation: with and without	Negative
	OECD 473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Human Metabolic activation: with and without	Negative
	OECD 489, mammalian comet assay	Experiment: In vivo Subject: Mammalian-Animal	Negative

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Methacrylic acid, monoester with propane-1,2-diol	Negative - Inhalation - NOAEC	Rat - Male, Female	≥2050 mg/m ³	6 hours /day; 5 days per week

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
Methacrylic acid, monoester with propane-1,2-diol	-	Negative	-	Rat - Male, Female	Oral: 300 mg/kg / day (NOAEL)	-
	-	-	Negative	Rat - Male, Female	Oral: 1000 mg/kg /day (NOAEL)	-
1,4-dihydroxybenzene	-	-	-	Rat	Oral: 300 mg/kg Parental NOEL	-

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Methacrylic acid, monoester with propane-1,2-diol	Negative - Oral	Rabbit	450 mg/kg /day (NOAEL)	-
	Negative - Inhalation	Rabbit	8300 mg/m ³ /day (NOAEC)	6 hours per day
1,4-dihydroxybenzene	Negative - Oral	Rat	-	-

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
styrene [stable]	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
styrene [stable]	Category 1	Inhalation	hearing organs

Aspiration hazard

Name	Result
styrene [stable]	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.
Inhalation : Harmful if inhaled. May cause respiratory irritation.
Skin contact : Causes skin irritation. May cause an allergic skin reaction.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 pain or irritation
 watering
 redness

Inhalation : Adverse symptoms may include the following:
 respiratory tract irritation
 coughing
 reduced foetal weight
 increase in foetal deaths
 skeletal malformations

Skin contact : Adverse symptoms may include the following:
 irritation
 redness
 reduced foetal weight
 increase in foetal deaths
 skeletal malformations

Ingestion : Adverse symptoms may include the following:
 reduced foetal weight
 increase in foetal deaths
 skeletal malformations

Delayed and immediate effects as well as chronic effects from short and long-term exposure**Short term exposure**

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Methacrylic acid, monoester with propane-1,2-diol 1,4-dihydroxybenzene	Sub-acute NOAEL Oral	Rat - Male, Female	300 mg/kg /day	-
	Chronic NOAEL Oral	Rat - Male, Female	25 mg/kg	-
	Sub-chronic NOAEL Dermal	Rat - Male, Female	73.9 mg/kg	-
	Sub-chronic NOAEL Oral	Rat	50 mg/kg	13 weeks; 5 days per week

General	: Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	: Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: Suspected of damaging the unborn child.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: Suspected of damaging fertility.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
Atlac® 580	11129.2	N/A	N/A	26.3	N/A
styrene [stable]	5000	N/A	N/A	11.8	N/A
1,4-dihydroxybenzene	302	2500	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
styrene [stable]	Acute EC50 4.9 mg/l	Algae	72 hours
	Acute EC50 4700 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 4020 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic EC ₁₀ 0.28 mg/l Fresh water	Algae	96 hours
Methacrylic acid, monoester with propane-1,2-diol	Chronic NOEC 1.01 mg/l Fresh water	Daphnia	21 days
	Acute EC50 >97.2 mg/l Fresh water	Algae	72 hours
	Acute EC50 >143 mg/l Fresh water	Daphnia	48 hours
1,4-dihydroxybenzene	Acute LC50 493 mg/l Fresh water	Fish	48 hours
	Chronic EC50 45.2 mg/l Fresh water	Daphnia	21 days
	Acute EC50 0.33 mg/l Fresh water	Algae - Pseudokirschnerella subcapitata	72 hours
	Acute EC50 130 µg/l Fresh water	Daphnia - Daphnia magna - Larvae	48 hours
	Acute LC50 44 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute NOEC 0.019 mg/l Fresh water	Algae - Pseudokirschnerella subcapitata	72 hours
	Chronic NOEC 0.0057 mg/l Fresh water	Daphnia	21 days
Chronic NOEC ≥0.066 mg/l arithmetic mean Fresh water	Fish - Pimephales promelas	32 days	

Persistence/degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Methacrylic acid, monoester with propane-1,2-diol	OECD 301C Ready Biodegradability - Modified MITI Test (I)	81 % - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
styrene [stable]	-	-	Readily
Methacrylic acid, monoester with propane-1,2-diol	-	-	Readily
1,4-dihydroxybenzene	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Atlac® 580	>2	-	low
styrene [stable]	2.96	13.49	low
Methacrylic acid, monoester with propane-1,2-diol	0.97	-	low
1,4-dihydroxybenzene	0.59	3.162	low

Mobility in soil




Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	IATA
UN number	UN1866	UN1866	UN1866
UN proper shipping name	RESIN SOLUTION	RESIN SOLUTION	Resin solution
Transport hazard class(es)	3 	3 	3 
Packing group	III	III	III
Environmental hazards	No.	No.	No.

Additional information

- UN** : **Special provisions** 223
Viscous liquid exception This class 3 viscous liquid is not subject to regulation in packagings up to 450 L according to 2.3.2.5.1.
- IMDG** : **Emergency schedules** F-E, _S-E_
Special provisions 223, 955
Viscous liquid exception This class 3 viscous liquid is not subject to regulation in packagings up to 450 L according to 2.3.2.5.
- IATA** : **Quantity limitation** Passenger and Cargo Aircraft: 60 L. Packaging instructions: 355. Cargo Aircraft Only: 220 L. Packaging instructions: 366. Limited Quantities - Passenger Aircraft: 10 L. Packaging instructions: Y344.
Special provisions A3

Special precautions for user **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

Section 15. Regulatory information

List of Goods banned for Importing

None of the components are listed.

Inventory of Hazardous Chemicals

Ingredient name	CAS number	Status	Reference number
Styrene monomer	100-42-5	Listed	96

List of Goods banned for Exporting

None of the components are listed.

List of Toxic Chemicals Severely Restricted for Importing & Exporting by China

None of the components are listed.

Inventory of Highly Toxic Chemicals

None of the components are listed.

Catalogue of Hazardous Chemicals of Priority Management

Styrene Listed

International regulations**Chemical Weapon Convention List Schedules I, II & III Chemicals**

Ingredient name	List name	Status
Not listed.		

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Ingredient name	List name	Status
Not listed.		

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Ingredient name	List name	Status
Not listed.		

Section 16. Other information

History

Date of printing : 2/27/2020
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Version : 8

Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 N/A = Not available
 SGG = Segregation Group
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A	Calculation method
SKIN SENSITISATION - Category 1	Calculation method
CARCINOGENICITY - Category 2	Calculation method
REPRODUCTIVE TOXICITY (Fertility) - Category 2	Calculation method
REPRODUCTIVE TOXICITY (Unborn child) - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 1	Calculation method
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2	Calculation method
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3	Calculation method

References : Not available.

 **Indicates information that has changed from previously issued version.**

Responsible name : MSDS:
 DSM Resins - Regulatory Affairs Department
 P.O. Box 615, 8000 AP Zwolle
 The Netherlands

Notice to reader

The information contained in the Safety Data Sheet is based on our data available on the date of publication. The information is intended to aid the user in controlling the handling risks; it is not to be construed as a warranty or specification of the product quality. The information may not be or may not altogether be applicable to combinations of the product with other substances or to particular applications.

The user is responsible for ensuring that appropriate precautions are taken and for satisfying themselves that the data are suitable and sufficient for the product's intended purpose. In case of any unclarity we advise consulting the supplier or an expert.