Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Polystyrene, Standard Grades (Styrene<1000ppm)

Products grade: MA5210, MB5210, D6007, EC6025, EA3300, MC3100
Product Cas No.: MIXTURE

Company Identification:
Supplier:
Loyal Group Trading Co., Ltd
18 floor, East Tower Technical Trade Centre,
No. 100 Xiangyun Road, High-tech Zone, Ningbo,
China 315040
Manufacturer:
Astor Chemical Industrial (Jiangsu)Co., Ltd
No.3 Changjiang Road, Free Trade Zone,
Zhangjiagang City, Jiangsu,China

Product Information:
MSDS Requests: +86-574-8623 0367
Technical Information: +86-512-5636 5266

24-Hour Emergency Telephone Numbers
+86-512-5636 5266

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENT	CAS NUMBER	AMOUNT	EINECS	SYM	R-PHRASES
Polystyrene	MIXTURE	> 99.9 % weight	NA	NA	NA
Styrene residual	100-42-5	< 0.1 % weight	202-851-5	Xn	R36/38, R20, R10

Occupational Exposure Limits:

Component	Limit	TWA	Ceiling / Peak	Stel	Notation
Polystyrene	Astor	Not Established	NA	NA	NA

Control as Particulate Not Otherwise Classified (PNOC). The ACGIH Guideline* for respirable dust is 3.0mg/m3 and 10.0mg/m3 for total dust. The OSHA PEL for respirable dust is 5.0mg/m3 and 15.0mg/m3 for total dust.

* This value is for inhalable (total) particulate matter containing no asbestos and < 1.0% crystalline silica.

MEDICAL APPLICATION CAUTION:

1. Do not use this material in medical applications involving permanent implantation in the human body or permanent contact with internal body fluids or tissues.

2. Do not use this material in medical applications involving brief or temporary implantation in the human body or contact with internal body fluids or tissues unless the material has been provided directly from Loyal Group Trading Co. Ltd. under an agreement which expressly acknowledges the contemplated use.

3. Loyal Group Trading Co., Ltd. makes no representation, promise, express warranty or implied warranty concerning the suitability of this material for use in implantation in the human body or in contact with internal body fluids or tissues.

SECTION 3 HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW

Opaque, odorless pellets

- DUST MAY PRODUCE MECHANICAL IRRITATION TO THE MUCOUS MEMBRANES OF THE EYES, NOSE, THROAT AND UPPER RESPIRATORY TRACT

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IMMEDIATE HEALTH EFFECTS:

Eye: Eye burns may be resulted from the material heating if happens, but it will not cause permanent or significant discomfort. Material is dusty and may scratch the surface of the eye.

Skin: Skin may be scalded if the material is heated and cause pain, thermalgia, dyschromia, swelling, and blister.

Skin contact is not expected to cause neither permanent or significant discomfort nor skin allergic.
It's not harmful to internal organs if absorbed through skin.

Ingestion: Not harmful if swallowed.

Inhalation: The material dust may cause respiratory discomfort.

If this material is heated, nausea and discomfort in upper respiratory tract may be caused by odors.

SECTION 4 FIRST AID MEASURES

Eye: Wash eyes with running water immediately while keep the eyes open.

Remove contact lenses, if worn, after eye washing, and continue washing for at least 15 minutes. And then get immediate medical treatment.

Please follow the same instruction if heated material splashes into eyes

Skin: To remove the material from skin, use soap and water.

Discard contaminated clothing and shoes or thoroughly clean them before reuse.
Get medical attention if any symptoms develop.
If the hot material gets on skin, quickly cool in water. And get medical attentions for extensive burns.
Do not try to peel the solidified material from the skin or use solvents or thinners to dissolve it.

Vegetable oil, mineral oil, or petroleum jelly is recommended for removal of this material from the skin.

Ingestion: If swallowed and doesn't induce vomiting, give the person a glass of water or milk to drink and get immediate medical attention. Never give any food or drink to an unconscious person.

Inhalation: Move the exposed person to fresh air. Give artificial respiration if breathing stops. Perform oxygen therapy if breathing is difficult. Get medical attention if breathing difficulties continue.

SECTION 5 FIRE FIGHTING MEASURES

NFPA Ratings: **Health:** 0 **Flammability:** 1 **Reactivity:** 0

Flammable properties:

Flashpoint: NDA

Autoignition: NDA

Flammability (Explosive) Limits (% by volume in air): **Lower:** NDA **Upper:** NDA
Extinguishing Media: Water spray, foam, dry chemical or carbon dioxide (CO2)

Protection for fire fighters:
Fire Fighting Instructions: This material can be burnt although it is not easily ignited.

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

If possible, water should be applied as a spray from a fogging nozzle since this is a surface burning material. The application of high velocity water will spread the burning surface layer.
Combustion Products: May include carbon dioxide, water vapor, carbon monoxide, styrene monomer, other hydrocarbons and hydrocarbon oxidation products, depending on temperature and air concentration.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective measures: Wear appropriate personal protective equipment when cleaning up spills. Refer to Section 8.
Spill management: Avoid creating dust clouds. Shovel, sweep up or use industrial vacuum cleaner to pick up. Place in container for proper disposal. Reduce airborne dust and prevent scattering by moistening with water.
If heated material is spilled, allow it to cool before proceeding with disposal methods.

SECTION 7 HANDLING AND STORAGE

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. REFER TO PRODUCT LABEL OR MANUFACTURERS TECHNICAL BULLETINS FOR THE PROPER USE AND HANDLING OF THIS MATERIAL.

Precautionary measures: Use caution to avoid creation of dusts and to prevent inhalation of product dust (fines). Avoid contact with product dust. Airborne dust concentrations above 20 mg/l may create a dust explosion hazard. Avoid breathing vapors or fumes which may be released during thermal processing. Do not breathe vapor or fumes from heated material. Do not breathe dust at levels above the recommended exposure limits. Keep container closed. Use only with adequate ventilation. Discard contaminated clothing and shoes or thoroughly clean before reuse. Avoid contact of heated material with eyes, skin, and clothing. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Unusual handling hazards: Potentially toxic/irritating fumes may be evolved from heated material. Inspect tank vents periodically. Styrene vapors may polymerize in vents or flame arrestors of storage tanks. Check temperature, inhibitor and polymer content at least once a week during warm weather. Increase monitoring frequency if stored at higher than 70 F for longer than 30 days. Minimize storage time.
General handling information: Avoid work practices that may release volatile components in the atmosphere. Local air pollution regulations should be consulted to determine if the release of volatile components is regulated or restricted in the area in which this material is used. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Static hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations, which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.
General storage information: Treat as a solid that can burn. Store away from oxidizing materials in a cool, dry place with adequate ventilation. Bond and ground transfer equipment. DO NOT USE OR STORE near heat, sparks or open flames. USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.
Container Warnings: Containers, even those that have been emptied, can contain residues of dusts or solid particulates which may create both health and fire/explosion hazards.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
If heated material generates vapor or fumes, use process enclosures, local exhaust ventilation, or other engineering controls to control exposure.

PERSONAL PROTECTIVE EQUIPMENT:
Eye/face protection: Wear eye protection such as safety glasses, chemical goggles, or face shields if engineering controls or work practices are not adequate to prevent eye contact. If this material is heated, wear chemical goggles or safety glasses and a face shield.
Skin protection: Wear impervious protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted.

Users should determine acceptable performance characteristics of protective clothing.

Consider physical requirements and other substances present when selecting protective clothing.

Suggested materials for protective gloves include: if this material is heated, wear insulated clothing to prevent skin contact if engineering controls or work practices are not adequate to prevent skin contact.

No skin protection is ordinarily required under normal conditions of use.

In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Transparent (GPPS), opaque (HIPS), odorless pellets
pH: NA
Vapor pressure: NA
Vapor density (Air=1): NA
Boiling point: NA
Solubility (in water): Soluble in organic solvents, insoluble in water.
Percent volatile: <0.1
Melting point: 77°C (170.6°F) - 110°C (230°F)
Specific gravity: 1.03
Evaporation rate: 0

SECTION 10 STABILITY AND REACTIVITY

Chemical stability: Stable at ordinary temperature, while unstable at elevated temperatures.
Conditions to avoid: Avoid heating above recommended processing temperature. Avoid contact with heat, light, catalysts, halogens or any other chemicals.
Incompatibility with other materials: Corrosive to copper and copper bearing alloys.
Hazardous decomposition products: Heating may produce carbon monoxide, carbon dioxide, styrene monomer, other hydrocarbons, hydrocarbon oxidation products
Hazardous polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS:
Acute oral toxicity: LD50 / not known
Acute dermal toxicity: LD50 / not known
Acute inhalation toxicity: LC50 / not known
Eye irritation: This material is not expected to be irritating to the eyes.
Skin irritation: This material is not expected to be irritating to the skin.
Sensitization: Dermal - This material is not a sensitized to skin according to Magnussen-Kleman Test

ADDITIONAL TOXICOLOGY INFORMATION:
This product contains STYRENE:
Repeated Dose Toxicity: 13 weeks / inhalation / rat / Doses: 0 or 0.565 mg/l / 7h/d, 5d/w / NOAEL = 0.565mg/l (hepatotoxicity); 28 days / gavage / rat / doses: 0, 100 - 2000mg/kg/ 5d/w / NOAEL = 100 mg/kg / LOAEL = 500 mg/kg (irritation to esophagus and stomach)
Reproductive and Developmental Toxicity: GD 6-15 / inhalation / rat / Doses: 0, 300 or 600ppm / 7h/d / NOAEL maternal tox. < 300ppm / NOAEL teratogenicity > 300ppm; GD 6-15 / gavage / rat / Doses: 0, 90, or 150mg/kg / twice/day /NOAEL maternal tox. < 180mg/kg, NOAEL teratogenicity > 300 mg/kg
Target Organs: 13 weeks / inhalation / rat / Doses: 0, 50, 200, or 800ppm / 6h/d, 7d/w/ NOAEL = 200ppm, LOAEL = 800ppm (auditory dysfunction at mid and high frequencies)
Genetic Toxicity: Ames test - negative; Cytogenetic assay - positive; E. coli reverse mutation assay - negative; Mouse lymphoma assay - negative; Sister Chromatid Exchange assay - positive; Mammalian cell gene mutation assay - negative; Micronucleus test - positive
Carcinogenicity: 2 years / in drinking water / rat / Doses: 0, 125 or 250ppm / daily / no evidence of carcinogenicity

The toxicological properties of this product have not been tested or have not been tested completely and its handling or use may be hazardous. EXERCISE DUE CARE.

Long-term exposure to high dust concentrations may cause non-debilitating lung changes.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY:
This material is expected to be harmful to aquatic organisms. Fish or birds may eat pellets which may obstruct their digestive tracts.

ENVIRONMENTAL FATE:
This material is not expected to be readily biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

Shipping Descriptions per regulatory authority.

US DOT

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

ICAO / IATA

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

IMO / IMDG

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

RID / ADR

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES:

1.	Immediate (Acute) Health Effects:	NO
2.	Delayed (Chronic) Health Effects:	NO
3.	Fire Hazard:	NO
4.	Sudden Release of Pressure Hazard:	NO
5.	Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01= CA Prop 65	17 = FDA 178	33 = RCRA Waste Appendix VIII
02 = LA RTK	18 = FDA 179	34 = RCRA Waste D-List
03 = MA RTK	19 = FDA 180	35 = RCRA Waste P-List
04 =MN Hazardous Substance	20 = FDA 181	36 = RCRA Waste U-List
05 =NJ RTK	21 = FDA 182	37 = SARA Section 311/312
06 = PA RTK	22 = FDA 184	38 = SARA Section 313
07 = CAA Section 112 HAPs	23 = FDA 186	39 = TSCA 12 (b)
08 = CWA Section 307	24 = FDA 189	40 = TSCA Section 4
09 = CWA Section 311	25 = IARC Group 1	41 = TSCA Section 5(a)
10 =DOT Marine Pollutant	26 = IARC Group 2A	42 = TSCA Section 8(a) CAIR
11 = FDA 172	27 = IARC Group 2B	43 = TSCA Section 8(a) PAIR
12 = FDA 173	28 = IARC Group 3	44 = TSCA Section 8(d)
13 = FDA 174	29 = IARC Group 4	45 = WHIMS - IDL
14 = FDA 175	30 = NTP Carcinogen	46 = Germany D TAL
15 = FDA 176	31 = OSHA Carcinogen	47 = Germany WKG
16 = FDA 177	32 = OSHA Highly Hazardous	48 = DEA List 1
		49 = DEA List 2

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORY LISTINGS:

AUSTRALIA: All the components of this material are listed on the Australian Inventory of Chemical Substances (AICS).

CANADA: All the components of this material are on the Canadian Domestic Substances List (DSL) or are

exempt from notification.
PEOPLE'S REPUBLIC OF CHINA: All the components of this product are listed on the draft Inventory of Existing Chemical Substances in China.
KOREA: All the components of this product are on the Existing Chemicals List (ECL) in Korea.
UNITED STATES: All of the components of this material are on the Toxic Substances Control Act (TSCA) Chemical Inventory.
PHILIPPINES: All the components of this product are listed on the Philippine Inventory of Chemicals and Chemical Substances (PICCS).
JAPAN: All the components of this product are on the Existing & New Chemical Substances (ENCS) inventory in Japan, or have an exemption from listing.
EUROPEAN UNION (EU): This product is exempt from inventory listing requirements..

EU RISK AND SAFETY PHRASES:
R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S22: Do not breathe dust.

EU Symbols: NA - Not Applicable

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0 Special: NA

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA).

REVISION STATEMENT: The following sections have been updated: 15

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
ACGIH	-	American Conference of Government Industrial Hygienists	OSHA	-	Occupational Safety & Health Administration
NIOSH	-	National Institute for Occupational Safety & Health	NFPA	-	National Fire Protection Agency
WHMIS	-	Workplace Hazardous Materials Information System	IARC	-	Intl. Agency for Research on Cancer
EINECS	-	European Inventory of existing Commercial Chemical Substances	RCRA	-	Resource Conservation Recovery Act
SARA	-	Superfund Amendments and Reauthorization Act.	TSCA	-	Toxic Substance Control Act
EC50	-	Effective Concentration	LC50	-	Lethal Concentration
LD50	-	Lethal Dose	CAS	-	Chemical Abstract Service
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To
CNS	-	Central Nervous System	MAK		Germany Maximum Concentration Values

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This data sheet is prepared according to the latest adaptation of the EEC Guideline 67/548.
This data sheet is prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200).
This data sheet is prepared according to the ANSI MSDS Standard (Z400.1).
This data sheet was prepared by EHS Product Stewardship Group, Chevron Phillips Chemical Company LP, 10001 Six Pines Drive, The Woodlands, TX 77380.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.