Material Safety Data Sheet

Rev. Date: Dec. 4, 2015
Product Name: Polypropylene

1. Chemical Product and Company Identification

Chemical Name: Polypropylene (PP)

Company Name: Sinopec Zhenhai Refining & Chemical Company

Address: Jiaochuan Street, Zhenhai District, Ningbo City, Zhejiang Province, China

Postcode: 315207

Fax: 0574-86440155

Telephone No.: 0574-86444813, 0574-86444204

National Emergency Telephone No.: 0532-83889090

MSDS No.: ZH-040

Product Recommendation & Limited Application: Applicable for film, injection molding, extrusion molding products, also can be used for plastic modification.

2. Hazards Identification

Emergency Overview：Extremely flammable gas. Propylene of high concentration can cause irritation and central nervous system depression. May cause asphyxia in confined spaces.

GHS Hazard Classification: None.

Lable Element:

Pictogram: None

Caution Word: None

Hazard Information: Certain dust content in the product may cause dust explosion. Static accumulation may occur and lead to fire with discharge. Touching hot material of this product may cause burn or permanent injury. Irritant or toxic smoke (or gas) will be released in combustion.

Precautions Description:

Precautionary Measures: Keep away from heat, fire and hot surface. Smoking is prohibited. Carefully handle to keep the container or packaging intact. Keep ventilation for closed operation. Use explosion-proof electric apparatus, ventilation, lighting equipment, and non-sparking tools. Operate as per specific instructions. Read and understand all safety precautions. Use personal protective equipment as required. Store separately from strong oxidizer. Pay attention to prevent static accumulation.

Incident Response: Use foam, dry powder, carbon dioxide and water spray for fire extinguishing. Avoid using once-through water. Move the container from fire to an open place when possible. Keep water spray to cool the container in fire until the fire is extinguished. In case of skin contact, immediately flush skin and hair with flowing water while removing contaminated clothing. In case of eye contact, flush eyes with water. In case of inhalation, immediately move to fresh air. Keep respiratory tract unobstructed. Oxygen therapy should be provided in case of breathing with difficulty. If respiratory and cardiac arrest occurs, immediately perform cardiopulmonary resuscitation. Accept medical treatment.

Safe Storage: Store in a cool and well ventilated warehouse. Keep far away from fire and heat sources. Store separately from strong oxidizer, mixed storage should be avoided. The storage area shall be provided with emergency equipment for leakage and suitable materials for collecting.

Disposal: Recovery should be considered before controlled incineration.

Physical and Chemical Hazard: Certain dust content in the product may cause dust explosion. Static accumulation may occur and lead to fire with discharge. Touching hot material of this product may cause burn or permanent injury.

Health Hazard: No obvious hazard for occupational exposure. The material may be volatile under high temperature, and its vapor can cause eye and

respiratory tract irritation. The formed dust may cause eye scratch or slight irritation of respiratory tract.

Environmental Hazard: None

3. Composition Information

√Material Compound

Component	Concentration or Concentration Range	CAS No.
Polypropene	≥99.9%	9003-07-0

4. First Aid Measures

First Aid:

- Skin Contact: Immediately flush skin and hair with flowing water while removing contaminated clothing.

- Eye Contact: Immediately flush with flowing water. If the pain continues or relapses, consult a physician. Remove contact lenses by professional in case of eye injury.

- Inhalation: Leave contaminated area in case of inhalation of the smoke or combustion product. The patient should be in the prone position, keep warm and quiet. Prior to the first aid, remove dentures to avoid, obstruction of respiratory tract. If the patient ceases breathing, perform artificial respiration immediately, better with bag valve mask or effective pocket mask. If respiratory and cardiac arrest occurs, immediately perform cardiopulmonary resuscitation. Send the patient to hospital and seek the doctor's help.

- Swallowing: Drink water as much as possible. Seek medical attention.

Acute and swallowing effects and main symptoms: None

5. Fire Fighting Measures

Special Hazard: Certain dust content in the product may cause dust explosion. Irritant or toxic smoke (or gas) will be released in combustion.

Extinguishing Method and Media: Use foam, dry powder, carbon dioxide and water spray for fire extinguishing.

Fire Fighting Precautions and Procedures: Firefighters should wear self-contained breathing apparatus (SCBA) and protective fire fighting clothing, and fight fire from upwind. Move the container from fire to an open place when possible. Keep water spray to cool the container in fire until the fire is extinguished.

6. Accidental Release Measures

Protective Measures & Devices and emergency handling procedures: Isolate the contaminated area and restrict the access. Cut off the fire source. Wet to avoid dust. Particle leakage on the ground will lead to slip risk. Pay attention to prevent slip. It is recommended that Emergency personnel wear a dust mask (full face mask) and work clothes.

Environmental Precautions: Prevent gas from diffusing via sewers, ventilation system and confined space.

Collecting & Removing Method for Leaked Chemicals and Disposal Materials: Cut off leakage sources when possible. In case of leakage on land, collect the leakage in a dry clean covered container with a clean scoop, and transfer to a safe place. If a large leakage occurs, collect and transport to waste disposal site. In case of leakage on water without danger, take actions to stop leaking, immediately restrict the leakage range by using oil fence, skim the leakage from surface, and warn other ships. The above suggestions are based on the most possible leakage cases; Consult the local expert since various natural conditions may have significant impacts on the taken measures. Note: local rules and regulations may have limitations or restrictions on the measures.

7. Handling and Storage

Handling Precautions: Keep ventilation for closed operation. The operators must be trained specifically and strictly observe operation procedures. It is recommended that the operators wear dust mask, safety goggles, anti-static workwear and oil resistant rubber gloves. Keep far away from fire and heat sources. Smoking is prohibited in the working site. Use explosion-proof ventilation system and equipment. Store separately from strong oxidizer. Carefully handle to keep the container or packaging intact. Pay attention to prevent static accumulation.

Storage Precautions: Store in a cool and well ventilated warehouse. Keep far away from fire and heat sources. Store separately from strong oxidizer, mixed storage should be avoided. The storage area shall be provided with emergency equipment for leakage and suitable materials for collecting.

8. Exposure Controls and Personal Protection

Exposure Limits:

MAC(mg/m^3): Not applicable (NA)	PC-TWA（mg/m^3）: NA
PC-STEL（mg/m^3）: NA	TLV-C(mg/m^3): NA
TLV-TWA(mg/m^3): 10	TLV-STEL(mg/m^3):

Biological Limits: None

Monitoring Method: None

Engineering Control: Provide adequate ventilation to ensure that Atmospheric level does not exceed the exposure limits. Provide safety shower and eyewash station. If a large amount of vapor/ smog is generated during heating the product, it is recommended to monitor thermal decomposition or oxidation products that may be present during heating.

Respiratory Protection: Wear dust musk when atmospheric level is out of limits. Wear self-contained breathing apparatus (SCBA) during emergency rescue or evacuation.

Eye Protection: Wear safety goggles with side shields.

Skin and Body Protection: Wear anti-static workwear.

Hand Protection: Wear protective gloves. It is recommended to wear heat proof gloves during hot material handling; wear long gloves if forearm touching is possible.

Other Protection: Smoking is strictly prohibited in the working site.

9. Physical and Chemical Properties

Appearance: pellet, transparent or white, odorless

pH value: NA	Melting point/ freezing point(℃): 120-170
Boiling point, IBP & boiling range (℃): NA	Density: NA
Relative vapor density(air=1): NA	Relative density (water=1): 0.85-0.93
Combustion heat(kJ/mol): NA	Saturated vapor pressure(kPa): NA
Critical pressure(MPa): NA	Critical temperature(℃): NA
Flash point (℃): NA	n- Octanol/Water Partition Coefficient: NA
Decomposition temperature(℃): NA	Ignition temperature(℃): 360
Lower explosive limit[%(V/V)]: 20（g/m3）	Upper explosive limit[%(V/V)]: 2000(g/m3)

Sulubility: Insoluble in water

10. Stability and Reactivity

Stability: Stable

Incompatible Materials: Strong oxidizer, aromatics, halohydrocarbon, etc.

Conditions to Avoid: Heat sources, ignition sources

Hazardous Reaction: NA。

Hazardous Decomposition Product: NA。

11. Toxicological Information

Acute Toxicity: According to the experimental data of chemicals with similar chemical structures, it is concluded that the toxicity of this product is

extremely low.

Subacute & Chronic Toxicity: According to the experimental data of chemicals with similar chemical structures, it is concluded that the toxicity of this product is extremely low.

Carcinogenicity: None of the components are listed in the carcinogenicity categories.

12. Ecological Information

Ecotoxicity: The product is considered harmless to aquatic organisms.

Persistence and degradation: This product doesn't degrade easily; it can exist in the environment for a long term.

Bio-concentration or bioaccumulation: The bioaccumulation of this product is very low.

Mobility in Soil: This product can be floated with a very low solubility. It may migrate from water to land and stick to sediments or solid in wastewater.

13. Disposal Considerations

Disposal Method

- Product: Recovery should be considered before controlled incineration.
- Dirty Package: Dispose in accordance with applicable national and local laws and regulations.

Discard Precautions: Refer to the national and local laws and regulations prior to disposal.

14. Transport Information

The United Nations Number (UN-No): None

The United Nations Shipping Name: Polypropylene

The United Nations Hazard Classification: None

Packing Category: None

Packing Mark: None

Packing Method: None

Maritime Pollutants: NA

Transport Precautions: According to the UN *Recommendations on the Transport of Dangerous Goods*, *International Maritime Dangerous Goods Code* (IMDG), the IATA Dangerous Goods Rules" (DGR), this product is not regulated. Transport Precautions: The transportation vehicle should be provided with the corresponding variety and quantity of fire equipment and emergency equipment for leakage. Transportation together with strong oxidant is strictly prohibited. Sun exposure, rain and high temperature should be prevented during transportation. The vehicles should stop away from fire, heat and high temperature areas. During transportation, the product should be stored in a clean, dry covered carriage or cabin without nails and other sharp objects.

15. Regulatory Information

Regulatory Information: The provisions for safe use, storage, transportation, handling, classification and mark of chemicals are listed in the following regulations and standards:

Rules for Classification and Labeling of chemicals (GB 30000.2-2013---30000.29-2013)

List of Hazardous Chemicals: Not listed

List of Hazardous Goods (GB 12268-2012): Not listed

16. Other Information

The Latest Revision Date: Dec. 4, 2015

Prepared by: Safety & Environmental Department, Sinopec Zhenhai Refining & Chemical Company

Approved by:

Abbreviations:

MAC: Maximum allowable concentration of toxic chemicals, which should not exceed at any time of a work day in a working site.

PC-TWA: Permissible concentration- Time Weighted Average (8h a day, 40h a week)

PC-STEL: Permissible concentration- Short Term Exposure Limit (15min), under the condition of conforming to PC-TWA

TLV-C: Threshold limit value - concentration, which should not exceed even for an instant.

TLV-TWA: Threshold limit value- time weighted average, the concentration to which a worker can be exposed every work day (8h a day, 40h a week) and experience no adverse health effects.

TLV-STEL：Threshold limit value- short term exposure limit (15min), under the condition of conforming to TLV-TWA. The maximum concentration to which no person should be exposed for more than 15 minutes during a work day.

IARC: International Agency for Research on Cancer

RTECS: Registry of Toxic Effects of Chemical Substances

HSDB: Hazardous Substances Data Bank

ACGIH: American Conference of Governmental Industrial Hygienists