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SAFETY DATA SHEET
Asia Pacific GHS Format

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1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY

Trademark:	NORYL*
Product Code:	PPO646 -111
Product Description:	Polyphenylene ether [CASRN 25134-01-4]
Product Type:	Commercial Product
Recommended use:	May be used to produce molded or extruded articles or as a component of other industrial products.
Company:	SABIC Innovative Plastics Japan LLC. Tokyo Club Building, 2-6 3Chome Kasumigaseki, Chiyoda-Ku Tokyo, 100-0013 Japan SABIC Innovative Plastics (China) Ltd.or SABIC Innovative Plastics International Trading Shanghai Ltd 16F,Plaza 66,No 1266 Nanjing Rd(W),Shanghai 200040 China(Contact address) SABIC Innovative Plastics Korea, Ltd. Donghoon Bldg, 20fl, 702-19, Yeoksam-Dong, Kangnam-Ku, Seoul, Korea SABIC Innovative Plastics Singapore Pte Ltd 23, Benoi Road, 629895 Singapore SABIC Innovative Plastics (Thailand) Co. Ltd 64/22 Moo 4 Tumbol Pluak Daeng, Amphur Pluak Daeng,Rayong 21140 Thailand SABIC Innovative Plastics India Ltd. Plastics Avenue, P.O. Jawaharnagar,District Vadodara 391320 India SABIC Innovative Plastics Taiwan Holding Limited, Room B,7F,No. 8,Min-Sheng E. Rd. Sec. 3,Taipei City 10480 Taiwan
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2. HAZARDS IDENTIFICATION

The additives in this product are bound in a thermoplastic resin matrix. In accordance with GHS for the classification of the product, the hazard potential may be assessed with respect to the physico-chemical form and/or bioavailability of the individual components in the thermoplastic resin.

Where GHS classifications are shown below, these are based on the individual components in the thermoplastic resin matrix. Under the typical use conditions for the resin, these hazardous components are unlikely to contribute to workplace exposure. Please read the entire safety data sheet and/or consult an EHS professional for a complete understanding.

Globally Harmonized System, UN(GHS) - Classification

GHS Category

Not hazardous

- Not classified

GHS-Labeling

GHS Labeling not required

Precautionary Statements

No GHS specific Precautionary Statements required - observe all other warnings and handling instructions in this SDS.

Other hazards which do not result in classification:

SABIC Emergency Overview

- Powder with slight or no odor
- WARNING! FORMS COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING HANDLING AND PROCESSING)
- Due to the propensity for hazardous dust explosions and electrostatic discharge hazard, review sections 5, 7 and 8 data with process safety expert before handling or processing.
- Spilled material may create slipping hazard
- Can burn in a fire creating dense, toxic smoke
- Molten plastic can cause severe thermal burns
- Fumes produced during melt processing may cause eye, skin, and respiratory tract irritation. Severe over-exposure may result in nausea, headache, chills, and fever. See below for additional effects.
- Powder can cause mechanical irritation if dusts are generated.

Other Information: OSHA, IARC and/or NTP have listed carbon, titanium dioxide, crystalline silica (quartz), respirable glass and certain heavy metals, present in some colorants and fillers, as carcinogens. If these materials are present in this product at significant quantities, they are shown in Section 2/3. These materials are essentially bound to the plastic matrix and are unlikely to contribute to workplace exposure under recommended processing conditions.

Processing Issues: Processing vapors may cause irritation to the eyes, skin, and respiratory tract. In cases of severe exposure, nausea and headache can also occur. Grease-like processing vapor condensates on ventilation ductwork, molds, and other surfaces can cause irritation and injury to skin.

Aggravated Medical Conditions: MEDICAL RESTRICTIONS: There are no known health effects aggravated by exposure to this product. However, certain sensitive individuals and individuals with respiratory impairments may be affected by exposure to components in the processing vapors.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Product Type Mixture

Hazardous Components

Chemical Name	CAS Number	Weight %	ELINCS / EINECS-No.:
Toluene	108-88-3	0.1-1.0	2036259

This product consists primarily of high molecular weight polymers which are not expected to be hazardous. The ingredients in this product are present within the polymer matrix and are not expected to be hazardous.

4. FIRST AID MEASURES

If Inhalation: Move to fresh air in case of accidental inhalation of fumes from overheating or combustion. If symptoms persist, call a physician.

On skin contact: Immediately cool the skin by rinsing with cold water after contact with hot material. Wash off immediately with soap and plenty of water. Consult a physician.

On contact with eyes: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If eye irritation persists, consult a specialist.

On ingestion: No hazards which require special first aid measures.

Precautions: Processing vapors inhalation may be irritating to the respiratory tract. If symptoms are experienced remove victim from the source of contamination or move victim to fresh air and obtain medical advice.

5. FIRE-FIGHTING MEASURES

Autoignition Temperature:	490 °C (914°F) estimated
Suitable Extinguishing Media:	Use dry chemical, CO2, water spray or "alcohol" foam. Water is the best extinguishing medium. Carbon dioxide and dry chemical are not generally recommended because their lack of cooling capacity may permit re-ignition on larger resin fires (blobs, drools, etc.).
Unsuitable Extinguishing Media for Safety Reasons:	Do not use a solid water stream as it may scatter and spread fire.
Hazards from Combustion Products:	Fire will produce dense black smoke containing hazardous combustion products, carbon oxides, hydrocarbon fragments.
Specific Hazards:	Take precautionary measures against static discharges. During processing, dust may form explosive mixture in air. Thermal decomposition can lead to release of irritating gases and vapors.
Special Protective Equipment for Firefighters:	Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products
Exposure hazards:	Do not release chemically contaminated water into drains, soil or surface water. Sufficient measures must be taken to retain the water used for extinguishing. Dispose of contaminated water and soil according to local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:	See section 8.
Environmental Precautions:	Do not flush into surface water or sanitary sewer system. Material should not be released into the environment.
Clean up:	Sweep up and shovel into suitable containers for disposal. Do not create a powder cloud by using a brush or compressed air.

7. HANDLING AND STORAGE

Handling:	Handle in accordance with good industrial hygiene and safety practices Provide for appropriate exhaust ventilation and dust collection at machinery Avoid dust formation All metal parts of the mixing and processing equipment must be earthed
Storage:	Store in closed container in a dry and cool area. Keep away from heat sources and sources of ignition. Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a dry and well-ventilated place.
Incompatible Products:	Strong acids, strong oxidizing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits:	No components with information, unless noted below

Chemical Name	US OSHA PEL (8 Hr)	Japan OEL(TWA)	China OEL(TWA)	Korea OEL(TWA)	Singapore OEL(TWA)	Thailand OEL(TWA)
Toluene 108-88-3	FRL_STEL: 560 mg/m^3 , 150 ppm ; FRL_TWA: 375 mg/m^3 , 100 ppm ; TL_PEL: See Table Z-2	OEL_M: 188 mg/m^3 , 50 ppm ; Skin Absorption: Skin AM: blood., urine.; OEL_B: 0.06 mg/l Within 2 h prior to end of shift at end of work week , 0.6 mg/l Within 2 h prior to end of shift at end of work week Parameter: Toluene.	50 mg/m^3	TWA: 100 ppm , 375 mg/m^3	PEL_LT: 50 ppm , 188 mg/m^3	200 ppm

Chemical Name	India TWA	Malaysia OEL(TWA)	Taiwan OEL(TWA)	Australian OEL(TWA)	Phillipines OEL(TWA)	SABIC Recom.(8 Hr)*
Toluene 108-88-3	TWA-8: 100 ppm , 375 mg/m^3	PEL_TWA8: 50 ppm , 188 mg/m^3 ; NOTE: SKIN	PC: 100 ppm , 376 mg/m^3 ; Remark: the second organic solvent; Symbol: SKIN	100 ppm TWA; 377 mg/m? TWA 150 ppm STEL; 565 mg/m? STEL exposure limits under review	375 mg/m^3 100 ppm	No Information

**SABIC Recommended Exposure Limits have been established for certain chemicals.*

Engineering Measures to Reduce Exposure: Handle in accordance with good industrial hygiene and safety practice. Provide for appropriate exhaust ventilation at machinery. Processing fume condensate may be a fire hazard and toxic; remove periodically from exhaust hoods, ductwork, and other surfaces using appropriate personal protection.

Hand Protection: Protective gloves should be worn

Eye Protection: Safety glasses with side-shields or chemical goggles. In addition, use full-face shield when cleaning processing vapor condensates from hood, ducts, and other surfaces.

Respiratory Protection: When using this product at elevated temperatures, implement engineering systems, administrative controls or a respiratory protection program (including a respirator approved for protection from organic vapors, acid, gases, and particulate matter) if processing vapors are not adequately controlled or operators experience symptoms of overexposure. If dust or powder are produced from secondary operations such as sawing or grinding, use a respirator approved for protection from dust.

Body Protection: Long sleeved clothing

Hygiene Measures: When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid
Appearance: Powder
Color: Varies
Odor: None or slight

Melting point/range: This product does not exhibit a sharp melting point but softens gradually over a wide range of temperatures.

Flash Point: Not applicable
Evaporation Rate: Negligible
Explosive Limits
upper: Not determined
lower: Not determined
Vapor Pressure: Negligible
Specific gravity: >1; (water = 1)
Water Solubility: Insoluble

Autoignition Temperature:	490 °C (914°F) estimated
Explosive Properties:	Dust may form explosive mixture in air
Oxidising Properties:	Not oxidising
VOC content (%):	Negligible

10. STABILITY AND REACTIVITY

Reactivity:	Not reactive under recommended conditions of handling, storage, processing and use.
Stability:	Stable under ambient conditions. Hazardous polymerization does not occur.
Polymerization:	Hazardous polymerization does not occur.
Conditions to Avoid:	Avoid temperatures above 490°C. To avoid thermal decomposition, avoid elevated temperatures. Heating can result in the formation of gaseous decomposition products, some of which may be hazardous. Do not exceed melt temperature recommendations in product literature. Purgings of hot material should be collected in small, flat, thin shapes and quenched with water to allow for rapid cooling. Do not allow product to remain in barrel at elevated temperatures for extended periods of time.
Materials to Avoid:	May react with strong oxidizing agents, strong acids or other highly reactive chemicals.
Hazardous Decomposition Products:	Process vapors under recommended processing conditions may include trace levels of hydrocarbons, alkylphenols, aldehydes, alcohols, aliphatic amines, dimethylcyclohexanone, trimethylanisole, dihydrobenzofuran.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information:

LD50/oral/rat:	>15 g/kg (estimated)
LD50/dermal/rabbit:	>2 g/kg estimated

Component Information:

Component Information Text: No data available

Sensitization

Respiratory Sensitization: Not classified

Irritation:

Eye Irritation: no data available

Subchronic Toxicity (28 days)

Repeated Oral Toxicity(28d):	No information available
Repeated Dermal Toxicity(28d):	No Information available

Subchronic Toxicity:

In a 13 week dust inhalation study, laboratory rats were exposed to up to 50 mg/m^3 PPE dust for 6 hrs/day for 13 weeks with a 13-week non-exposure recovery period. There was no evidence of systemic toxicity at the highest dose. Localized toxicity was observed in the lungs and regional lymph nodes of the 50 mg/m^3 exposure group. These findings decreased in severity in the 7 and 1 mg/m^3 exposure groups. A no adverse effect level for PPE is estimated to be 7 mg/m^3 and a no observable effect level is 1 mg/m^3.

Chronic Toxicity

Carcinogenicity:

There are no known carcinogenic chemicals in this product except specifically mentioned below.

Chemical Name	IARC:
Toluene 108-88-3	3

Mutagenic Effects: No data is available on the product itself
Reproductive Toxicity: No information available
Developmental Toxicity: No information available

Neurological effects: No information available

Specific Target Organ Toxicity(STOT)

Target Organ Effects: Not established

Aspiration Hazard

Aspiration Hazard Statement: No data available

Other relevant toxicity information

IARC: Not listed
OSHA: Not regulated
NTP: Not tested

Remarks: The toxicological data has been taken from products of similar composition.

Special Studies: Polyphenylene ether: In two independent 2 year dietary studies, purebred beagles and laboratory rats were fed polyphenylene ether resin powder (up to 10% by weight in the animal diet). In both studies, there were no adverse effects on physical appearance, behavior, growth, food consumption, survival, clinical laboratory results, organ weights or gross or microscopic pathology. In a 6 month chronic inhalation study, rats and guinea pigs exposed 6 hrs/day to up to 300 mg/m^3 PPE dust developed no physical, nutritional, hematologic, clinical or pathological reaction except to lung tissue changes which consisted of macrophage accumulation, many of which were degenerative in the pulmonary alveoli. Polyphenylene ether is not a mutagen by Ames (Salmonella) Assay with and without activation.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Component Information:

100% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Chemical Name	Toxicity to Fish	Toxicity to Algae	Daphnia Magna (Water Flea)	Toxicity to Microorganisms
Toluene 108-88-3	*No data available*	*No data available*	*No data available*	*No data available*

Product Information:

Persistence and Degradability

Biodegradation:	Not inherently biodegradable
Partition coefficient (n-octanol/water)	Not established

Bioaccumulative Potential:

Bioaccumulation:	Not established

Mobility

Mobility:	May be separated mechanically in waste water plants.

Other Adverse Effects

Ecotoxicity Effects:	Do not flush into surface water or sanitary sewer system.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:	Where possible recycling is preferred to disposal or incineration. Dispose of in accordance with local regulations.
Contaminated Packaging:	Empty containers should be transported/delivered using a registered waste carrier for local recycling or waste disposal.
Waste Disposal:	Recycling is encouraged. Landfill or incinerate in accordance with federal, state and local requirements. Collected processing fume condensates and incinerator ash should be tested to determine waste classification.

14. TRANSPORT INFORMATION

IMO / IMDG	Not regulated
ICAO	Not regulated
IATA-DGR	Not regulated
DOT	Not regulated
ADR/RID	Not regulated
ADR	Not regulated
ADN	Not regulated

15. REGULATORY INFORMATION

International Inventories:

TSCA (USA):	Listed
DSL (Canada):	Listed
EINECS/ELINCS (Europe):	Listed
ENCS (Japan):	Listed
IECSC (China):	Listed
KECL (Korea):	Listed
PICCS (Philippines):	Listed
AICS (Australia):	Listed

15. REGULATORY INFORMATION

NZIoC (New Zealand): Listed

Other Inventory Information:
A "Listed" entry above means all chemical components are on the respective inventory list and/or a qualifying exemption exists for one or more components. A "Not listed" entry above indicates one or more components is restricted from import or manufacture into that country/region. Articles are exempt from registration and are therefore not listed on the national chemical inventories.

SVHC (REACH Regulation (EC) No 1907/2006 and 453/2010, as amended):
This product does not intentionally contain SVHC chemicals except as noted below. Incidental amounts of impurities, if present, would be below the threshold limit of 0.1% by weight.

SARA (313) Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA):
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA (311, 312) hazard class:

Acute Health Hazard	N
Chronic Health Hazard	N
Fire Hazard	N
Sudden Release of Pressure Hazard	N
Reactive Hazard	N

Canada:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS hazard class:
Non-controlled

California Proposition 65:
Components in this product known to the State of California to cause cancer and/or reproductive effects, are listed below:

Chemical Name	Weight %	California Proposition 65:
Toluene 108-88-3	0.1-1.0	Type of Toxicity: female ; Type of Reproductive Toxicity: developmental

RoHS EU Directive 2002/95/EC (and its amendments and directive 2011/65/EU):
This product complies with RoHS - it does not intentionally contain banned chemicals.

Remarks:
This product consists primarily of high molecular weight polymers which are not expected to be hazardous. The ingredients in this product are present within the polymer matrix and are not expected to be hazardous.
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HMIS Rating **Health:** 0 **Flammability:** 1 **Reactivity:** 0

16. OTHER INFORMATION

NORYL* Brands marked with * or ™ are trademarks of SABIC or affiliates

SDS Scope:
China: Conforms to Chinese Regulation on the Control over Safety of Hazardous Chemicals (Decree No 591) and GHS standards GB15258,GB13698,GB/T16483 etc.
Japan: Conforms to Industrial Safety and Health Law, Japan (2006) and Industrial GHS Standards JIS Z7250, JIS Z7251
Korea: Conforms to Industrial Safety & Health Act, Ministry of Labor, Korea
Singapore: Conforms to Singapore workplace Safety and Health (WSH) Act, WSH Regulations, and GHS Standard 586
Taiwan: Conforms to Taiwan Rules on Hazard Communication and Labeling of Hazardous Substances, (Council of Labor Affairs, Taiwan) and GHS standards Z1051
Thailand: Conforms to Notification of the Ministry of Industry on the System of Classification and Hazard Communication of Hazardous Substances B.E. 2555 (2012)
This document is also applicable in other countries and regions.

Prepared by: Product Stewardship & Toxicology

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End of Safety Data Sheet