SAFETY DATA SHEET

According to Regulation (EC) No 1907/2006 and 453/2010 (REACH)

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1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

Trademark:	NORYL™
Product Code:	843-100-0-NOR
Product Description:	Modified Polyphenylene ether [CASRN proprietary]
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 B.V. Plasticslaan 1 P.O. Box 117 4600 AC Bergen op Zoom The Netherlands
Manufacturer:	SABIC Innovative Plastics B.V. Plasticslaan 1 P.O. Box 117 4600 AC Bergen Op Zoom The Netherlands
Emergency Telephone Number:	Bergen op Zoom +31(0)164-292911 (24/24)
Emergency Transportation/CHEMTREC (24 HOUR):	800 424-9300 (USA) +1 703-527-3887 (globally, outside USA)
E-mail:	webinquiries@sabic-ip.com
Website Address:	**www.sabic.com**

2. HAZARDS IDENTIFICATION

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.

Indication of danger:	Not dangerous.
Skin Contact:	Powder not likely to cause skin irritation.
Eye Contact:	Resin particles, like other inert materials, are mechanically irritating to eyes.
Inhalation:	Powder can cause mechanical irritation if dusts are generated. Processing fumes from PPE resin are not considered toxic. In acute inhalation tests, laboratory rats were exposed to processing fumes at concentrations exaggerating those that would likely occur in workplace situations. During the exposure periods (6 hour duration) signs of eye and nasal irritation were observed. These signs of irritation disappeared shortly after the animals were removed from the exposure chamber. No deaths or signs of toxicity were noted during the fume exposure period. There were no distinct or consistent treatment related tissue or organ changes noted in gross necropsies.
Ingestion:	Ingestion unlikely due to physical form.
Other Information:	Cool skin rapidly with cold water after contact with molten material. Heating can release hazardous gases. Hazardous fumes can also occur in post-processing operations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Not a hazardous substance or preparation according to EC-directives 1999/45/EC and 1272/2008/EC unless indicated.

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.

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 eyes with plenty of water for at least 15 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention if symptoms of burning, pain, and/or vision impairment remain. After initial flushing, remove any contact lenses. Due to fine particle size and water repellency, material remains abrasive and difficult to remove by washing.
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

Explosive Limits

upper: Not determined
lower: Not determined

Explosive Properties: Avoid generating and accumulating dusts; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Material is not sensitive to mechanical impact. Values below may vary by particle size distribution, morphology and grade. Using standard ASTM test methods, polyphenylene ether powder has the following properties:
Minimum Ignition Energy (MIE): 1.6 MJ (millijoules),
Deflagration Index, Kst: 225 (bar-m/sec) [classified ST-2 dust],
Volume Resistivity average: 2 x 10E14 (ohm-cm),
Maximum Pressure Output, Pmax: 6.4 (bar),
Maximum Pressure Rise Rate, dP/dt: not measured,
Minimum Oxygen Concentration: 12 (% O2)
.

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.

Hazardous Decomposition Products: Fire will produce dense black smoke containing hazardous combustion products, carbon oxides, hydrocarbons fragments.

Hazards from Combustion Products: Fire will produce dense black smoke containing hazardous combustion products, carbon oxides, hydrocarbon fragments.

Special Protective Equipment for Firefighters: In the event of fire, wear self-contained breathing apparatus (EU: NEN-EN137).

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.

6. ACCIDENTAL RELEASE MEASURES

Clean up: Use appropriate tools to gather spilled material into suitable containers for disposal while avoiding airborne dust. Dust deposits should not be allowed to accumulate on surfaces, as these may form explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Use non-sparking tools and equipment. If vacuum systems are used, electric motors must meet the required electrical classification.

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.

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. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Some product packaging, such as a "supersack" (flexible intermediate bulk container designed to hold up to approximately 2,000 kg), is designed to allow the packaging to be grounded before the product is removed. If the packaging is so designed, instructions for grounding are printed on the packaging. Check the packaging for, and follow, any instructions for grounding. During mixing operations, provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Polyphenylene ether contains approximately 20% fines (< 75 microns) and as such is an explosive dust. Use good and generally accepted engineering practices for processing an explosive dust. Preventive measures such as grounding/bonding, use of conductive devices are examples. NFPA Standards are an excellent reference. Values below may vary by particle size distribution, morphology and grade. Using standard ASTM test methods, polyphenylene ether powder has the following properties:
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Deflagration Index, Kst: 225 (bar-m/sec) [classified ST-2 dust],
Volume Resistivity average: 2 x 10E14 (ohm-cm),
Maximum Pressure Output, Pmax: 6.4 (bar),
Maximum Pressure Rise Rate, dP/dt: not measured,
Minimum Oxygen Concentration: 12 (% O2)
.

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits: No components with information, unless noted below

**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. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks. In the case of hazardous fumes, wear self-contained breathing apparatus. Wear face-shield and protective suit for abnormal processing problems. Processing fume condensate may be a fire hazard and toxic; remove periodically from exhaust hoods, ductwork, and other surfaces using appropriate personal protection. Use generally accepted industrial ventilation practices. System dust concentrations should be calculated to determine if explosion protection is required. For guidance, consult NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling and of Combustible Solids, 2006 edition.

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. 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:	Same as color code
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.
Autoignition Temperature:	490 °C (914°F) estimated
Vapor Pressure:	Negligible
Density:	<1000 kg/m^3
Water Solubility:	Insoluble
Solubility in other solvents:	Chloroform
Evaporation Rate:	Negligible
Specific gravity:	>1; (water = 1)
VOC content (%):	Negligible
Explosive Limits	
upper:	Not determined
lower:	Not determined
Remarks:	see section 5

10. STABILITY AND REACTIVITY

Stability:	Stable under ambient conditions. 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.
Hazardous Decomposition Products:	Process vapors under recommended processing conditions may include trace levels of hydrocarbons, alkylphenols, aldehydes, alcohols, aliphatic amines, dimethylcyclohexanone, trimethylanisole, dihydrobenzofuran.
Incompatible Products:	Strong acids, strong oxidizing agents

11. TOXICOLOGICAL INFORMATION

LD50/oral/rat:	>15 g/kg (estimated)
LD50/dermal/rabbit:	>2 g/kg estimated
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.
Primary Irritation:	Substance does not generally irritate and is only mildly irritating to the skin. PPE has acute eye irritation potential. A 100 mg single application of undiluted substance into the eyes of rabbits produced transient conjunctival redness and swelling (Draize method).
IARC:	Not listed
OSHA:	Not regulated
NTP:	Not tested
Remarks:	Information given is based on data obtained from similar substances.
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 Effects:	Do not flush into surface water or sanitary sewer system.
Ecotoxicity:	No hazards of this material known. Biologically inert.
Ecotoxicity - Invertebrate Data:	Ecological damages are not known or expected under normal use.
Germany VCI (WGK):	0

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
EWC waste disposal no:	702 - waste from the manufacture, formulation, supply and use of plastics, synthetic rubber and man-made fibres.
Further information:	Sweep up spilled material. Dispose as INDUSTRIAL WASTE.

14. TRANSPORT INFORMATION

Transport Classification: Not regulated as hazardous for shipment, unless noted below, under current transportation guidelines.

DOT

ADR/RID/ADN

IMDG

ICAO

IATA-DGR

15. REGULATORY INFORMATION

This substance is classified and labelled according to Annex I of Directive 67/548/EEC, as amended.
Indication of danger: Not dangerous.

International Inventories:

TSCA (USA):	Listed
DSL (Canada):	Not listed
EINECS/ELINCS (Europe):	Listed
ENCS (Japan):	Not listed - Full notification approved under Sabic Innovative Plastics
IECSC (China):	Not listed - Polymer simplified notification approved under Sabic Innovative Plastics
KECL (Korea):	Not listed - Full notification approved under Sabic Innovative Plastics
PICCS (Philippines):	Not listed
AICS (Australia):	Not listed
NZIoC (New Zealand):	Not listed
REACH Information:	For this product's REACH related information, please contact webinquiries@sabic-ip.com

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.

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	<100 ppm	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.

+135-3858-6433 (GuangDong)
+188-1699-6168 (ShangHai)
+852-6957-5415 (HongKong)

16. OTHER INFORMATION

Literary Reference: Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

SDS Scope:
Europe: Conforms to Regulation (EC) No 1907/2006 and 453/2010 (REACH)
This document is also applicable in other countries and regions.

Prepared by: Product Stewardship & Toxicology

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End of Safety Data Sheet