# SAFETY DATA SHEET
## Asia Pacific GHS Format

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## 1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY

**Trademark:** NORYL™

**Product Code:** NH6010B - BK1005

**Product Description:** Polyphenylene ether [CASRN 25134-01-4]/High impact polystyrene [CASRN 9003-55-8] and/or polystyrene [CASRN 9003-53-6] blend

**Product Type:** Commercial Product

**Recommended use:** May be used to produce molded or extruded articles or as a component of other industrial products.

**Company:**
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## 2. HAZARDS IDENTIFICATION

The additives in this product (if any) 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

In 1995, the International Agency for Research on Cancer (IARC) concluded that there is "sufficient evidence in experimental animals for the carcinogenicity of carbon black." IARC's overall evaluation was that "Carbon black is possibly carcinogenic to humans (2B)." In 2006, IARC re-affirmed this classification. There has been no causal link between carbon black exposure and cancer risk in humans. Applying the rules of the Globally Harmonized System of Classification and Labelling (GHS, e.g. UN `Purple Book´, EU CLP Regulation) the results of repeated dose toxicity and carcinogenicity studies in animals do not lead to classification of Carbon Black for Specific Target Organ Toxicity (Repeated exposure) and carcinogenicity. UN GHS says, that even if adverse effects are seen in animal studies or in-vitro tests, no classification is needed if the mechanism or mode of action is not relevant to humans. The European CLP Regulation also mentions, that no classification is indicated if the mechanism is not relevant to humans. Furthermore, the CLP guidance on classification and labelling states, that “lung overload“ in animals is listed under mechanism not relevant to humans.

### 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**

• Pellets with slight or no odor
• 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.
• Secondary operations, such as grinding, sanding, or sawing can produce dust which may present an explosion or respiratory hazard.

**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 % | GHS Classification (EC) No. 1272/2008 [CLP]: |
|---|---|---|---|
| Carbon black | 1333-86-4 | 0.3 - <1.0 | |
| Zinc oxide | 1314-13-2 | 0.1 - <0.3 | Aquatic Acute 1 (H400)<br>Aquatic Chronic 1 (H410) |

**For the full text of the H-statements, if mentioned in this section, see Section 16.**

The non-hazardous components and exact percentage (concentration) of the composition have been withheld as a trade secret.

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:** Not probable due to nature of the product. If a large amount of pellet material is swallowed, consult a physician for medical treatment.

**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

**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.

## 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.

## 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) |
|---|---|---|---|---|---|---|
| Carbon black 1333-86-4 | FRL_TWA: 3.5 mg/m³ ; TL_PEL: 3.5 mg/m³ | OEL_M: 4 mg/m³ Total dust , 1 mg/m³ Respirable dust | 1 | TWA: 3.5 mg/m³ | PEL_LT: 3.5 mg/m³ | No Information |
| Zinc oxide 1314-13-2 | FRL_STEL: 10 mg/m³ fume ; FRL_TWA: 5 mg/m³ fume , 5 mg/m³ Respirable fraction , 10 mg/m³ Total dust ; TL_PEL: 5 mg/m³ fume , 5 mg/m³ Respirable fraction , 15 mg/m³ Total dust | OEL_M: Pending | 3 MGM3 | TWA: 5 mg/m³ Fume, 10 mg/m³ dust | PEL_LT: 5 mg/m³ ; PEL_ST: 10 mg/m³ | TWA: 5 mg/m³ Fume |

| Chemical Name | India TWA | Malaysia OEL(TWA) | Taiwan OEL(TWA) | Australian OEL(TWA) | Phillipines OEL(TWA) | SABIC Recommend (8 Hr)* |
|---|---|---|---|---|---|---|
| Carbon black 1333-86-4 | No Information | PEL_TWA8: 3.5 mg/m³ | PC: 3.5 mg/m³ | No Information | 3.5 MGM3 | No Information |
| Zinc oxide 1314-13-2 | TWA-8: 5 mg/m³ fume, 10 mg/m³ Dust (total dust) | PEL_TWA8: 5 mg/m³ Fume, 10 mg/m³ Dust | PC: 5 mg/m³ fume | No Information | 1 MGM3 | 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 practices. 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:** | Pellets |
| **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 |
| **Water Solubility:** | Insoluble |
| **Evaporation Rate:** | Negligible |
| **Explosive Limits** | |
| **upper:** | Not determined |
| **lower:** | Not determined |
| **Specific gravity:** | >1; (water = 1) |
| **VOC content (%):** | Negligible |

## 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. |

## 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
**Primary Irritation:** Substance does not generally irritate and is only mildly irritating to the skin

**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 above de minimus reporting levels, except as specifically mentioned below.

| Chemical Name | IARC: |
|---|---|
| Carbon black<br>1333-86-4 | 2B |

**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.
Carbon Black: The International Agency for Research on Cancer (IARC) has determined that carbon black is a class 2B known animal and possible human carcinogen by the route of inhalation. Rats exposed to high doses of carbon black by inhalation developed statistically significant increases in lung fibrosis and lung tumors.
Carbon Black: The scientific discussions about the carcinogenic potential of inorganic low solubility particles (fine dust) including carbon black has not been concluded. Many inhalation toxicologists believe the lung fibrosis and tumors that developed in rats following exposure to carbon black result form massive accumulation of small dust particles that overwhelm the clearance mechanism and produce what is termed "lung overload," an effect considered to be rat specific and not relevant to humans. In addition, based on epidemiological studies, no causal link between carbon black exposure and cancer risk in humans has been demonstrated.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Component Information:**

**Product Information:**

**Other information:** Ecological damages are not known or expected under normal use.

**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.

**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

| | |
|---|---|
| **Transport Classification:** | Not regulated as hazardous for shipment, unless noted below, under current transportation guidelines. |
| **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 |
| **NZIoC (New Zealand):** | Not 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):**
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 SDS contains all the information required by the CPR. Unless noted below, this product is non-controlled. Some classifications may not apply to the entire product.

**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: |
|---|---|---|
| Carbon black<br>1333-86-4 | 0.3 - <1.0 | Listed: February 21, 2003 Carcinogenic. (airborne, unbound particles of respirable size) |
| Toluene<br>108-88-3 | 0.01-0.10 | Type of Toxicity: female ; Type of Reproductive Toxicity: developmental |
| 4,4'-isopropylidenediphenol (bisphenol A)<br>80-05-7 | ≤10 ppm | Listed: May 11, 2015 Type of Toxicity: Female |

**RoHS EU Directive 2011/65/EU:**
The subject product is in compliance with EU RoHS Directive 2011/65/EU. All below chemicals are not employed in the manufacture of the product: a.Cadmium and its compounds, b.Lead and its compounds, c.Mercury and its compounds, d.Hexavalent chromium compounds, e.Polybrominated biphenyls (PBBs), f.Polybrominated diphenyl ethers (PBDEs including Deca-BDE). The trace levels of heavy metals may be present as impurities within threshold limits (<0.1% for Pb, Hg, Cr VI, and <0.01% for Cd). We are disclosing this information, to the best of our knowledge, based upon data from our raw material manufacturers.

**HMIS Rating**

**Health:** 0
**Flammability:** 1
**Reactivity:** 0

## 16. OTHER INFORMATION

**SABIC and brands marked with ™ are trademarks of SABIC or its subsidiaries or affiliates.**

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http://eur.sabic-ip.com/ordeur/pages/msds/MSDSSearch.jsp?app=sabic-ip

**SDS Scope:**
Singapore: Conforms to Singapore workplace Safety and Health (WSH) Act, WSH Regulations, and GHS Standard 586
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 (2015) and Industrial GHS Standards JIS Z7253
Korea: Conforms to Industrial Safety & Health Act, Ministry of Labor, Korea
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)
Australia: National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC:2011 (2003)]
This document is also applicable in other countries and regions.

**Prepared by:** Product Stewardship & Toxicology

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**End of Safety Data Sheet**