



GE Plastics MATERIAL SAFETY DATA SHEET

**NORYL® RESIN- EN265-701**

**1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION**

**MANUFACTURER / SUPPLIER**

General Electric Company  
One Plastics Avenue  
Pittsfield, MA 01201

GE Plastics Canada, Ltd.  
2300 Meadowvale Blvd.  
Mississauga, ONT L5N 5P9

**EMERGENCY TELEPHONE**

(800) 447-4545 (24 hour)  
(800) 424-9300 (24 hour)  
(518) 475-5222 (24 hour)

Medical  
CHEMTREC  
Other

(800) 447-4545 (24 hour)  
(800) 424-9300 (24 hour)  
(518) 475-5222 (24 hour)

**NON-EMERGENCY TELEPHONE**

(800) 845-0600

(800) 845-0600

PRODUCT IDENTIFIER: NORYL  
PRODUCT DESCRIPTION: Polyphenylene ether (CAS# 25134-01-4) / high impact polystyrene (CAS# 9003-55-8) polymer blend fire retarded with triarylphosphate esters.  
PRODUCT USE: May be used to produce molded or extruded articles or as a component of other industrial products.

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

This product consists primarily of high molecular weight polymers. Substances listed below are reportable hazardous ingredients as defined by the OSHA Hazard Communication Standard. Exposure limits, when available, are also listed.

Additional compositional data are provided in Section 15, REGULATORY INFORMATION, subject to supplier notification requirements.

CAS NUMBER CHEMICAL NAME	OSHA	UNITS	ACGIH	UNITS
1333-86-4 carbon black	3.5	mg/m3 PEL	3.5	mg/m3 TLV
115-86-6 triphenyl phosphate	3.0	mg/m3 PEL	3.0	mg/m3 TLV

**3. HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW:** Solid pellets with slight or no odor. Spilled pellets 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. Secondary operations, such as grinding, sanding or sawing, can produce dust which may present an explosion or respiratory hazard.

**POTENTIAL HEALTH EFFECTS**

EYE: Product may cause irritation or injury due to mechanical action.  
SKIN: Pellets not likely to cause skin irritation.  
INGESTION: Not acutely toxic.  
INHALATION: Pellet inhalation unlikely due to physical form.

**CHRONIC/CARCINOGENICITY**

NTP: Not Tested  
OSHA: Not Regulated  
IARC: Not Listed

**MELT PROCESSING HEALTH EFFECTS:** Molten plastic can cause severe burns.

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Brandon, Mississippi

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Processing fumes may cause irritation to the eyes, skin and respiratory tract, and in cases of severe over-exposure, nausea and headache.

Prolonged or repeated exposure to triarylphosphate fire retardants may cause a reduced level of monoocyte "color staining" with esterase dependent dyes based upon human exposure. There have been no diseases or adverse health effects associated with this reduced cell staining observation.

Grease-like processing fume condensates on ventilation duct work, molds and other surfaces can cause irritation and injury to skin.

**MEDICAL RESTRICTIONS:** There are no known human 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 fumes.

**NOTE:** OSHA, IARC and/or NTP have listed carbon black and heavy metals, present in some colorants, as carcinogens. If these colorants are present in this product, they are shown in SECTION 2. These colorants are essentially bound to the plastic matrix and are unlikely to contribute to workplace exposure under recommended processing conditions.

#### 4. FIRST AID MEASURES

**EYES:** Remove contact lenses at once. Immediately flush eyes well with copious quantities of water or normal saline for at least 20-30 minutes. If irritation persists, seek medical attention.

**SKIN:** Wash skin thoroughly with soap and water. Seek medical attention if rash or burn occurs.

**INGESTION:** Not probable. If a large amount is swallowed, seek medical attention.

**INHALATION:** Not likely to be inhaled due to physical form.

**MELT PROCESSING:** For molten plastic skin contact, cool rapidly with water and immediately seek medical attention. Do not attempt removal of plastic without medical assistance. Do not use solvent for removal.

For processing fume inhalation irritation, leave contaminated area and breathe fresh air. If coughing, difficult breathing or any other symptoms develop seek medical attention at once, even if symptoms develop at a later time.

For skin contact with fume condensate, immediately wash thoroughly with soap and water. If irritation develops seek medical attention.

#### 5. FIRE FIGHTING MEASURES

**FIRE FIGHTING:** Approved pressure demand breathing apparatus and protective clothing should be used for all fires. Water spray is the preferred extinguishing medium. This product will melt but will not be carried on the surface of water.

**EXTINGUISHING MEDIA:** Water spray and 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.

**HAZARDOUS COMBUSTION PRODUCTS:** Hazardous combustion products may include intense heat, dense black smoke, carbon monoxide, carbon dioxide, triarylphosphate ester fragments, hydrocarbon fragments and oxides of phosphorus.

<b>FLASH POINT:</b>	Not Applicable
<b>LOWER FLAMMABLE LIMIT:</b>	Not Established
<b>UPPER FLAMMABLE LIMIT:</b>	Not Established
<b>AUTOIGNITION:</b>	490C (914F), estimated
<b>CONDITIONS OF FLAMMABILITY:</b>	Requires a continuous flame source to ignite and sustain combustion.

<b>EXPLOSION DATA</b>	
<b>IMPACT SENSITIVITY:</b>	Not sensitive to mechanical impact.
<b>STATIC DISCHARGE:</b>	Not sensitive to static discharge. (See HANDLING AND STORAGE)

#### 6. ACCIDENTAL RELEASE MEASURES

**GENERAL:** Sweep or gather up material and place in proper container for disposal or recovery.  
(See DISPOSAL INFORMATION)

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## 7. HANDLING AND STORAGE

**HANDLING:** Follow recommendations on label and in processing guide. Prevent contact with skin and eyes. Use good industrial hygiene practices. Provide adequate ventilation. Secondary operations such as grinding, sanding or sawing may produce a dust explosion hazard. Use aggressive housekeeping activities to prevent dust accumulation; employ bonding, grounding, venting and explosion relief provisions in accordance with accepted engineering practices.

**STORAGE:** Store in a dry place away from moisture, excessive heat and sources of ignition.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**ENGINEERING CONTROLS:** A continuous supply of fresh air to the workplace together with removal of processing fumes through exhaust systems is recommended. Processing fume condensate may be a fire hazard and toxic; remove periodically from exhaust hoods, duct work and other surfaces using appropriate personal protection. For powders and residual dusts refer to HANDLING AND STORAGE section.

Ventilation requirements must be locally determined to limit exposure to processing fumes in the workplace. Design techniques and guidelines may be found in publications such as:

Industrial Ventilation; available from the American Conference of Governmental Industrial Hygienists, Committee on Industrial Ventilation, P.O. Box 16153, Lansing, MI 48901.

### PERSONAL PROTECTION

**EYE/FACE:** Wear safety glasses with side shields or chemical goggles. In addition, use full face shield when cleaning processing fume condensates from hoods, ducts and other surfaces.

**SKIN:** When handling pellets avoid prolonged or repeated contact with skin. When melt processing product wear long pants, long sleeves, well insulated gloves and face shield when applicable. Use appropriate protective clothing, including chemical resistant gloves, to prevent any contact with processing fume condensates.

**RESPIRATORY:** When processing fumes are not adequately controlled, use respirator approved for protection from organic vapors and acid gases. When dust or powder from secondary operations, such as grinding sanding or sawing, are not adequately controlled use respirator approved for protection from dust.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>PHYSICAL STATE:</b>	Solid
<b>ODOR AND APPEARANCE:</b>	Plastic pellet with slight odor
<b>BOILING POINT:</b>	Not Applicable
<b>MELTING POINT:</b>	See COMMENT below.
<b>VAPOR PRESSURE (mmHg):</b>	Negligible
<b>VAPOR DENSITY (air=1):</b>	Not Applicable
<b>SPECIFIC GRAVITY (water=1):</b>	>1
<b>WATER SOLUBILITY:</b>	Insoluble
<b>% VOLATILES:</b>	Negligible
<b>pH:</b>	Not Applicable
<b>ODOR THRESHOLD:</b>	Not Established
<b>EVAPORATION RATE:</b>	Negligible
<b>COEFFICIENT WATER/OIL DISTR:</b>	Not Established
<b>COMMENT:</b>	This product does not exhibit a sharp melting point, but softens gradually over a wide temperature range.

## 10. STABILITY AND REACTIVITY

**STABILITY:** Stable under recommended conditions of storage and handling.

**REACTIVITY:** Not reactive under recommended conditions of handling, storage, processing and use.

**CONDITIONS TO AVOID:** Do not exceed melt temperature recommendations in product literature. In order to avoid autoignition/ hazardous decomposition of hot thick masses of plastic, purgings should be collected in small, flat shapes or thin strands to allow for rapid cooling and quench in water. (See EXPOSURE CONTROLS/PERSONAL PROTECTION section for respiratory protection advice.)

**HAZARDOUS DECOMPOSITION:** Processing fumes evolved at recommended processing conditions may include trace levels of triarylphosphate esters, phenol, styrene, aliphatic amines, aldehydes and alcohols, toluene, ethylbenzene and 4-

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vinylcyclohexene.

## 11. TOXICOLOGICAL INFORMATION

### PRODUCT:

**EYE:** Product not considered primary eye irritant. When similar products, in finely divided form, were placed into the eyes of rabbits, slight transient redness or discharge occurred - consistent with the expected slightly abrasive nature of the resin particles.

**SKIN:** Product not considered primary skin irritant. Draize Skin Primary Irritation Score (rabbit) for similar products, in finely divided form, for a 24-hour exposure is 0. Not expected to be a skin sensitizer based on results of Modified Buchler Guinea Pig Sensitization Test from similar products. Dermal LD50 (rabbit) > 2g/kg, estimated.

**ACUTE ORAL:** Oral LD50 (Rat) > 5 g/kg, estimated.

**ACUTE INHALATION:** Processing fumes from similar products 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.

### COMPONENTS:

In two independent 2 year dietary studies, purebred beagles and laboratory rats were fed polyphenylene oxide 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<sup>3</sup> PPO 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 oxide is not a mutagen by Ames (Salmonella) Assay with and without activation.

The triarylphosphate esters contained in this product have undergone extensive toxicology testing. They are not acutely toxic via oral (LD50's > 5 g/kg), dermal (LD50's > 2 g/kg), or inhalation (LC50's > 4.14 mg/L) routes of exposure. These triarylphosphate esters may be mild and transient skin and eye irritants and have not been shown to be sensitizers. They produce only minimal systemic effects at relatively high concentrations, consisting primarily of increase in liver and lung weight. The triarylphosphate were not mutagenic in bacterial and mammalian assays and did not produce chromosomal aberrations in either in vitro or in vivo test systems. In recent acute and delayed neurotoxicity studies in hens, these triarylphosphate esters were not found to be neurotoxic and did not inhibit neurotoxic esterase (NTE) activity. In reproductive and developmental toxicity studies, no adverse effects have been observed. Consistent with aryl phosphates, these substances inhibit plasma acetylcholinesterase (ACHE) and monocyte nonspecific esterase (MNSE). However, when tested in an extensive and validated immunotoxicity testing battery, MNSE staining inhibition showed no adverse effects on immune system function. This staining phenomenon has not been observed at exposures below 10ug/m<sup>3</sup>.

## 12. ECOLOGICAL INFORMATION

**GENERAL:** Not expected to present any significant

## 13. DISPOSAL INFORMATION

**RCRA HAZARDOUS WASTE:** Product is not a RCRA hazardous waste.  
**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. TRANSPORTATION INFORMATION

**DOT HAZARD CLASS:** Not Regulated  
**PROPER SHIPPING NAME:** Not Regulated  
**IDENTIFICATION NUMBER:** Not Listed  
**TIGA:** Not Listed

## 15. REGULATORY INFORMATION

Listed below are chemical substances subject to supplier notification requirements. The percentages, when present, represent average values.

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CAS NUMBER CHEMICAL NAME	EPCRA 313,%	WHMIS %	NPRI %	CA-65 %	FL	RI
108-88-3 toluene				< 0.1		
115-86-6 triphenyl phosphate					X	X

**TSCA STATUS:** This product complies with the Chemical Substance Inventory requirements of the US EPA Toxic Substances Control Act (TSCA).  
**WHMIS CLASSIFICATION:** Not a controlled product.

## 16. OTHER

**PREPARED BY:** Product Compliance

The above information and recommendations are believed accurate and reliable. Because it is not possible to anticipate all conditions of use additional safety precautions may be required. GENERAL ELECTRIC COMPANY makes no warranty, either express or implied, including merchantability and fitness.

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it into individual site safety programs in accordance with applicable hazard communication standards and regulations.

### ABBREVIATIONS:

ACGIH: American Conference of Governmental Industrial Hygienists  
CA-65: California Proposition 65 (Safe Drinking Water & Toxic Enforcement Act) CAS #: Chemical Abstracts Service number.  
EPCRA 313: Emergency Planning and Community Right-To-Know Act, Section 313.  
FL: Florida Right-To-Know Law, Substance List.  
OSHA: The Occupational Safety and Health Administration.  
NPRI: The Canadian National Pollutant Release Inventory.  
RCRA: Resource Conservation and Recovery Act.  
RI: Rhode Island Right-To-Know Law, Hazardous Substance List.  
WHMIS: Canadian Workplace Hazardous Materials Information System

NORYL is a registered trademark of the GENERAL ELECTRIC COMPANY. PPO is a registered trademark of General Electric Company for polyphenylene ether resins manufactured by General Electric Company and employed as a basic raw material in Neryl resins.

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