SAFETY DATA SHEET
North America U.S. GHS Format

Print date: 25-Mar-2015 *Revision Number: 1* *Revision date: 24-Mar-2015*

1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY

Trademark:	CYCOLAC™
Product Code:	BDT6500 - 1000
Product Description:	Poly (acrylonitrile-butadiene-styrene) [CASRN 9003-56-9]
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 US LLC One Plastics Avenue Pittsfield, MA 01201 USA (413) 448-5800 www.sabic-ip.com
Manufacturer:	SABIC Innovative Plastics US LLC 1 Plastics Drive Burkville, Alabama 36752 United States -and/or- SABIC Innovative Plastics US LLC 1 Lexan Lane Mt. Vernon, Indiana 47620 United States
Emergency Telephone Number:	800/447-4545 Chemtrec 800-424-9300
Emergency Transportation/CHEMTREC (24 HOUR):	800 424-9300 (USA) +1 703-527-3887 (globally, outside USA)
E-mail:	productinquiries@sabic-ip.com
Website Address:	**www.sabic-ip.com**

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.

Classification

OSHA Regulatory Status
This product is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS-Labeling

Emergency Overview

Not classified

The product contains no substances which at their given concentration, are considered to be hazardous to health

Appearance: Pellets **Physical State:** Solid **Odor:** None or slight

Hazards not otherwise classified (HNOC)
Not applicable

Other Information
Not applicable

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 %
Styrene	100-42-5	0.1 - 0.3

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: 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:	No information available
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.
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, hydrogen cyanide, nitrogen oxides.
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.
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:	Sweep up and shovel into suitable containers for disposal. Do not create a powder cloud by using a brush or compressed air.
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. 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.
Incompatible Products:	No special restrictions on storage with other products.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits: No components with information, unless noted below

Chemical Name	US OSHA PEL (8 Hr)	ACGIH	Canada - Alberta (8 Hr)	Mexico OEL Data	SABIC Recommend (8 Hr)*
Styrene 100-42-5	FRL_STEL: 425 mg/m^3 , 100 ppm ; FRL_TWA: 215 mg/m^3 , 50 ppm ; TL_PEL: See Table Z-2	STEL: 40 ppm ; TWA: 20 ppm ; Notations: Not Classifiable as a Human Carcinogen , BEI ; Crit Eff: CNS impairment , Peripheral neuropathy , Upper respiratory tract irritation	OEL_15 mins: 170 mg/m^3 , 40 ppm ; OEL_8 hr: 85 mg/m^3 , 20 ppm	LMPE-PPT: 50 ppm , 215 mg/m^3 ; LMPE-CT: 100 ppm , 425 mg/m^3 ; CONN: SKIN	No Information

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

Engineering Measures toExposure: 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:	Pellets
Color:	Same as color code
Odor:	None or slight
Odor Threshold:	No information available
pH	No data available
Boiling point/range:	Not determined
Melting point/range:	This product does not exhibit a sharp melting point but softens gradually over a wide range of temperatures.
Autoignition Temperature:	No information available
Flammability (solid, gas):	No information available
Vapor Pressure:	Negligible
Water Solubility:	Insoluble
Partition coefficient: (n-octanol/water)	No information available
Vapor Density:	Not determined
Evaporation Rate:	Negligible
Decomposition temp. (°C) :	Not determined
Specific gravity:	>1; (water = 1)
VOC content (%):	Negligible
Explosive Limits	
upper:	Not determined
lower:	Not determined

10. STABILITY AND REACTIVITY

Stability:	Stable under ambient conditions. Hazardous polymerization does not occur.
Conditions to Avoid:	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, styrene, acrylonitrile, acrolein, acetaldehyde, acetophenone, ethyl benzene, cumene, alpha methylstyrene, 4-vinylcyclohexene, phenols.
Incompatible Products:	None known

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

LD50/oral/rat:	>5000 mg/kg (estimated)
LD50/dermal/rabbit:	>2000 mg/kg estimated
Inhalation:	Pellet inhalation unlikely due to physical form.
Eye Contact:	Resin particles, like other inert materials, are mechanically irritating to eyes.
Skin Contact:	Not a hazard with pellets during normal industrial use.
Ingestion:	Pellet ingestion unlikely due to physical form.
Chronic Toxicity:	Ethyl benzene: Genotoxicity - In several in vitro bacterial mutagenicity tests using Salmonella typhimurium tester strains TA 98, TA100, TA 1535, TA1537 and TA1538 at concentrations up to 4,000 ug/plate, ethylbenzene tested negative both with and without metabolic activation. It also tested negative in bacterial strains Escherichia coli (strains WP2 and WP2uvrA) and Saccharomyces cerevisiae (strains D7, XV 185-14 C, and JD1). In standard in vitro mutagenicity tests in mammalian cells (mouse lymphoma L5178 Y/TK cells), mutagenicity was observed but only without metabolic activation and at cytotoxic concentrations. When using in vitro cytogenicity test systems, ethylbenzene tested predominantly negative. With in vivo cytogenicity tests (mouse micronucleus, unscheduled DNA synthesis, and Drosphila sex-linked recessive lethal tests) ethylbenzene did not increase the frequency of chromosome aberrations. Styrene: Genotoxicity - In several in vitro bacterial mutagenicity tests using Salmonella typhimurium tester strains TA 98, TA100, TA 1535, and TA1537 at concentrations up to 1 mg/plate, styrene has been found to test negative without metabolic activation and has tested either equivocal or negative with metabolic activation. In standard mammalian cells tested in vitro, no mutagenicity was observed. When using in vivo test systems, styrene did not induce chromosome aberrations in mouse bone marrow cells but did increase sister chromatid exchanges (SCE) at concentration of 250 ppm and above for 14 days. In another in vivo SCE test using rats exposed to 150 – 1000 ppm for up to 4 weeks of exposure, no increases in SCEs were observed. In cytogenetic studies in workers, an increase in chromosome damage was detected in human lymphocytes. It has been reported that concentrations greater than 30 ppm are associated with increased chromosomal aberrations in humans.

Subchronic Toxicity:

No information available
Ethyl benzene: Many repeat dose toxicity studies are available in several test animal species (rats, mice, rabbits, guinea pigs, monkeys) following inhalation exposure. Animals were typically exposed 6 hours/day for 5 days/week for 13 to 26 weeks to concentrations reaching 1600 ppm (up to 7,000 mg/m^3). Effects commonly included significantly increased liver and kidney weights and reduced body weights at the highest concentrations. The NOELs for these subchronic studies ranged from 100 to 400 ppm (approx. 400 to 1000 mg/m^3). Following oral exposure, rats fed ethylbenzene via gavage to doses up to 680 mg/kg/day for 6 months also produced increased liver and kidney weights. The NOEL following oral exposure in this experiment was 136 mg/kg/day.
Styrene: Many repeat dose toxicity studies are available in several test animal species following both oral and inhalation exposure. In rats dosed orally, effects on liver (changes in enzyme levels and increased weight) were consistently observed at concentrations of 350 mg/kg and higher. Gastrointestinal irritation and kidney weight changes are observed at higher doses. Findings were similar for beagle dogs. The no observed effect levels (NOEL) ranged from 100 mg/kg/day to about 300 mg/kg/day, depending on the duration of exposure. A series of inhalation studies were conducted in the 1940s and 1950s. Rats, guinea pigs, rabbits, and monkeys were exposed up to 8 hours/day, 5 days/week for 6 months to 650 to 2000 ppm (3 – 9.3 mg/L) and consistent signs of significant eye and nose irritation were observed at 1300 ppm and above. Histopathological lesions at this concentration typically consisted of pulmonary lesions.
In more recent studies, rats exposed 6-8 hours/day for 7 days to 450 ppm, 300 ppm for 2-11 weeks, or 200-400 ppm for 4 days showed significant liver and/or kidney enzyme changes. In a standard 13-week inhalation study, rats exposed 6 hours/day for 5 days/week showed no treatment-related effects except for minor changes in the nasal olfactory epithelium at 500 ppm and above. The sub-chronic NOEL was determined to be 200 ppm. Mice exposed to 60 ppm and higher for 6 hours/day, 5 days/week for 2 weeks showed microscopic (centrilobular necrosis) liver changes. The NOEL in mice from this study was 15 ppm.

IARC:

Not listed Styrene: Group 2B (possible human carcinogen) - In subsequent reviews in 1994 and 2002, IARC chose to maintain its classification for styrene. In chronic inhalation studies, mice, but not rats develop lung tumors following styrene exposure, even though both species form DNA adducts.

OSHA:

Not regulated

NTP:

Not tested Styrene: is reasonably anticipated to be a human carcinogen based on limited evidence of carcinogenicity from studies in humans, sufficient evidence of carcinogenicity from studies in experimental animals, and supporting data on mechanisms of carcinogenesis (2011).

Remarks:

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

Special Studies:

Ethylbenzene: In a National toxicology Program (NTP) 2 year inhalation study in rats and mice, there was clear evidence of carcinogenic activity in male rats, based on increased incidence of renal tubule neoplasms and testicular adenoma. There was some evidence of carcinogenic activity in female rats, based on increases in renal tubule adenoma. In mice, there was also some evidence of carcinogenic activity based on increased incidence of aveolar/bronchiolar neoplasms and hepatocellular neoplasms for males and females, respectively.

Styrene: A reproduction study in rats exposed to 125 and 250 ppm in drinking water (approximately 14-21 mg/kg/day) produced no treatment-related effects on reproductive performance over 3-generations. The only treatment related findings were reduced pup survival index in the F1 and F2 offspring. There was no evidence of developmental effects and no other effects were reported. The parental NOEL was 250 ppm and the NOEL for the F1 and F2 offspring was 125 ppm. In developmental toxicity studies in rats, rabbits, and hamsters styrene was not a selective toxicant to the fetus and was toxic at only those doses that produced maternal toxicity.

In humans, styrene is associated with central nervous system depression (headache, fatigue, nausea, and dizziness) at inhalation concentrations greater than 50 ppm. Styrene has also been reported to reduce sensory nerve conductions in occupation settings after exposure to 100 ppm or more. Styrene has also been reported to produce color vision deficiencies (dyschromatopsia) at concentrations greater than 8 ppm (averaging 24 ppm). Twelve epidemiology studies have been reported for styrene and half have supported the hypothesis that styrene produces lymphatic and hematopoetic cancers (LHC). However, those that show an increase of LHC has generally been small in size (limited statistical power), have shown no dose-response relationship, and/or had multiple chemical exposures. Of the six studies that have not shown an association with styrene and LHC, these studies tended to be larger in size (higher statistical power), had an older study population, and had good exposure data. Overall, the weight of evidence suggests that there is not an association of LHC and styrene exposure in humans.

In a recent inhalation cancer bioassay, Sprague Dawley derived rats (70/sex/group) were exposed whole body to styrene vapor at 0, 50, 200, 500, or 1000 ppm 6 h/day 5 days/week for 104 weeks. Males exposed to 500 and 1000 ppm and females exposed to 200 ppm and higher gained significantly less weight than the controls. There were no changes of toxicologic significance in hematology, clinical chemistry, urinalysis, or organ weights. Styrene-related non-neoplastic histopathologic changes were confined to the olfactory epithelium of the nasal mucosa. The incidence and severity were related to dose. There was no evidence that styrene exposure caused treatment related increases of any tumor type in males or females or in the number of tumor bearing rats in the exposed groups compared to controls. In 2-year carcinogenicity bioassays conducted by the National Toxicology Program, rats and mice (50/sex/group) received 0, 500, 1000, or 2000 mg/kg/day and 0, 150, or 300 mg/kg/day, respectively, via oral gavage. In male or female rats and female mice there was no significant difference in tumor incidence when compared to the control groups. In male mice there was a positive association between styrene dose and the incidence of the combination of adenomas and carcinomas of the lung. However, due to the high background incidence of this tumor type in male mice, no firm conclusion was drawn for the carcinogenicity. In a study that administered styrene (125 and 250 ppm) in the drinking water of rats for 2 years, there was no evidence of carcinogenicity. In other chronic inhalation toxicity studies, rats were exposed to styrene via inhalation at concentrations up to 300 ppm for 4-6 hours/day, 5 days/week, for 1 year or up to 1000 ppm for 2 years. There was a slightly increased, but not statistically significant, incidence of mammary tumors in the females in both studies. Because the control incidence was also high and there was no dose-response relationship the studies were considered to be negative.

12. ECOLOGICAL INFORMATION

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

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

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 taken for local recycling, recovery 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

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

DOT

ADR/RID/ADN

IMDG

ICAO

IATA-DGR

MEXICO

CANADA/TDG

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):	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 contains a chemical or chemicals that are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Chemical Name	CAS Number	Weight %	CERCLA/SARA 313 de minimus:
Styrene	100-42-5	0.1 - 0.3	0.1
Ethylbenzene	100-41-4	0.1 - 0.3	0.1

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 - WHMIS Classification:
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.

Chemical Name	Weight %	WHMIS hazard class:
Styrene 100-42-5	0.1 - 0.3	0.1%; English Item 1473; French Item 1508 B2; D2A; F

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:
Ethylbenzene 100-41-4	0.1 - 0.3	Type of Toxicity: cancer
Acrylonitrile 107-13-1	0.01 - 0.10	Type of Toxicity: cancer

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.

Visit our public website to search, view and print Safety Data Sheets for commercial products:
http://eur.sabic-ip.com/ordeur/pages/msds/MSDSSearch.jsp?app=sabic-ip

SDS Scope:
USA: Conforms to 29 CFR 1910.1200 (2012 OSHA Hazard Communication Standard)
This document is also applicable in other countries and regions.

Prepared by: Product Stewardship & Toxicology

Reason for revision: Update to GHS format

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End of Safety Data Sheet