



Material Safety Data Sheet

Section I - CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Manufacturer's Name: Entegris, Inc.	Emergency Telephone Number: CHEMTREC USA: 800-424-9300 International: 703-527-3887 (Collect)
Address: 101 Peavey Road Chaska, Minnesota 55318	MSDS Issue Date: 7/27/2010
Telephone Number For Information: 952-556-3131	MSDS Revision: NA MSDS Revision Date: NA MSDS Number: NA
Product: TEGO™ Polymers	Product Number(s): 01-1009568
Substance Identification: A static dissipative carbon nanotube composite filled Polycarbonate.	

Section II – COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS NO.	Percent
Polycarbonate	24936-68-3	85-100
Polymer	Trade Secret	1-10
Carbon Nanotubes	Not Established	1-15
Cobalt and Cobalt Compounds	7440-48-4; 1308-06-1	≤0.15

Section III – HAZARD IDENTIFICATION AND EMERGENCY OVERVIEW

Emergency Overview: Pellets may give off an odor. Melted product is flammable and produces intense heat and dense smoke during burning. Irritating gases/fumes may be given off during burning or thermal decomposition, resulting in possible irritation to eyes, skin and respiratory tract. Fumes generated during melt processing may cause eye, skin and respiratory tract irritation. May cause mechanical irritation (abrasion). Spilled materials may present a slip hazard. Molten materials can cause severe burns. Target organs: Respiratory tract, eyes and skin.
Route(s) of Entry:
Inhalation: Pellets are not expected to cause adverse respiratory effects in supplied form. Mechanical or thermal processing and/or decomposition of material may create particles or fumes that may irritate the respiratory tract.
Skin absorption: Not likely to occur in the supplied or processing form.
Ingestion: Not acutely toxic.
Signs and Symptoms of Exposure: Molten materials can cause severe burns. Once impregnated, carbon nanotubes are not likely to be separated from the polymer matrix. The toxicity of carbon nanotubes has not been fully investigated, therefore due care must be taken in handling and use. The cobalt component is classified by the IARC as a 2B Possible carcinogen.

Section III (Cont)

Health Hazards (Acute and Chronic): In the supplied form, the ingredients are encapsulated in plastic pellets, and therefore the likelihood of exposure is low unless the product form is modified. If the pellets or molded products undergo additional mechanical processing (i.e., grinding, sanding, milling, etc.), compound particulates may cause mechanical irritation to the eyes and temporary discomfort to the respiratory tract at concentrations above the occupational exposure limit. Keep particulate levels below occupational exposure limits.

The cobalt component is classified by the IARC as a 2B Possible carcinogen. Acute skin exposure to cobalt may cause allergic skin reactions, while chronic skin exposures may cause dermatitis with symptoms of red, itchy, dry skin.

Gases and fumes evolved during thermal processing or decomposition may irritate the eyes, skin or respiratory tract. Molten materials can cause severe burns.

Medical Conditions Generally Aggravated by Exposure: 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/particulates if not properly ventilated. Cobalt and cobalt compounds are bound with the polymer; therefore they are not expected to be a health hazard unless the resin is mechanically processed (i.e., ground, sanded, cut, etc.) where the particulate may be released. Exposures to cobalt and cobalt compounds may cause occupational asthma.

Section IV – FIRST AID

In Raw Material Form:

Eyes: Wash eyes immediately with large amounts of water for a minimum of 15 minutes, occasionally lifting the upper and lower lids until no evidence of chemical remains. Immediately consult a physician for medical treatment.

Skin: Wash material off skin with soap or mild detergent and water. If redness, itching or burning sensation develops consult a physician for medical treatment.

Ingestion: Not probable due to nature of the material. If large amounts of the material are swallowed, consult a physician for medical treatment.

Inhalation: Not probable due to nature of the material.

In Melt Processing Form:

Eyes: For eye contact with molten material, immediately flush with large amounts of water for a minimum of 15 minutes, occasionally lifting the upper and lower lids until no evidence of chemical remains. Immediately consult a physician for medical treatment.

Skin: For skin contact with molten material, cool rapidly with water or ice and consult a physician for medical treatment. For skin contact with fume condensate, wash thoroughly with soap and water. If irritation develops, consult a physician for medical treatment.

Ingestion: Not probable due to nature of the material. If large amounts of the material are swallowed, immediately consult a physician for medical treatment.

Inhalation: For processing fume inhalation or irritation, immediately remove person to fresh air. If coughing, difficulty breathing or other respiratory symptoms develop, immediately consult a physician for medical treatment. If exposure to fumes from overheating or combustion, remove to fresh air and consult a physician if symptoms persist.

Section V – FIRE FIGHTING MEASURES

Flash Point (Method Used): >300°C (>572°F)	Flammable Limits	LEL: Not available	UEL: Not available
Extinguishing Media: Water spray or foam. Carbon dioxide or dry chemical are generally not recommended due to their lack of cooling capacity which may allow re-ignition.			
Fire and Explosion Hazards: Combustible material. During a fire, intense heat, irritating smoke and toxic gases (Phenol, Bisphenol A, carbon dioxide, aldehydes, and carbon monoxide) may be generated by thermal decomposition and combustion. Additional mechanical processing may create particulates that may form explosive mixtures with air. Users should investigate best management practices and engineering controls to keep particulates from creating dangerous conditions. To reduce the risk for dust explosion, do not allow particulates to accumulate.			
Special Fire Fighting Instructions/Precautions: Fire fighters should wear full protective clothing and self-contained breathing apparatus to protect against potential toxic and irritating fumes while extinguishing a fire.			

Section VI – ACCIDENTAL RELEASE MEASURES

Steps to Be Taken in Case Material is Released or Spilled: If molten, allow material to cool and place into an appropriate container for disposal. Loose pellets may present a slipping hazard. Avoid particulate formation. Vacuum particulates using a HEPA equipped vacuum or sweep pellets up immediately and place in proper container for disposal or recovery.
--

Section VII – HANDLING AND STORAGE

Handling: Wear protective gloves and safety glasses. Open containers in a well ventilated area. Avoid grinding or sanding material into particulate or dust without proper ventilation or respiratory protection.
Storage: Store in a cool dry place. Maximum storage temperature is 93°C (199.4°F). Keep containers closed to prevent contamination.

Section VIII – PERSONAL PROTECTIVE EQUIPMENT AND EXPOSURE CONTROL

Ingredient:	OSHA - PEL	ACGIH - TLV
Particulates	15 mg/m ³ (Total Dust) 5 mg/m ³ (Respirable)	10 mg/m ³ (Inhalable Fraction) 3 mg/m ³ (Respirable)
Cobalt and cobalt compounds	0.1 mg/m ³ as Co (dust and fumes)	0.02 mg/m ³ as Co

Ventilation: Provide local exhaust ventilation at processing equipment to keep fumes and potential particulates below applicable regulatory limits.

Respiratory Protection: With properly designed ventilation, use of respiratory protection should not be necessary. When processing fumes/particulates are not adequately controlled, use NIOSH approved respirators for the hazard present.

Personal Protection:
Hand: Wear heat resistant gloves when handling molten materials.
Eyes: Wear safety glasses with side shields when handling.
Skin and body: Protect skin and body when handling molten materials.
Additional Protective Measures: After handling materials, employees should wash their hands and face before eating, drinking, or using tobacco products.

ACGIH® and TLV® are registered trademarks of the American Conference of Governmental Industrial Hygienists.

Section IX – PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	Not Available	Evaporation Rate (Butyl Acetate = 1)	Not available
Vapor Pressure (mm Hg.)	No available	Decomposition Temperature	288°C (550°F)
Vapor Density (AIR = 1)	Not available	Autoignition Temperature	>450°C (843°F)
Solubility in Water	Insoluble		
Appearance and Odor: Smooth, glossy black surface finish with odor similar to polycarbonate.			

Section X – STABILITY AND REACTIVITY

Stability: Stable under normal storage, handling and processing conditions
Incompatibility (Materials to Avoid): Strong oxidizing agents, acids and bases.
Hazardous Decomposition or Byproducts: By fire and thermal decomposition: Carbon monoxide, carbon dioxide and hydrocarbons.
Hazardous Polymerization/Reactions: Will not occur
Conditions to Avoid: Do not exceed melt temperature recommended in product literature. Do not allow product to remain in barrel at elevated temperatures for extended periods. Avoid particulate formation and ignition sources. Avoid thermal decomposition temperatures over 288°C (550°F).

Section XI – TOXICOLOGICAL INFORMATION

Toxicological data: Carbon Nanotubes (Results based on similar product): Acute Oral Toxicity: LD ₅₀ : >5000 mg/kg (rat) Acute Dermal Toxicity: LD ₅₀ : >2000 mg/kg (rat) A few carbon nanotube studies have reported inflammation and fibrotic reactions in rodent lungs following intratracheal installation, an application method that is not directly relevant to humans, and which may produce artificial results. The materials tested are not known to be identical to the carbon nanotubes contained in this polymer matrix, which may differ significantly in a number of parameters including composition, all of which can influence a toxicological profile.
Carcinogenicity: Cobalt and cobalt compounds are listed by the IARC as a 2B Possible Carcinogen.

Section XII – ECOLOGICAL INFORMATION

Do not allow material to be released to the environment without proper governmental permits. Plastic pellets are inert and benign in terms of their physical impact on the environment. Material must not be released to the environment since they can be consumed by animal and aquatic species.
--

Section XIII – DISPOSAL INFORMATION

Discarded product is not a Hazardous Waste under RCRA (40 CFR 261). Recycling or reuse of this product is encouraged. User is responsible for proper classification and management if additions are introduced. Dispose of this material in accordance with country, regional and local environmental regulations.
--

Section XIV – TRANSPORTATION INFORMATION

Transportation and Hazardous Materials Description: This material is not a hazardous material for shipment in accordance with the US Department of Transportation or IATA regulations

Section XV – REGULATORY INFORMATION

OSHA Status: This product is not regulated by 29 CFR 1910.1000 Subpart Z

CERCLA Reportable Quantities:

SARA Title III:

Section 302 Extremely Hazardous Substances: Not listed

Section 311/312: Threshold reporting quantity based on maximum amount of molten state material on site at one time

Section 313: Not listed

US EPA CERCLA Hazardous Substances (40 CFR 302): Not listed

TSCA: All ingredients are on the TSCA Chemical Substance Inventory

US EPA RCRA (40 CFR 261): If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified and managed as a hazardous waste.

California Proposition 65: This product contains a chemical regulated by California Proposition 65.

Section XVI – ADDITIONAL INFORMATION

The chemical, physical and toxicological properties of this material have not been thoroughly investigated. Exercise due care.

Entegris is a registered trademark of Entegris Inc. or an affiliated company.

© 2010 Entegris Inc. or affiliated company. All rights reserved. The above information is believed to be current and accurate; however Entegris makes no warranty or representation, expressed or implied, as to the accuracy or completeness of such information and assumes no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigation to determine the suitability of the information.