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MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Trade Name: QPAC[®] 25

Product/Chemical Name: Poly(ethylene carbonate)

Chemical Family: Aliphatic Polycarbonate

Manufacturer:

Empower Materials
91 Lukens Drive, Suite E
New Castle, DE 19720

Emergency Telephone Numbers:

Chemtrec 1-800-424-9300 U.S.
1-703-527-3887 International

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient (s)	CAS Number	%
Poly(ethylene carbonate) (C ₃ H ₄ O ₃) _n	-----	94+ %
Ethylene carbonate	96-49-1	0 – 5 %
Methylene Chloride	75-09-2	0.2 – 1.0 %

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: Clear to slight tan pellets or white to off-white granulates or powder

Odor: No Odor

- Avoid contact with eyes, skin or clothing. Avoid breathing dust or vapor from granulates or powder. Do not swallow. Wear safety glasses and latex gloves.
- Wash thoroughly after handling. Use with adequate ventilation. May produce hazardous gases under fire conditions.
- During emergencies, wear equipment to protect eyes, skin and respiratory tract. Prevent material and run-off from entering sewer or waterways. Consult the Material Safety Data Sheet.

Potential Health Effects

Skin

Contact may cause mild irritation.

Eyes

Polymer dust is mildly irritating to the eyes. Treat as a nuisance dust and avoid eye contact.

Inhalation

Polymer dust causes discomfort if inhaled. Treat as a nuisance dust and avoid inhalation

Ingestion

Ingestion of product may cause nausea and vomiting.

Conditions aggravated by exposure

No human or animal health effects data are known to exist. However, available toxicity information on polymers of molecular weight 1000 or greater suggests they have low toxicity.

May contain 0.2 – 1.0% methylene chloride. Pure methylene chloride is a suspected human carcinogen. ACGIH has published a TLV of 50 ppm (1993)

SECTION 4 - FIRST AID MEASURES**Eye Contact**

Immediately flush with large quantities of water for 15 minutes while holding back eyelids occasionally. Call a physician.

Skin Contact

In case of skin contact, wash with soap and water.

Ingestion

In case of ingestion have victim drink large quantities of water and induce vomiting if conscious. Call a physician.

Inhalation

Immediately remove victim to fresh air. If breathing becomes difficult, call a physician.

SECTION 5 - FIRE FIGHTING MEASURES**Flammable Properties**

Flash Point: NA

Auto ignition Temperature: N/A

Explosion Limits

Lower: N/A

Upper: N/A

Extinguishing Media

Poly(ethylene carbonate) is a combustible solid. Choose extinguishing media suitable for the material, such as water spray, dry chemical, alcohol foam or carbon dioxide.

Unsuitable Extinguishing Media

No restrictions on media based on knowledge of this material.

Special Fire Fighting Instructions

None required

SECTION 6 - ACCIDENTAL RELEASE MEASURES**Spills, Leak and Disposal**

- Incinerate under controlled conditions, and proper ventilation.
- Dispose in approved landfill.
- Observe governmental spill and water-quality regulations.

For spills and leaks, wear chemical safety goggles, chemical resistant gloves, and apron or coveralls. Contain spills and place in an approved D.O.T. container and seal. Wash all contaminated clothing before reuse. Ventilate area and clean spill site after material clean up is complete.

Large Spills

For larger spills requiring emergency response, respiratory protection may also be required. Follow OSHA regulations and NIOSH recommendation for respirator use (see 29 CFR 1910.134 and NIOSH Pub. 87-108) and emergency response (see 29 CFR 1910.120). Contain spills and place in an approved D.O.T. container and seal. Wash all contaminated clothing before reuse. Ventilate area and clean spill site after material clean up is complete.

SECTION 7 - HANDLING / STORAGE**Handling**

Avoid contact with eyes, skin or clothing. Do not swallow. Wear chemical safety goggles and gloves. Wash thoroughly after handling. General ventilation during normal use is recommended especially when used in thermal processing and spray applications.

Storage

Store in a cool and dry area. To prevent agglomeration of pellets, granulates, or powder, store in a refrigerator.

Incompatibility

- Incompatible with strong oxidizing agents
- Temperature above 150 °C

SECTION 8 - EXPOSURE CONTROL AND PERSONAL PROTECTION

Ventilation

Local, mechanical exhaust ventilation recommended especially when used in thermal processing or spray applications. Work areas must be well ventilated to maintain the methylene chloride vapor concentration below 50 ppm.

Personal Protective Equipment

Safety glasses and gloves.

Respiratory Protection

If excessive dusting occurs, wear NIOSH/MSHA approved dust/mist respirator.

Skin Protection

Chemical resistant gloves and apron.

Eye Protection

Safety glasses during normal use. Eye wash fountain and emergency shower should be provided in work area.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear to slight tan pellets or white to off-white granulates or powder

Odor: No odor

Boiling Point: Decomposes above 180°C (356 °F)

Melting Point: NA

Specific Gravity: 1.38 – 1.42 (H₂O = 1)

% Volatile by Vol.: Less than 5 weight %

Vapor Pressure: NA

Solubility in Water: Insoluble

pH Value: NA

SECTION 10 - STABILITY AND REACTIVITY

Stability

Stable.

Hazardous Polymerization

Does not occur

Hazardous Decomposition Products

Ethylene carbonate when burned may form toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes, acids and ketones. Other hazardous products may occur under conditions of decomposition or combustion, and/or result from interaction with other materials and/or environment of decomposition or combustion.

Materials and Conditions to Avoid

Keep away from excess heat and temperatures above 150°C. During the initial mild decomposition, the polymer decomposes primarily to ethylene carbonate. Further decomposition of the polymer and the ethylene carbonate can produce ethylene oxide (EO), carbon dioxide, and other unknown materials both gaseous and solid. There is evidence that ethylene oxide causes tumors in laboratory animals. The Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) for ethylene oxide is 1 ppm for an eight-hour time weighted average exposure.

SECTION 11 - TOXICOLOGICAL INFORMATION

Product Information

LD50 (oral, rat)

No Data Available

Acute Overexposure

No data is available on the health effects of chronic exposure to this product.

Chronic Overexposure

No other effects besides those associated with acute exposure.

Ingredient information

No other information.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity Data

No Data Available

SECTION 13 - DISPOSAL CONSIDERATIONS

Hazardous Waste Characteristic

None

Recommendation

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures. Discharge of processing effluent to the sewer may require a permit. DO NOT discharge effluent solutions to septic systems.

SECTION 14 - TRANSPORTATION INFORMATION

Ground Shipping Information

DOT Proper Shipping Name

None

Non-Hazardous for Transport

This substance is considered to be non-hazardous for transport.

Air (ICAO/IATA) Shipping Information

Proper Shipping Name

None

Non-Hazardous for Air Transport

This substance is considered to be non-hazardous for air transport.

International Maritime Organization (IMO) Additional Shipping Class

IMDG Code

Not Applicable

Amdt. Code

Not Applicable

HTS Code

Not Applicable

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

SARA LISTED: No

TSCA Inventory Item: No—Research and Development Exemption: TSCA 15 U.S.C. ¶2604(h) (3)

SECTION 16 - OTHER INFORMATION

It is believed that the herein contained information is accurate. It is provided for the purpose of hazard communication independent of any sale of the product, as part of our product safety program. There is no claim made regarding an implied warranty, express warranty, and fitness for a particular purpose or merchantability by the information herein contained or regarding the product. We make available data sheets for our products, which we urge you to obtain for the products you buy, process, distribute, or use. You should advise those who may come in contact with our products of the herein contained information.

User should consult his legal advisor or the appropriate government agency to establish applicability or effect of any regulation or law regarding the product. We do not undertake to provide advice on these matters.