1. Identification of the Substance / Mixture and the Company / Undertaking

1.1 Product Identifier

Product Name: StyroChem EPS (Expandable Polystyrene) – Grade MC590E

Chemical Name: Expandable Polystyrene

Synonyms: EPS, Expandable Polystyrene, poly(phenylethene)

CAS No.: 30050-69-2

1.2 Relevant Identified Uses of the Substance or <Mixture and Uses Advised Against

Raw material for polystyrene foam

1.3 Details of the Supplier of the Safety Data Sheet

Supplier:

StyroChem
19250 Baie d'Urfé, QC H9X 3R8
Canada

Logistics & Customer Service Inquiries:

+1 (514) 457-3226 extension 210
customerservice@styrochem.ca

Information In Case of Emergency:

+1 (613) 996-6666 Canutec
+1 (514) 457-3227 StyroChem

2. Hazards Identification

2.1 Classification of the Substance or Mixture

According to Regulation (EC) No. 1272/2008 [CLP]: No need for classification according to GHS criteria for this product.

EUH018 In use may form flammable/explosive vapor-air mixture

2.2 Label Elements:

According to Regulation (EC) No. 1272/2008 [CLP]

Hazard Statement: EUH018 In use may form flammable/explosive vapor-air mixture

Hazard Pictogram: None

Signal Word: None

Precautionary Statements:

P210 Keep away from heat/sparks/open flames/hot surfaces. – No Smoking

P233 Keep container tightly closed.

P243 Take precautionary measures against static discharge.

P403 + P235 Store in a well-ventilated place. Keep cool.

2.3 Other Hazards

Product releases pentane, a flammable hydrocarbon.

In use may form flammable/explosive vapor-air mixture

May cause some eye irritation which should cease after removal of the product.

3. Composition/Information on Ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical nature: Preparation based on: polystyrene, blowing agent mix

Hazardous Ingredient(s)	CAS No.	EC No.	% by Wt.	(EC) No. 1272/2008 Hazard Pictogram(s), Hazard Categories and Hazard Codes
Tri-blend Pentane Mix of normal, iso- and cyclopentane	109-77-0 78-78-4 287-92-3	203-692-4 201-142-8 206-016-6	<9	GHS02, Flam. Liq.2; H225  GHS08, Asp. Tox. 1: H304  GHS07, STOT SE 3 (drowsiness and dizziness); H336  GHS09, Aquatic Chronic 2; H411, EUH066 

4. First Aid Measures

4.1 Description of First Aid Measures

No special precautions necessary.

General Information:
Possible minor skin or respiratory irritant.

If inhaled:
Inhalation of pentane may cause respiratory irritation, headache, dizziness or lack of coordination. Remove to fresh air. If breathing has stopped, apply artificial respiration and administer oxygen if necessary. If symptoms persist, seek medical attention.

Skin contact:
May cause irritation. Wash skin with soap and water thoroughly. If irritation persists, seek medical attention.
After contact with the molten product, cool rapidly with cold water. Do not pull solidified product off skin. Seek immediate medical attention.

Eye contact:
If contact with eyes occurs, flush eyes (and under eye lids) immediately with running water for several minutes. If symptoms persist, seek medical attention.

Ingestion:
Unlikely to be hazardous if ingested.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed:
Symptoms: headache, dizziness, loss of coordination, dazed state, eye irritation, skin irritation

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed:
Treatment: Treat according to symptoms (decontamination, vital functions), move patient to fresh air

5. Fire Fighting Measures

5.1 Extinguishing media:
Suitable extinguishing media: CO_2 (carbon dioxide), powder or water spray.
For safety reasons, unsuitable extinguishing agents: water jet

5.2 Special hazards caused by the substance or mixture
Carbon monoxide
Under certain fire conditions, traces of other toxic gases cannot be excluded

5.3 Advice for Firefighters
Wear self-contained respiratory protective device.
Additional information:
Cool endangered receptacles with water spray.
Collect contaminated fire fight water separately. It must not enter sewage.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:

Beads on the floor could present a slipping hazard. Good housekeeping practices should be followed to avoid this hazard.

Ensure adequate ventilation. Pentane can form an explosive mixture with air. Note that pentane is heavier than air and can spread along the ground in the direction of the wind and can collect in low areas

Avoid formation of dust.

Keep away for ignition sources.

6.2 Environmental precautions:

Do not allow to enter drains or waterways.

Inform respective authorities in case of seepage into water course or sewage system.

6.3 Methods and material for containment and cleaning up:

Pick up mechanically (sweeping / shovel).

Pack in tightly closed containers for disposal.

Dispose of material collected according to regulations.

Ensure adequate ventilation.

6.4 Reference to other sections:

See also Sections 8 and 13

7. Handling and Storage

7.1 Precautions for safe handling:

No smoking

Ensure good ventilation of workplace.

Prevent formation of dust.

Any unavoidable deposit of dust must be regularly removed.

Use appropriate industrial vacuum cleaners or central vacuum systems approved for use in hazardous locations for dust removal.

Keep away from ignition sources.

Take precautionary measures to avoid static discharges. Product may charge electrostatically.

Ground all equipment containing material.

Keep container tightly sealed when not in use. Containers under pressure should be opened with care to release pressure. Once container is opened, contents should be used as soon as possible. Reseal container when not in use and re-open with caution.

Temperature class: T3 (Autoignition temperature >200^{o}C)

7.2 Conditions for safe storage, including any incompatibilities:

Ensure good ventilation of storage area.

Flammable concentrations of pentane may accumulate on storage in closed containers. Before unloading freight containers / trailers, keep doors open and ventilate for 30 minutes prior to unloading.

Protect against moisture, direct sunlight and heat.

Keep way form ignition sources.

No smoking.

Combustible materials and strong oxidizing agents should not be stored close by.

Keep packaging tightly sealed and store in cool, dry, well ventilated location.

7.3 Specific end use(s):

For use in manufacture of polystyrene foam.

8. Exposure Controls/Personal Protection

8.1 Control Parameters

8.1.1 Threshold Limits

Country	Chemical (CAS)	Occupational Exposure Limits (Time Weighted Average for 8 hrs.)		Reference
		ppm	mg/m^3	
European Union	Pentane (normal 109-66-0 and iso- 78-78-4)	1000	3000	Community Directive 2006/15/EC
USA	Pentane (all isomers)	1000 600	2950 1770	NIOSH (PEL) American Council of Government Industrial Hygienists (ACGIH)
Austria	Pentane (normal 109-66-0 and iso- 78-78-4)	600	1800	Grenzwert für Arbeitsstoffe und über krebserzeugende Arbeitssoffe
Belgium	Pentane (all isomers)	600	1800	Annex I of the Arrêté royal du 11 mars 2002 relatif à la protection de la santé et de la sécurité des travailleurs contre les risques liés à des agents chimiques sur le lieu de travail
Canada				
Alberta	Pentane (all isomers)	600	1770	Occupational Health & Safety Code 2009
British Colombia	Pentane (all isomers)	600		OHS Regulations, Guidelines Part 5
Quebec	n-Pentane (109-66-0)	120	350	Regulation Respecting

	cyclopentane (287-92-3)	600	1720	Occupational Health and Safety, Schedule 1 Part 1
Saskatchewan	Pentane (all isomers)	600		The Occupational Health and Safety Regulations 1996, Table 1
All Other Provinces and Territories	Pentane (all isomers)	600	1770	ACGIH
Denmark	Pentane (normal 109-66-0 and iso- 78-78-4)	500	1500	Grænseværdier for stoffer og materialer
	Cyclopentane (287-92-3)	300	850	
Germany	Pentan (normal 109-66-0 and iso- 78-78-4)	1000	3000	Technische Regeln für Gefahrstoffe 900 (2006)
Finland	Pentane (normal 109-66-0 and iso- 78-78-4)	500	1500	Finnish Ministry of Social Affairs & Health
France	Pentane (normal 109-66-0 and iso- 78-78-4)	1000	3000	Institut National de Recherche et de Sécurité (INRS) ED 984
	Cyclopentane (287-92-3)	600	1720	
Mexico	Pentane (109-66-0)	600	1800	NOM-010-STPS-1999
Netherlands	Pentaan (normal 109-66-0 and iso- 78-78-4)	600	1800	OEL Database
Norway	Pentane (normal 109-66-0 and iso- 78-78-4)	250	750	Administrative standards for contaminants in workplace air
Poland	Pentane (normal 109-66-0 and iso- 78-78-4)		3000	The Ordinance of the Minister of Labour and Social Policy on the Maximum Admissible Concentrations and Intensities of Harmful Health Agents in Working Environment
Spain	Pentano (normal 109-66-0 and iso- 78-78-4)	1000	3000	Limites de Exposición Professional Para Agentes Guimicos en España (2008)
	Ciclopentano (287-92-3)	600	1745	
Sweden	Pentane (normal 109-66-0 and iso- 78-78-4)	600	1800	Occupational Exposure Limits Values and Measures Against Air Contaminants (AFS 2005:17)
United Kingdom	Pentane (normal 109-66-0 and iso-78-78-4)	600	1800	Health and Safety Executive (HSE) Guidance Note EH40/2005

8.1.2 Sampling methods:

Chemical	Organization	Protocol
n-Pentane (Hydrocarbons, BP 36-126°C	NIOSH	1500
n-Pentane (Volatile Organic Compounds)	NIOSH	2549
n-Pentane	NIOSH	95-117
Pentane	OSHA	7

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

DNEL – Workers

n-Pentane

Effect Level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	3000 mg/m^3	
	Long-term systemic effects dermal	432 mg/kg bw/day	

DNEL – General Population

n-Pentane

Effect Level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	643 mg/m^3	
	Long-term systemic effects dermal	214 mg/kg bw/day	
	Long-term systemic effects oral	214 mg/kg bw/day	

PNEC

n-Pentane

Compartments	Value	Remark
Fresh Water	230 µg/L	
Marine Water	230 µg/L	
Agua (intermittent releases)	880 µg/L	
STP	3600 µg/L	
Fresh Water Sediment	1.2 mg/kg sediment dw	
Marine Water Sediment	1.2 mg/kg sediment dw	
Soil	0.55 mg/kg soil dw	

8.2 Exposure Controls

8.2.1 Appropriate engineering controls:

Use only in well ventilated areas.

8.2.2 Individual protection measures:

Do not eat, drink, or smoke while working with material.

Keep away from foodstuffs, beverages and feed.

The usual precautionary measures are to be adhered to when handling chemicals.

8.2.2.1.1 Respiratory protection:

Use suitable respiratory protective device in case of insufficient ventilation.

8.2.2.1.2 Hand protection:

Thermally insulated glove material required when handling hot material.

8.2.2.1.3 Eye protection:

Tightly sealed goggles

8.2.2.1.4 Skin and body protection:

Protective work clothing

8.2.3 Environmental exposure controls:

Government and local provisions on volatile organic substances (VOCs) are to be fulfilled when they are applicable.

9. Physical and Chemical Properties

General Information *Form:* Beads *Color:* Colorless to white *Odor:* perceptible odor *pH value:* not soluble
Change in Condition: *Melting point / melting range:* >132°C (270°F) *Boling point / boiling range:* Undetermined, the substance decomposes. *Flash point:* Vapors are flammable, -56°C (Pentane) *Evaporation rate:* not available
Flammability: In use may form flammable / explosive vapor-air mixture *Upper explosive limit:* 7.8% v/v (Pentane) *Lower explosive limit:* 1.3% v/v (Pentane) *Vapor pressure:* Not available
Relative density: 640 kg/m^3
Solubility (water): Insoluble **Solubility (other):** Soluble in aromatic hydrocarbons, halogenated solvents and ketones
Partition coefficient (n-octanol/water): Not available
Auto-ignition temperatures: 285°C (Pentane) (ASTM E-659)
Decomposition temperature: >280°C
Viscosity: not established
Explosive properties: In use, may form flammable/explosive vapor-air mixture.
Oxidizing properties: Not oxidizing

9.2 Other information:

Bulk density: approximately 640 kg/m^3 (about 40 pounds per cubic foot)

10. Stability and Reactivity

10.1 Reactivity:

Stable under normal use conditions as prescribed, may form flammable/explosive vapor-air mixture

10.2 Chemical stability:

Stable under normal use conditions as prescribed

10.3 Possibility of hazardous reactions:

In use may form flammable/explosive vapor-air mixture.

10.4 Conditions to avoid:

Keep way from heat, ignition sources and direct sunlight.

10.5 Incompatible materials:

Avoid storing or handling in conjunction with UN Class 1 explosives.

10.6 Hazardous decomposition products:

Carbon monoxide and carbon dioxide, flammable gases/vapors.

11. Toxicological Information

11.1 Information on Toxicological Effects

11.1.1 Acute toxicity:

(Experimental/calculated data based on pentane)

LD_{50} (oral, rat): >2000 mg/kg

LC_{50} (inhalation, mouse): 295 mg/L/2 hour

LC_{50} (inhalation, rat): 364 g/m^3/4 hour

Pentane is harmful when inhaled in high concentrations or ingested. Pentane may cause dizziness and drowsiness if inhaled and high concentrations may result in central nervous system depression and loss of consciousness. Symptoms of ingestion may include nausea, vomiting, as well as symptoms of dizziness, drowsiness and central nervous system depression. If vomiting occurs, pentane may be aspirated into the lungs, with a risk of chemical pneumonitis.

11.1.2 Irritation:

Pentane can be irritating to the eye, may cause redness.

11.1.3 Corrosivity:

Pentane is not corrosive

11.1.4 Sensitization:

Pentane is not known to be a sensitizer

11.1.5 Repeated dose toxicity:

Prolonged or repeated contact with pentane will results in defatting of the skin, causing dryness and cracking.

11.1.6 Carcinogenicity:

Pentane is not expected to be carcinogenic.

11.1.7 Mutagenicity:

Pentane is not expected to be mutagenic.

11.1.8 Toxicity for reproduction:

Pentane is not expected to be toxic to reproduction.

11.1.9 Route of exposure:

Inhalation and ingestion

For EPS, no adverse health effects are expected if handled as recommended with suitable precautions.

12. Ecological Information

12.1 Toxicity

12.1.1 Aquatic toxicity

Aquatic invertebrates:

For EPS, EC50 (48 hour) >100 mg/L, Daphnia magna (OECD Guideline 202, part 1, static) Nominal concentration. No toxic effects occur within the range of solubility.

For Pentane, LC50/48t/daphnia = 9.7 mg/L; toxic.

Aquatic plants:

EC50 (72 hour) >100 mg/L (growth rate), Desmodesmus subspicatus (OECD Guideline 202, part 1, static) Nominal concentration. No toxic effects occur within range of solubility.

12.2 Persistence and degradability

EPS is not readily biodegradable. EPS can be mechanically separated from water.

When released into the air, pentane photochemically degrades, with a half-life of 1 to 10 days. When released into water, pentane may biodegrade to a moderate extent. Pentane quickly disperses in water, however, in view of its high evaporation rate, pentane is expected to volatilize rapidly from water sources into the atmosphere. Pentane is expected to have a half-life of less than 1 day in water. The estimated bioconcentration factor (BCF) for pentane is <100. Pentane has an octanol-water partition coefficient of greater than 3.0.

12.3 Bioaccumulative potential:

EPS has a low potential for bioaccumulation and is not readily bioavailable due to its consistency and insolubility in water.

12.4 Mobility in soil:

EPS bead sink in fresh water, may float or sink in salt water.

12.5 Results of PBT and vPvB assessment:

EPS does not fulfill the criteria for PBT (Persistent/Bioaccumulative/Toxic) or vPvB (very Persistent/very Bioaccumulative).

12.6 Other adverse effects:

EPS contains no ozone depleting substances listed in Regulation (EC) 1005/2009. Pentane has a very low Global Warming Potential (<0.00044) and zero Ozone Depletion Potential.

13. Disposal Considerations

13.1 Waste treatment methods

Surplus, unused, old beads may still contain residual pentane. Therefore waste EPS must be treated with all safety measures in place for the fresh material.
Recover or recycle if possible.
Do not dispose of or allow entry into sewage systems.
Dispose of in compliance with local and national regulations.

14: Transport Information

14.1 UN Number:	2211
14.2 UN proper shipping name:	POLMERIC BEADS, EXPANDABLE, evolving flammable vapor
14.3 Transport hazard class(es):	9
14.4 Packaging group:	III
14.5 Environmental hazards:	None
14.6 Special precautions for users:	633: Keep away from any source of ignition Can release flammable vapors. No smoking. Ventilate freight container with open door for one hour before unloading.

14.7 Transport in Bulk According to Annex II of MARPOL 73/78 and IBC Code

Not applicable

15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

This product has been formulated to comply with the following regulations:

- EU Regulation (EC) No. 1272/2008, Article 59 (10) Substances of Very High Concern
  This product is free from any SVHC listed per this regulation.
- EU Directive 94/62/EC – Packaging and Packaging Waste
- EU Directive 202/95/EC – Restriction of Hazardous Substances (aka RoHS)
- Directive 2012/19/EU – Waste of Electrical and Electronic Equipment (aka WEEE)
- CONEG Legislative Model for Policies on Packaging which has been enacted into laws in 19 states.
  This product is free from heavy metals (mercury, lead, cadmium, and hexavalent chromium)
- California Health & Safety Code, sections 25214.11-25214-26 “Toxics in Packaging Act”

15.2 Chemical Safety Assessment:

Not available

16: Other Information:

This Safety Data Sheet was prepared in accordance with European Community Regulation (EC 1907/2006 (REACH), 1272/2008 and 453/2010.

The following sections contain revisions or new statements: 1-16

Full text of acronyms, classifications, including the hazard classes and the hazard statements, and precautionary statements:

Asp. Tox.	Aspiration hazard
Flam. Liq.	Flammable liquid
STOT SE	Specific Target Organ Toxicity – Single Exposure
Aquatic Chronic	Hazardous to the aquatic environment – chronic
EUH018	In use, may form flammable/explosive vapor-air mixture.
H225	Highly flammable liquid and vapor
H304	May be fatal if swallowed
H336	May cause drowsiness or dizziness
H411	Toxic to aquatic life with long lasting effects
H224	Extremely flammable liquid and vapour
EUH066	Repeated exposure may cause skin dryness or cracking
P210	Keep away from heat/sparks/open flames/hot surfaces. – No Smoking
P233	Keep container tightly closed.
P243	Take precautionary measure against static discharge.
P403 + P235	Store in well-ventilated place. Keep Cool
EUH066	Repeated exposure may cause skin dryness ro cracking
DNEL	Derived no effect level
PNEC	Predicted no effect concentration
DMEL	Derived minimum effect level
LD50	Lethal dose 50, the amount of a toxic that will kill 50% of a population
LC50	Lethal concentration 50, the concentration of a toxic that will kill 50% of a population
EC50	Effective concentration 50, half maximal effective concentration
OECD	Organization for Economic Co-operation and Development
PBT	Persistent, bioaccumulative and toxic
vPvB	Very persistent and very bioaccumulative