



SECTION 1: MATERIAL IDENTIFICATION

Product Name: Sheet / Bulk Moulding Compound
Product Identification No.: All Product Series (SMC - S, BMC - B) and experimental (EXS, EXB)
Chemical Family: Polyester / Vinyl Ester
Chemical Formula: Proprietary
Trade Name and Synonyms: SMC (Sheet Moulding Compound), BMC (Bulk Moulding Compound)
Material Use: Compression Moulding
Manufacturer: Jet Moulding Compounds Inc.
251 Station Street, Ajax, ON, Canada L1S 1S3
Telephone (905) 683-7022 (8 am to 6 pm ET weekdays)

SECTION 2: COMPOSITION

Hazardous Ingredients	Approximate Concentration%	CAS No. or UN No.	Exposure Limits	LD50 / LC50 Specify Species and Route
Styrene Monomer	10-16%	CAS 100-42-5	ACGIH 35 ppm TWA 100 ppm STEL	LD 5000 mg/kg (Rat Ingestion) LC 24 g/cu.m/4M (Rat Inhalation)
Synthetic Vitreous Fibers - Fibrous Glass	8 – 70%	65997-17-3 Fibrous Glass	ACGIH Total Dust 5 mg/m ³ TWA ACGIH Respirable 1 f/cc	Not Available
Carbon Black	0.00 – 0.10%	CAS 1333-86-4	ACGIH 3.5 mg/m ³ TWA	Not Available

N/A – Not Established / TWA – 8 hour time weighted average / STEL – 15 minute maximum limit

SECTION 3: PHYSICAL DATA

Appearance and Odour: Solid mass with styrene odour
Odour Threshold: 0.01 ppm
Specific Gravity: 1.0 - 2.0
Freezing Point: Not Applicable
Solubility in Water: Not Applicable
% Volatile by Volume: Not Applicable
Boiling Point and Evaporation Rate: Not Applicable
pH: Not Available



SECTION 4: FIRE AND EXPLOSION INFORMATION

Flammability:	Yes (will typically not maintain flame at room temperature)
Under What Conditions:	Moderate when exposed to flame at elevated temperature
Means of Extinction	Water or chemical fire extinguisher
Special Procedures:	None
Flash Point (Celsius) and Method:	24.5 deg C - ASTM D56 (Styrene) / 76.7 deg C – Cleveland cup (SMC-BMC)
Upper Explosion Limit (% By Volume):	In air, 7% (Styrene) / NA (SMC-BMC)
Lower Explosion Limit (% By Volume):	1.1% / NA (SMC-BMC)
Explosion Data:	Not applicable
Sensitivity to Mechanical Impact:	Not applicable
Explosive Power:	Not applicable
Hazardous Combustion Products:	None known
Auto Ignition Temperature:	490 degrees Celsius
Sensitivity to Static Discharge:	Not applicable
Special Fire Fighting Equipment:	May require protective clothing that will prevent skin contact and personal protection equipment to prevent inhalation.

SECTION 5: HEALTH HAZARD DATA

Permissible Exposure Level

Not Established for Product (See Section 2)

Effects of Acute Overexposure

Eyes	Exposure to styrene in excess of 200 ppm will cause severe irritation, redness, tearing and blurred vision. Irritation due to styrene does not have corneal involvement and generally not considered damaging.
Skin	Draize skin primary irritation score (0-8 scale) at 4 hour (rabbits) was 6.6. LD50 (rabbits) was 5g/kg. Prolonged or repeated contact with styrene can cause moderate irritation, dermatitis.
Breathing	Studies indicate that exposures to styrene above 200 ppm may cause irritation of upper respiratory tract. Continued high concentration exposure could follow irritation with symptoms of narcosis, muscle contraction and death due to respiratory paralysis.

First Aid

Eyes	Flush with large amounts of water, lifting upper and lower lids, seek medical attention.
Skin	Thoroughly wash exposed area with soap and water. Remove contaminated clothing. Launder contaminated clothing before re-use.
Breathing	If affected, remove individual to fresh air. If breathing is difficult administer oxygen. If breathing has stopped, give artificial respiration. Seek medical attention.



Effects of Chronic Overexposure

Styrene has been shown to cause probable hearing loss in rats when exposed to 800 ppm (air) for at least six hours per day for three to thirteen weeks. No effects were noted at 200 ppm (air) exposure. Based on animal and human experiments no significant risk of hearing loss is expected in under normal occupational exposure.

Overexposure to styrene has been suggested (based on animal studies) to cause aggravation of pre-existing Disorders in the following organs: Mild, reversible kidney effects, hearing, respiratory tract, testis & liver damage.

Long term overexposure to styrene has been associated to the following effects in laboratory animals: liver abnormalities, kidney damage, lung damage and nervous disorders.

The international Agency for Research on Cancer (IARC) has classified Styrene in Group 2B (possibly carcinogenic to humans). This classification was not based on human health studies that had inadequate evidence but rather on animal and other relevant data. A number of lifetime animal studies with styrene including those conducted in the NCI BIOASSAY Program have not shown styrene to be carcinogenic. International assessments organizations still show significant disparity with many finding inadequate evidence of human carcinogenicity.

Teratology: Accumulated information from human experience and animal studies suggest no significant risk of birth defects or reproductive toxicity of styrene to humans.

Mutagenicity: Styrene has given mixed positive and negative results in a number of mutagenicity tests. It was not mutagenic in the Ames test without metabolic activation but gave negative and positive mutagenic results with metabolic activation. It has also given negative mutagenic results in the Chinese Hamster Ovary Test and the forward gene mutation test but positive results in the sister chromatid exchange and the chromosomal aberration assay.

Carbon black has a similar 2B (possible carcinogenic to human) classification as Styrene when present as dust. Carbon black is only found in grey to black coloured material and is encapsulated in finished product. Composite dust containing Carbon black can be exposed during mechanical operations such as sanding & grinding and should be controlled using appropriate methods.

SECTION 6: REACTIVITY DATA

Chemical Stability:	Yes
Incompatibility to Other Substances:	No
Reactivity and Under What Conditions:	N/A
Hazardous Decomposition Products:	Can produce oxides of carbon



SECTION 7: SPILL & DISPOSAL CONSIDERATIONS

Spill: No applicable (Moulding Compound is a Solid Mass Product).

Waste Disposal Method: Contaminated or scrap moulding compound should be cured and then recycled or deposited in a landfill in accordance with local, state/provincial and federal regulations.

SECTION 8: PROTECTIVE EQUIPMENT TO BE USED

Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see Section 2 and local regulations), a NIOSH/MSHA approved respirator is advised in absence of proper environmental control.

Ventilation: Provide sufficient mechanical (general and/or local exhaust) to maintain exposure below TLV(s) (see Section 2). If Respiration Protection is required due to short term rise in styrene levels a NIOSH approved respirator with organic vapour cartridge is recommended as a minimum.

Skin Protection: Wear chemical resistant gloves such as polyvinyl or Viton is recommended.

Eye Protection: Wear approved safety glasses with side shields as minimum.

Other Protective Equipment: Normal work clothing covering arms and legs.

SECTION 9: SPECIAL PRECAUTIONS OR OTHER COMMENTS

Storage: Unless noted otherwise, material should be kept in a cool area of the building (below 70 degrees F) to minimize premature maturation of material. Material should be kept well wrapped in nylon to prevent styrene loss and hardening. Material should also be kept away from ignition sources to minimize risk of fire.

Handling: Avoid inhalation and contact with eyes, skin and clothing. Wash hands thoroughly after handling and before eating / drinking. Remove and wash contaminated clothing before reuse. Use with adequate ventilation. When drilling, grinding or de-flashing cured moulding compound, special care should be taken to control dust and seal off potential skin exposure areas of dust entry, i.e. shirt sleeves, pant legs.

Additional: PPE should be considered (as a minimum) if environmental conditions are poor, if there are long term exposure concerns to dust, or exposure limits are exceeded.



SECTION 10: TRANSPORTATION INFORMATION

US DOT SHIPPING INFORMTIONS

Shipping Name: SMC / BMC
Hazard Class: 9
ID # UN3314
Packaging Group: III
ERG #: 171

CANADIAN TDG SHIPPING INFORMATION

Shipping Name: SMC / BMC
Hazard Class: 9
ID #: UN3314
Packing Group: PG III
ERG #: 171

SECTION 11: REGULATORY INFORMATION

Canadian WHMIS: Classified by Canadian Workplace Hazardous Materials Information System as D2A (Material causing other toxic effects, very toxic material), D2B (Material causing other toxic effects, toxic material), F (dangerously reactive material) – based on styrene as a liquid ingredient.

Canadian WHMIS: Disclosure List for Styrene Monomer (CAS 100-42-5)

California Proposition 65: Styrene Monomer (CAS 100-42-5) California safe drinking water and toxic enforcement act of 1986 requires that clear and reasonable warning be given prior to exposing any person to this chemical

Clean air act – Hazardous Air Pollutant (HAP): Styrene Monomer (CAS 100-42-5)

Clean water act – Priority Pollutant: Styrene Monomer (CAS 100-42-5)

Occupational Safety and Health Act (OSHA) – This material classifies as a hazardous chemical under Hazard communication standard, 29 CFR 1910.1200

SARA Title III: Section 304 – CERCLA: Styrene Monomer (CAS 100-42-5) reportable

SARA Title III: Section 311/312 – This material is classified as an immediate health hazard, delayed health hazard & reactivity hazard

TSCA Section 8(b) – Inventory Status: All components of this material are listed on the US Toxic Substance Control Act inventory.

TSCA Section 12(b) – Export Notifications: This material does not contain any components that are subject to the US Toxic Substance Control Act for export.

SECTION 12: PREPARATION DATE OF MSDS

Additional Information

Rev 1 07/14/93 Revised Styrene Monomer Concentration
Rev 2 12/09/95 Revised MSDS Package
Rev 3 06/04/96 Manufacturer's Company Name Changed
Rev 4 04/08/97 Product ID and ID Numbers updated, Format Changed, Legal Disclaimer Added
Rev 5 07/28/98 Issuer Name and Document Number Changed
Rev 6 01/18/00 Issuer Name Changed
Rev 7 05/11/00 Revised Section 2 Ingredients (CAS No.'s)
Rev 8 10/02/02 Revised Section 1 Product Identification No.



- Rev 9 06/26/03 Revised Document to Reflect New Company Logo and Format Changed
- Rev 10 11/1/04 Revised Section 2, 3, 4, 5, 8 and 9 (no significant product changes)
- Rev 11 11/17/06 Revised Section 2 Ingredients Carbon Black approximate concentration updated
- Rev 12 2/2/09 Revised Section 2 & 10 for new exposure limits & general transport information.
- Rev 13 2/15/10 Revised Section 5 for additional Styrene information, added new regulatory information section & made various clarifications to improve general understanding.

Sources Referenced

IARC, EPA, ACGIH, OSHA, Component MSDS, Harvard Medical, Canadian & American regulations.

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SECTION 13: LEGAL DISCLAIMER

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