

Safety data sheet

TOTAL POLYSTYRENE CRISTAL

Product :
PSTY-001

Version (en) nr : 11.1

Page : 1/10
Revised : 01/12/2013
Supersedes : 20/08/2012

WARNING :
FOR STACKING
PALLETS, SEE
SECTION 7



1. Identification of the substance / mixture and of the company / undertaking

1.1. PRODUCT IDENTIFIER
SDS number
Name of the product
CAS number

Polystyrene
PSTY-001
POLYSTYRENE CRYSTAL
9003-53-6

1. 2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE AND USES ADVISED AGAINST

extrusion
injection

Recommended uses
Recommended to professional users

1.3. DETAILS OF THE SUPPLIER OF SAFETY DATA SHEET

Trade name of the firm
see below this page.

Email address: rc.fer-sds@total.com
(Safety data sheet)

1.4. EMERGENCY TELEPHONE NUMBER

Emergency call Carechem 24 International :
• for English speaking countries: +44 (0) 1235 239 670
• for Europe (in local languages): + 33 1 49 00 00 49
• for Africa and Middle East: + 44 (0) 1235 239 671 • for China:
+ 86 10 5100 3039
• for Asia Pacific (Hong-Kong, Singapore, Taiwan, Philippines, India,
Vietnam, Sri Lanka, Japan, Korea, Malaysia, Indonesia, Thailand) :
+ 65 3158 1074

Official advisory body
UK: National Poisons Emergency Number: 0845 4647
IRL: National Poisons Information Centre
PO Box 1297, Beaumont Hospital, Beaumont Road
Dublin 9.
Telephone: + 00 353 (0)1 809 2566 / + 00 353 (0)1 837 9964

2. Hazards identification

2.1. Classification of the substance

EC-GHS (CLP)
Not classified according to the regulation EC 1272/2008 (EC-GHS) and ATP

67/548/EEC & 1999/45/EC
Not classified according to EEC directives 67/548/EEC (dangerous substances) and 1999/45/EC (dangerous preparations).

Main hazards



REFINING & CHEMICALS BRANCH
TOTAL PETROCHEMICALS & REFINING SA/NV
rue de l'Industrie 52 Nijverheidsstraat
B- 1040 BRUSSELS
BELGIUM
phone : +32 (0)2.288.91.11 - fax : +32 (0)2.288.33.69
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Safety data sheet

TOTAL POLYSTYRENE CRISTAL

Page : 2/10

Product :
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Adverse human health effects

Inhalation

fine dust may cause irritation of respiratory system and mucous membranes.
if heated to more than 200°C, the product may form vapours or fumes which may cause irritation of respiratory tract and cause coughing and sensation of shortness of breath.

Skin contact

in contact with hot material, may cause severe thermal burns

Eye contact

fine dust may cause irritation to ocular mucous.

Ingestion

polyolefins are biologically inert.

Adverse environmental effects

because of its structure, the product should not be dangerous for aquatic life
non biodegradable

Adverse physicochemical effects

combustible if exposed to flames.
flowing product can create electrical charge, resulting sparks may ignite dust or cause an explosion in some concentration ranges.

2.2. Label elements

EC-GHS (CLP)

Not classified according to the regulation EC 1272/2008 (EC-GHS) and ATP

Pictogram(s)

-

WARNING :
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2.3. Other hazards

no information available

3. Composition / information on ingredients

3.1. Substances (chemical name)

Polystyrene
Benzene,ethenyl- homopolymer

Chemical formula

(C₈H₈)_x

CAS number

9003-53-6

EINECS or ELINCS number

the product is a polymer, following the European regulation, registration on the EINECS (European Inventory of Existing Commercial Chemical Substances) inventory is not required.

EC-GHS (CLP)

non required

67/548/EEC & 1999/45/EC

non required

Substances presenting a health hazard

none

Impurities contributing to hazard

Styrene < 0.08 %



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TOTAL POLYSTYRENE CRISTAL

Product :
PSTY-001

Version (en) nr : 11.1

Page : 3/10
Revised : 01/12/2013
Supersedes : 20/08/2012

4. First-aid measures

4.1. Description of first aid measures

Route of exposure

Inhalation

in case of severe exposure to spray, fumes or vapors, move the affected person into fresh air.
if necessary, give oxygen
if breathing has stopped: administer artificial respiration.
in case of heavy or persistent disturbances, call a doctor or seek medical advice

Skin contact

exposure to splashing of hot product:
treat the affected part with cold water (by spraying or immersion).
no attempt should be made to detach molten product adhering to the skin or to remove clothing attached with molten material, the injured body part would risk being pulled out; usually the layer detaches itself after a few days.
in case of severe burns, seek hospital treatment

Eye contact

in case of irritation caused by fine dust: wash with copious volumes of water, until the irritation disappears.
exposure to splashing of hot product:
treat the eyes with cold water.
Get medical advice (ophthalmologist)

Ingestion

ingestion during handling is not likely.
remove material from mouth
do not induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

refer to § 11 for more details on effects.

4.3. Indication of any immediate medical attention and special treatment needed

no information available

5. Fire - fighting measures

Technical measures

stop the fire spreading.
call the fire brigade immediately.
evacuate non-essential personnel
protective clothing, goggles and self-contained breathing equipment should be made available for firemen.

5.1. Extinguishing media

Suitable

for minor fires : carbon dioxide (CO₂) or powder
for more extensive fires : foam. water spray (mist) to cool the surfaces exposed to the fire.

Not to be used

do not use water jets (stick jets) for extinguishing fire since they could help to spread the flames



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Safety data sheet

TOTAL POLYSTYRENE CRISTAL

Page : 4/10

Product :
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Version (en) nr : 11.1

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Supersedes : 20/08/2012

- 5.2. Special hazards arising from the substance** complete combustion, with an excess of oxygen forms: carbon dioxide (CO₂) and water vapour.
partial combustion, forms also: carbon monoxide (CO), soot and cracked products: aldehydes, ketones , Styrene , Toluene , Alcohol
- 5.3. Advice for firefighters** wear suitable breathing equipment, in case of risk of exposure to vapour or fumes.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel wear a suitable anti-dust respirator
where exposure is likely, protective clothing must be worn including gloves
goggles/spectacles
- For emergency responders wear suitable breathing equipment, in case of risk of exposure to vapour or fumes.

6.2. Environmental precautions

do not dispose off this product into the environment

6.3. Methods and material for containment and cleaning up

- on soil granules spilled on the floor can cause a risk of slipping on smooth surfaces.
recover the spilled product by sweeping or suction; put it in containers to facilitate its disposal.
dispose safely in accordance with local or national regulations.
- on water prevent the spilled material from spreading.
if the material has been discharged into a stream or a sewerage system, inform the authorities
refer to a specialist for waste disposal in a safe manner in accordance with local or national regulations.

6.4. refer to points 8 and 13

7. Handling and storage

- Important refer to any national measures that may be relevant.

7.1. Precautions for safe handling

- Technical measures all pneumatic transport equipment must be electrically earthed.
avoid dust accumulation by use of filters in the pneumatic transport equipment.
- fire and explosion prevention Electrostatic charges may be generated when emptying sacks
It is recommended that sacks are emptied away from explosive atmospheres



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Safety data sheet

TOTAL POLYSTYRENE CRISTAL

Page : 5/10

Product :
PSTY-001

Version (en) nr : 11.1

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Supersedes : 20/08/2012

Explosive atmospheres may result from the presence of flammable gas or from the evaporation of flammable liquids, such as some solvents. Such explosive atmospheres are likely to occur, for example, above mixers in which the product is to be added. As examples, the following procedures for emptying sacks are recommended:
Fill the mixers using a 'rotating valve' or other system with suitable valves
Fill mixers indirectly through an earthed metallic hopper or simply using first an earthed metallic container away from the explosive atmosphere and then emptying it into the mixer

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

store at ambient temperature and at atmospheric pressure in original packaging (plastic or cardboard boxes) or in silo made of appropriate material (aluminium, stainless steel, ...).
do not store near highly flammable materials.
keep away from light.
store away from heating source. avoid static electricity build up with connection to earth.
store in dry, well-ventilated area.
store at ambient temperature, keep dry, away from sources of ignition

Storage of pallets

Pallets may be stacked on flooring in sound condition. however, when the pictorial warning as shown on the top of the safety data sheet is affixed to the pallet, the pallet must never be placed either on top of or below another pallet.
N.B. :here the term pallet includes both the pallet and its load.
when pallets are stored in racks, it should be checked whether the pallet is fit for stacking in the concerned racks

Incompatible materials
container

avoid contact with strong oxidizing materials

Suitable

Polyethylene, paper bags, stainless steel

7.3. SPECIFIC USE(S)

Recommended to professional users

refer to point 8

8. Exposure controls / personal protection

8.1. CONTROL PARAMETERS

refer to any national measures that may be relevant.

OCCUPATIONAL EXPOSURE LIMIT

inhalable dust particles:
US (ACGIH-2012): TLV-8h TWA: 10 mg/m³
UK: HSE EH40/2005:
Long-term exposure limit (8-hour TWA reference period) : 10 mg/m³
(Total Inhalable Dust)
respirable dust particles:
US (ACGIH-2012): TLV- 8h TWA: 3 mg/m³
UK: HSE EH40/2005:



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TOTAL POLYSTYRENE CRISTAL

Product :
PSTY-001

Version (en) nr : 11.1

Page : 6/10
Revised : 01/12/2013
Supersedes : 20/08/2012

Long-term exposure limit (8-hour TWA reference period) : 4 mg/m³
(Respirable Dust)

8.2. EXPOSURE CONTROLS

Occupational exposure controls

Personal protection



Respiratory protection

in case of risk of overexposure to dust, vapour or fumes (during product processing), it is recommended that a local exhaust system is placed above the conversion equipment (a fume hood) and the working area must be properly ventilated.
wear a suitable anti-dust respirator
recommended filter type : P1

Hands protection

industrial gloves

Skin and body protection

where exposure is likely, protective clothing must be worn including gloves

Eye protection

goggles/spectacles

Other personal protection

safety non-slip shoes in areas where spills or leaks can occur.

Industrial health measures

General use

local exhaust ventilation may be needed when working in a closed area
use working clothing.
do not store near food products.
When using, do not eat, drink or smoke.

Environmental exposure controls

handle in accordance with good industrial hygiene and safety procedures

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state at 20°C

solid (pellets)

Colour

transparent

Odour

faint

Change in physical state at 1013 hPa

Softening point (°C)

VICAT (ISO 306-A): 90 - 105 °C
VICAT (ISO 306-B): 82 - 100 °C

Flash point (ASTM D 1929)(°C)

no information available

Thermal decomposition (°C)

<= 250



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Safety data sheet

TOTAL POLYSTYRENE CRISTAL

Page : 7/10

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PSTY-001

Version (en) nr : 11.1

Auto-ignition temperature (°C)	490 ca.
Explosion limits (kg/m ³)	:
Lower	0,015 (for polymer dust < 63 µm)
Vapour pressure at 20°C (hPa)	-
Density, mass at 20°C (kg/m ³)	1050 ca.
Bulk density, mass at 20°C (kg/m ³)	600 ca.
Solubility in water at 20°C (mg/l)	insoluble
Soluble in	organic solvents
pH value (concentrated product)	not applicable
Viscosity (mm ² /s)	not applicable
9.2. OTHER INFORMATION	no information available

10. Stability and reactivity

10.1. REACTIVITY

combustible if exposed to flames.

10.2. CHEMICAL STABILITY

stable under normal operating conditions of storage, handling and use

10.3. POSSIBILITY OF HAZARDOUS REACTIONS

dust may form an explosive mixture with air, ignited by sparks or sources of ignition.

10.4. CONDITIONS TO AVOID

avoid proximity or contact with flames or sparks
avoid overheating the product.
do not heat to temperatures exceeding 250 °C
keep away from light.

10.5. INCOMPATIBLE MATERIALS

avoid contact with strong oxidizing materials

10.6. HAZARDOUS DECOMPOSITION PRODUCTS

complete combustion, with an excess of oxygen forms: carbon dioxide (CO₂) and water vapour.
partial combustion, forms also: carbon monoxide (CO), soot and cracked products: aldehydes, ketones ...

Advice to prevent explosion

all pneumatic transport equipment must be electrically earthed.
avoid dust accumulation by use of filters in the pneumatic transport equipment.
thoroughly ventilate the working place.
flowing product can create electrical charge, resulting sparks may ignite dust or cause an explosion in some concentration ranges.
in case of pneumatic alimentation, feed the extruders by aspiration, use preferably nitrogen as carrier gas



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Product :
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Version (en) nr : 11.1

Page : 8/10
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Supersedes : 20/08/2012

11. Toxicological information

11.1. Information on toxicological effects

ACUTE TOXICITY

Ingestion

because of its composition, the product should be considered as practically not harmful

LOCAL EFFECT

Inhalation

dust may cause irritation of respiratory system.
if heated to more than 200°C, the product may form vapours or fumes which may cause irritation of respiratory tract and cause coughing and sensation of shortness of breath.

Skin contact

because of its composition, the product should be considered practically as not irritating
thermal decomposition products are produced at elevated temperatures and these may be irritating
in contact with hot material, may cause severe thermal burns

Eye contact

because of its composition, the product should be considered practically as not irritating
fine dust may cause irritation to ocular mucous.
splashing of molten droplets causes ocular tissue burns.
thermal decomposition products are produced at elevated temperatures and these may be irritating

SPECIFIC EFFECTS

no particular preoccupation for man

12. Ecological information

Information on ecological effects

avoid losses to the environment whenever possible.

12.1. TOXICITY

because of its low solubility, the product should not be dangerous for aquatic life

12.2. PERSISTENCE AND DEGRADABILITY

persistent in the environment

Biodegradation

this substance is slowly biodegradable

BOD 5 (gO₂/g)

below the detection limit

soil and sediments

Product is expected to undergo degradation in the presence of sunlight

12.3. BIOACCUMULATIVE POTENTIAL

potential bioaccumulation of the product in environment is very low

12.4. MOBILITY

water / air

evaporation into air is practically nil
volatile organic compound (VOC) content of this product is < at 0.5 % weight

soil and sediments

because of its physico-chemical properties, the product has a low soil



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Safety data sheet

TOTAL POLYSTYRENE CRISTAL

Page : 9/10

Product :
PSTY-001

Version (en) nr : 11.1

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Supersedes : 20/08/2012

water	mobility the product has a density > 1000 kg/m ³ , it sinks in water. because of its low solubility, the product should not be dangerous for aquatic life
12.5. Results of PBT and vPvB assessment	non required
12.6. OTHER ADVERSE EFFECTS	no information available

13. Disposal considerations

13.1. Waste treatment methods	according to local regulations. authorized disposal as refuse for reprocessing do not dispose of by means of sinks, drains or into the immediate environment may be used as fuel in suitably designed installations. incinerate with household refuse in a municipal solid waste incinerator plan.
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14. Transport information

Road (ADR) / Rail (RID)	Not restricted for transport.
UN Number	not applicable
Inland waterways (ADN)	Not restricted for transport.
Marine (IMO)	Not restricted for transport.
Air transport (ICAO / IATA)	Not restricted for transport.

15. Regulatory information

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

Germany

Wassergefährdungsklasse

NWG: non-hazardous to waters

Registration

These registration entries are for polymers only. For additives, please refer to TOTAL who will provide the necessary certification
the product is a polymer, following the European regulation, registration on the EINECS (European Inventory of Existing Commercial Chemical Substances) inventory is not required. listed on the United States TSCA (Toxic Substances Control Act) inventory
listed on the Canadian DSL (Domestic Substances List) inventory.



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Safety data sheet

TOTAL POLYSTYRENE CRISTAL

Page : 10/10

Product :
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listed on the Japanese ENCS (Existing & New Chemical Substances) inventory.
listed on the AICS (the Australian Inventory of Chemical Substances).
listed on the Korean ECL (Existing Chemical List) inventory.
listed on the swiss inventory : SWISS
listed on the Filipino PICCS (Philippine Inventory of Chemicals and Chemical Substances) inventory.
listed on the People's Republic of China register: CRC-SEPA (Chemical Registration Center for Chinese State Environmental Protection Administration)

15.2. Chemical safety assessment

The substance is not classified for human health or for the environment, and is not PBT or vPvB so that no exposure assessment or risk characterisation is required. For tasks where the intervention of workers is required, the substance must be handled in accordance with good industrial hygiene and safety procedures.

16. Other information

Training advice

The use of this product requires specific training.
The user must receive all product information in order to handle the product safely
(personal protection equipment and best practice standards)

Further information

no information available

Safety data sheet conforms to the Regulation (EU) N° 1907/2006

This information applies to the PRODUCT AS SUCH and conforming to specifications of TOTAL.
In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear.
The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. However the revision of some data is in progress.
Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes.
The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive.
It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product.
It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product. (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

The (*) indicate the changes made with respect to the previous version.



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