SECTION 1: Identification

1.1. Product identifier

Product form	:	Substance
Trade name	:	STYRENE INHIBITED MONOMER
Chemical name	:	Vinyl benzene, styrene monomer, phenylethylene, ethenyl benzene
Substance type	:	Mono-constituent
CAS-No.	:	100-42-5
Formula	:	C_8H_8

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use : Mainly used as a precursor in the manufacture of polystyrene. Also used as solvent.

1.3. Supplier's details

VIDEOLAR - INNOVA S/A
BR 386, Rodovia Tabaí/Canoas, Km 419, Complexo Básico, Via do Contorno 212. Bairro: III Pólo Petroquímico
95853-000 Triunfo/RS - Brasil
T +55 (51) 3457-5800

1.4. Emergency telephone number

Emergency number : (51) 3457-5888

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to the United Nations GHS

Flammable liquids, Category 3	H226
Acute toxicity (oral), Category 5	H303
Acute toxicity (dermal), Category 5	H313
Acute toxicity (inhalation:dust,mist) Not classified	
Skin corrosion/irritation, Category 2	H315
Specific target organ toxicity — Repeated exposure, Category 1	H372
Hazardous to the aquatic environment — Acute Hazard, Category 2	H401

Full text of H statements : see section 16

2.2. Label elements

Labelling according to the United Nations GHS

Hazard pictograms (GHS-UN) :

GHS02 GHS07 GHS08

Signal word (GHS-UN) : Danger

Hazard statements (GHS-UN) :
H226 - Flammable liquid and vapour.
H303 - May be harmful if swallowed
H313 - May be harmful in contact with skin
H315 - Causes skin irritation.
H372 - Causes damage to organs through prolonged or repeated exposure.
H401 - Toxic to aquatic life

Precautionary statements (GHS-UN) :
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 - Keep container tightly closed.
P240 - Ground and bond container and receiving equipment.
P241 - Use explosion-proof equipment.
P242 - Use non-sparking tools.
P243 - Take action to prevent static discharges.
P260 - Do not breathe vapours, mist.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, eye protection.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P312 - Call a POISON CENTER or doctor if you feel unwell.
P314 - Get medical advice/attention if you feel unwell.
P321 - Specific treatment (see supplemental first aid instruction on this label)
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P370+P378 - In case of fire: Use media carbon dioxide (CO_2), alcohol resistant foam, dry extinguishing powder to extinguish.
P403+P235 - Store in a well-ventilated place. Keep cool.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type : Mono-constituent

Chemical name : Vinyl benzene, styrene monomer, phenylethylene, ethenyl benzene

Name	Product identifier	%	Classification according to the United Nations GHS
Styrene inhibited monomer (Main constituent)	(CAS-No.) 100-42-5	> 99.7	Flammable liquids, Category 3, H226 Acute toxicity (oral), Category 5, H303 Acute toxicity (dermal), Category 5, H313 Acute toxicity (inhalation:dust,mist) Not classified Skin corrosion/irritation, Category 2, H315 Specific target organ toxicity — Repeated exposure, Category 1, H372 Hazardous to the aquatic environment — Acute Hazard, Category 2, H401

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Seek medical attention immediately.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Administer oxygen if breathing is difficult. Apply artificial respiration if breathing stopped. Immediately call a POISON CENTER/doctor.

First-aid measures after skin contact : After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. Gently wash with plenty of soap and water. Be careful, the product may remain trapped under clothing, footwear or a wrist-watch. If irritation persists, consult a doctor.

First-aid measures after eye contact : Flush immediately eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Refer the victim to the medical service.

First-aid measures after ingestion : Do not induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious). If the person is fully conscious, make him/her drink plenty of water. Never give an unconscious person anything to drink. If vomiting occurs have person lean forward. Prevent aspiration of vomit. Take medical advice immediately.

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

Symptoms/effects : Causes damage to organs through prolonged or repeated exposure.

Symptoms/effects after inhalation : May cause irritation to the respiratory tract, sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.

Symptoms/effects after skin contact : May be harmful in contact with skin. Causes skin irritation, itching, redness, blistering.

Symptoms/effects after eye contact : Causes eye irritation, stinging, redness.

Symptoms/effects after ingestion : May be harmful if swallowed. Ingestion may cause nausea, vomiting, burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Dry chemical, CO_2, water spray or regular foam.

Unsuitable extinguishing media : Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable liquid and vapour. The vapours are denser than air and may travel along the ground. Distance ignition possible. Agitation can cause build up of electrostatic charge. Vapours may cause fire/explosion if source of ignition is present. In case of fire and/or explosion do not breathe fumes.

Explosion hazard	:	Vapours may form explosive mixture with air. Prolonged exposure to fire may cause containers to rupture/explode.
Reactivity	:	Closed containers may rupture/explode during runaway polymerization.

5.3. Advice for firefighters

Precautionary measures fire	:	Keep container closed when not in use. This product is not to be used under conditions of poor ventilation.
Firefighting instructions	:	Combat amount of the fire outbreak in relation to the wind direction. Get the package away from the fire if this can be done without risk. Do not use water jet to extinguish. Cool laterally with water containers exposed to flames, even after the fire is extinguished. Do not enter fire area without proper protective equipment, including respiratory protection.
Protection during firefighting	:	Use self-contained breathing apparatus and chemically protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	:	Eliminate every possible source of ignition. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Avoid contact with skin and eyes. Clean up any spills as soon as possible, using an absorbent material to collect it. Stop leak if safe to do so. Absorb spillage to prevent material damage. It is recommended to install a fire alarm and leak detection system in the storage and use areas of the product.

6.1.1. For non-emergency personnel

Protective equipment	:	Wear recommended personal protective equipment.
Emergency procedures	:	No flames, no sparks. Eliminate all sources of ignition. Do not touch or walk on the spilled product. Evacuate area. Only qualified personnel equipped with suitable protective equipment may intervene. Notify fire brigade and environmental authorities. Do not breathe vapours, spray.

6.1.2. For emergency responders

Protective equipment	:	Use self-contained breathing apparatus and chemically protective clothing. Gloves. Wear security glasses which protect from splashes. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	:	Keep away from combustible material. All equipment used when handling the product must be grounded. Evacuate unnecessary personnel. Stop leak if safe to do so.

6.2. Environmental precautions

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Do not allow product to spread into the environment. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak without risks if possible.
Methods for cleaning up	:	Absorb remaining liquid with sand or inert absorbent and remove to safe place. Clean contaminated surfaces with an excess of water. Absorb spillage to prevent material damage. Notify authorities if product enters sewers or public waters.
Other information	:	Dispose of materials or solid residues at an authorized site.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Provide adequate ventilation to minimize dust and/or vapour concentrations. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear personal protective equipment. Keep only in original container. Do not handle until all safety precautions have been read and understood. Flammable vapours may accumulate in the container. Use explosion-proof equipment. Do not breathe dust, fume, gas, mist, vapours, spray. Avoid contact with skin and eyes.
Hygiene measures	:	Always wash hands after handling the product. Remove contaminated clothes. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.
Additional hazards when processed	:	Flammable vapours may accumulate in the container.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Ensure adequate ventilation, especially in confined areas. Store in tightly closed, leak-proof containers. Ground/bond container and receiving equipment.
Storage conditions	:	Keep cool. Store in a well-ventilated place. Keep container tightly closed. Keep cool. Protect from sunlight.
Incompatible materials	:	Catalysts for alkylation (H_2SO_4, H_3PO_4, BF_3, $AlCl_3$), halogens and hydrogen halides, sodium hydroxide.
Packaging materials	:	Store always product in container of same material as original container.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

STYRENE INHIBITED MONOMER (100-42-5)		
USA - ACGIH	Local name	Styrene, monomer
USA - ACGIH	ACGIH TWA (ppm)	20 ppm
USA - ACGIH	ACGIH STEL (ppm)	40 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Measure concentrations regularly, and at the time of any change occuring in conditions likely to have consequences on workers exposure. Ensure good ventilation of the work station.

Environmental exposure controls : Do not exceed the occupational exposure limits (OEL). Avoid release to the environment.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Hand protection : Protective gloves made of PVC.

Eye protection : Wear closed safety glasses.

Skin and body protection : Wear suitable protective clothing.

Respiratory protection : Where exposure through inhalation may occur from use, respiratory protection equipment is recommended.

8.4. Exposure limit values for the other components

No additional information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : No data available

Molecular mass : 104,16 g/mol

Colour : Colourless

Odour : Strong, sweet and penetrating

Odour threshold : 0,15 ppm
0,6 mg/m³

pH : No data available

pH solution : No data available

Relative evaporation rate (butylacetate=1) : 0,49

Relative evaporation rate (ether=1) : 16

Melting point : -30,6 °C

Freezing point : No data available

Boiling point : 146 °C

Flash point : 31,1 °C (closed cup); 36,7ºC (open cup)

Auto-ignition temperature : 490 °C

Decomposition temperature : No data available

Flammability (solid, gas) : Not applicable

Vapour pressure : 6 hPa (20ºC)

Vapour pressure at 50 °C : No data available

Relative vapour density at 20 °C : 3,6

Relative density : 0,91

Relative density of saturated gas/air mixture : No data available

Density : 906 kg/m³

Relative gas density : No data available

Solubility : Poorly soluble in water. Soluble in ethanol, ether, acetone, methanol, toluene.
Water: 0,03 g/100ml (25ºC)

Log Pow : No data available

Log Kow : 2,96

Viscosity, kinematic : 0,8388521 mm²/s

Viscosity, dynamic : 0,00076 Pa.s (20°C)

Explosive properties : No data available

Oxidising properties	:	No data available
Explosive limits	:	1,1 - 8 vol % 45 - 350 g/m³
Lower explosive limit (LEL)	:	No data available
Upper explosive limit (UEL)	:	No data available

9.2. Other information

Saturation concentration	:	25 g/m³
VOC content	:	100 %

SECTION 10: Stability and reactivity

10.1. Reactivity

Closed containers may rupture/explode during runaway polymerization.

10.2. Chemical stability

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

10.3. Possibility of hazardous reactions

Liquids/vapours may ignite or react with other materials.

10.4. Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid formation of vapours. Eliminate all sources of ignition.

10.5. Incompatible materials

Catalysts for alkylation (H_2SO_4, H_3PO_4, BF_3, $AlCl_3$), halogens and hydrogen halides, sodium hydroxide.

10.6. Hazardous decomposition products

May liberate toxic gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	:	May be harmful if swallowed.
Acute toxicity (dermal)	:	May be harmful in contact with skin.
Acute toxicity (inhalation)	:	Not classified.

STYRENE INHIBITED MONOMER (100-42-5)	
LD50 oral rat	5000 mg/kg
LD50 dermal rat	2820 mg/kg
LD50 dermal rabbit	5010 mg/kg
LC50 inhalation rat (mg/l)	12 mg/l/4h
LC50 inhalation rat (ppm)	2770 ppm/4h

Skin corrosion/irritation	:	Exposure to liquid and vapors may cause skin irritation. Prolonged contact of liquid with skin may cause blistering. Repeated contact degreases the skin causing dryness and cracking.
Serious eye damage/irritation	:	Exposure to liquid and vapors may cause eye irritation.
Respiratory or skin sensitisation	:	Not classified
Germ cell mutagenicity	:	The mutagenic potential of styrene has been tested on bacteria, animals and human cells with conflicting results. Many positive results are observed in the presence of metabolic activation. A metabolic product of styrene, styrene oxide, may cause mutations.
Carcinogenicity	:	There are not enough data to indicate that styrene causes cancer in humans. Some studies suggest an increased risk of cancer. However, multiple exposure to different chemicals and the small group studied limit the validity of these results. Styrene is classified as possible carcinogenic to humans by IARC.
Reproductive toxicity	:	Styrene is considered moderately toxic to fetuses of rats, mice, rabbits and hamsters exposed orally or by inhalation. No study has determined that styrene causes birth defects in tested animals.
STOT-single exposure	:	Not classified
STOT-repeated exposure	:	Causes damage to organs (auditory organs) through repeated or prolonged exposure. Laboratory animals exposed to high concentrations of styrene had a hearing loss and damage to the nervous system. The importance of these data for humans is unknown in relation to adequate levels of occupational exposure.
Aspiration hazard	:	Not classified

STYRENE INHIBITED MONOMER (100-42-5)	
Viscosity, kinematic	0,8388521 mm²/s

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity : Toxic to aquatic life.

Chronic aquatic toxicity : Not classified

STYRENE INHIBITED MONOMER (100-42-5)	
LC50 fish 1	9,1 mg/l

12.2. Persistence and degradability

STYRENE INHIBITED MONOMER (100-42-5)	
COD - Chemical oxygen demand	2,8 g O□/g substance
ThOD - Theoretical oxygen demand	3,07 g O□/g substance

12.3. Bioaccumulative potential

STYRENE INHIBITED MONOMER (100-42-5)	
BCF fish 1	13,5
Log Kow	2,96
Log Koc	2,55 ; Koc: 352
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

STYRENE INHIBITED MONOMER (100-42-5)	
Surface tension	0,032 N/m (19ºC)

12.5. Other adverse effects

Other adverse effects : No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Must follow special treatment according to local regulation. Dispose of contents/container in accordance with licensed collector's sorting instructions.

Sewage disposal recommendations : Disposal must be done according to official regulations.

Product/Packaging disposal recommendations : Disposal must be done according to official regulations.

Additional information : Flammable vapours may accumulate in the container. Do not re-use empty containers.

SECTION 14: Transport information

In accordance with IMDG / IATA / UN RTDG

14.1. UN number

UN-No.(UN RTDG) : 2055

UN-No. (IMDG) : 2055

UN-No. (IATA) : 2055

14.2. Proper Shipping Name

Proper Shipping Name (UN RTDG) : STYRENE MONOMER, STABILIZED

Proper Shipping Name (IMDG) : STYRENE MONOMER, STABILIZED

Proper Shipping Name (IATA) : STYRENE MONOMER, STABILIZED

14.3. Transport hazard class(es)

UN RTDG

Transport hazard class(es) (UN RTDG) : 3

Danger labels (UN RTDG) : 3

:

IMDG

Transport hazard class(es) (IMDG) : 3

Danger labels (IMDG) : 3

:

IATA

Transport hazard class(es) (IATA) : 3

Hazard labels (IATA) : 3

:

14.4. Packing group

Packing group (UN RTDG) : III

Packing group (IMDG) : III

Packing group (IATA) : III

14.5. Environmental hazards

Dangerous for the environment : No

Marine pollutant : No

Other information : No supplementary information available

14.6. Special precautions for user

- UN RTDG

Limited quantities (UN RTDG) : 5L

Excepted quantities (UN RTDG) : E1

Packing instruction (UN RTDG) : P001, IBC03, LP01

Portable tank and bulk container special instructions (UN RTDG) : T2

Portable tank and bulk container special provisions (UN RTDG) : TP1

- IMDG

Special provisions (IMDG) : 386

Packing instructions (IMDG) : P001

IBC packing instructions (IMDG) : IBC03

Tank instructions (IMDG) : T2

Tank special provisions (IMDG) : TP1

EmS-No. (Fire) : F-E - FIRE SCHEDULE Echo - NON-WATER-REACTIVE FLAMMABLE LIQUIDS

EmS-No. (Spillage) : S-D - SPILLAGE SCHEDULE Delta - FLAMMABLE LIQUIDS

Stowage category (IMDG) : C

Flash point (IMDG) : 32°C c.c.

Properties and observations (IMDG) : Colourless, oily liquid. Flashpoint: 32°C c.c. Explosive limits: 1,1% to 6,1% Immiscible with water. Irritating to skin, eyes and mucous membranes.

- IATA

PCA Excepted quantities (IATA) : E1

PCA Limited quantities (IATA) : Y344

PCA limited quantity max net quantity (IATA) : 10L

PCA packing instructions (IATA) : 355

PCA max net quantity (IATA) : 60L

CAO packing instructions (IATA) : 366

CAO max net quantity (IATA) : 220L

Special provisions (IATA) : A209

ERG code (IATA) : 3L

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health, and environmental national regulations specific for the product

Regulatory reference : IMDG Code - International Maritime Dangerous Goods.
IATA - International Air Transport Association.
UN - Recommendations on the Transport of Dangerous Goods.
GHS - Globally Harmonized System of Classification and Labelling of Chemicals

SECTION 16: Other information

Data Source : VIDEOLAR - INNOVA S/A.,- FISPQ – ESTIRENO MONÔMERO INIBIDO; May 15th, 2017.

Abbreviations and Acronyms : ACGIH – American Conference of Governement Industrial Hygienists, United States
IARC – International Agency for Research on Cancer
BCF – Bioconcentration Factor
CAS – Chemical Abstracts Service
LC50 – Lethal Concentrtion 50%
VOC – Volatile Organic Compounds
LD50 – Lethal Dose 50%
GHS – Globally Harmonized System of Classification and Labeling of Chemicals
USA – United States of America
Kow – Partition coefficient in the octanol phase / aqueous phase
OEL – Occupational exposure limit
PVC – Polyvinyl chloride
STEL – Short Term Exposure Limit
TWA – Time Weighted Average

Full text of H-statements:

H226	Flammable liquid and vapour.
H303	May be harmful if swallowed
H313	May be harmful in contact with skin
H315	Causes skin irritation.
H372	Causes damage to organs through prolonged or repeated exposure.
H401	Toxic to aquatic life

SDS UN

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.