

Product Stewardship/Regulatory Summary for GPPS/HIPS

Americas Styrenics LLC has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employees, public health and our environment. The success of our Product Stewardship program rests with each and every individual involved with Americas Styrenics LLC products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Product Overview

Americas Styrenics manufactures General Purpose Polystyrene (GPPS) and High Impact Polystyrene (HIPS) resins. These resins are available with various physical and mechanical properties and are formulated with additives to affect processability, color, or other characteristics. The resins are available as pellets or granules.

Chemical Identity

Common Name: General Purpose Polystyrene (GPPS)

Also known as vinyl benzene, styrene polymer.

CAS No. 9003-53-6

Common Name: High Impact Polystyrene (HIPS)

Also known as styrene 1,3-butadiene copolymer

CAS No: 9003-55-8

Exposure Potential

Industrial Worker exposure

Exposure can occur either in a resin manufacturing facility or in the various industrial or manufacturing facilities that use these resins. Each manufacturing facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. If there is a potential for exposure to dust particles that could cause eye discomfort, wear chemical goggles. Provide general and/or local exhaust ventilation to control airborne dust levels. No other precautions other than clean, body-covering clothing should be needed.

Long sleeves and thermal gloves are necessary in areas where molten polymer is present. If molten material comes in contact with the skin, apply cool water. Do not attempt to remove the material from the skin, but seek medical attention immediately.

Consumer exposure

Americas Styrenics does not sell resins for direct consumer use, but it is used as a raw material to make many products used by consumers. All our prime grades are approved for food-contact applications.

Environmental Exposure

Due to the relatively high molecular weight of GPPS/HIPS, bioconcentration (accumulation in the food chain) is not expected. In terrestrial environments, the material is expected to remain in the soil. In aquatic environments, the material is expected to sink and remain in the sediment or bound to dissolved organic materials.

GPPS/HIPS resins are expected to be inert in the environment. Surface photodegradation will occur with exposure to sunlight. No appreciable biodegradation is anticipated. These resins are not likely to be acutely toxic, but material in pellet form may cause adverse mechanical effects if ingested by waterfowl or aquatic life.

Health Information

There are few health concerns resulting from handling GPPS or HIPS. Dust or small pellets may cause eye irritation or corneal injury due to mechanical action. Handling these resins is unlikely to cause skin reaction or irritation. If molten resin comes in contact with the skin, thermal burns can occur.

There is a very low risk of toxicity if the product is swallowed; harmful effects are not anticipated from swallowing small amounts. However, choking or blockage of the digestive tract is possible if the product is swallowed. Based on available data, repeated exposures are not anticipated to cause significant adverse effects. Additives are encapsulated in the polymer and are not expected to be released under normal processing conditions.

Stability Information

GPPS/HIPS resins are thermally stable at typical use temperatures. However, exposure to elevated temperatures can cause the product to decompose. Under high-heat processing conditions, small amounts of irritating fumes can be released.

To reduce the potential for dust explosion, do not permit dust to accumulate. During a fire, smoke may contain the original material in addition to toxic and/or irritating combustion products of varying composition. In smoldering or flaming conditions, carbon monoxide and carbon dioxide are generated. Dense smoke is produced when the product burns.

The NFPA classification for our polystyrene resins is: 1,1,0 (health, flammability, reactivity).

Shelf Life

The shelf life of Americas Styrenics' polystyrene products is 2 years from the date of manufacture.

The shelf life of 2 years for Americas Styrenics polystyrene products is that for which Americas Styrenics LLC guarantees retention of properties as stated in the sales specification, provided the material is properly stored following good manufacturing practices. In general, polystyrene resins when stored properly, will retain a high level of mechanical properties after storage times of many years.

Shelf life or storage time is the time between manufacture at Americas Styrenics and actual processing at the customer location. Guidelines for good storage practice must be followed e.g. storage in a sheltered location, with good ventilation, no direct sunlight and undamaged, original packaging.

NOTICE: The information presented above is not intended to be a substitute for Material Safety Data Sheets (MSDS). Americas Styrenics LLC strongly encourages and expects its customers to read and understand the product MSDSs prior to use of Americas Styrenics LLC products. We expect you to follow the precautions identified in the MSDS unless your use conditions necessitate other appropriate methods or actions. Americas Styrenics LLC personnel are available to answer your questions and to provide reasonable support if needed. Click [here](#) for a list of available MSDSs.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of polystyrene resins. These regulations may vary by city, state, country, or geographic region. A summary of the regulatory profile of our prime grade polystyrene resins is provided below.

Please note the following:

1. **The information provided below applies only to Americas Styrenics PRIME grade polystyrene resins.**
2. **The information presented in this document is not exhaustive. Additional Information may be found by consulting the relevant [Safety Data Sheet \(SDS\)](#), [Technical Data Sheet](#) or by contacting [Customer Service](#).**

US FDA Food Contact Status

When used unmodified and processed in accordance with good manufacturing practices for food contact applications, all prime grade GPPS and HIPS resins will comply with the U.S. Food and Drug Administration's food additive regulation at 21 CFR § 177.1640, under the Federal Food, Drug, and Cosmetic Act. These products may be used to produce articles or components of articles used in contact with food for all food types described in Table 1 and Conditions of Use C-H described in Table 2 of U.S. FDA's regulation at 21 CFR § 176.170(c).

The preceding statement refers to regulatory requirements only, not to the products' physical utility. The uses cited above are subject to good manufacturing practices and any limitations which are part of the regulations. **It is the responsibility of the article producer or food packager to determine that the article is suitable for its intended use. The regulations should be consulted for complete details.**

Health Canada - Health Products and Food Branch (HPFB) Status

The GPPS and HIPS resins listed below have been submitted to Health Canada's Food Packaging Materials Section of the Health Products and Food Branch (HPFB) for evaluation and have been granted "No Objection" status for use in general food packaging applications.

- STYRON™ 668
- STYRON™ 695
- STYRON™ 675
- STYRON™ 685D
- STYRON™ 685P
- STYRON™ A-TECH™ 1170
- STYRON™ A-TECH™ 1115
- STYRON™ A-TECH™ 1260
- EB6400
- EC6600
- EB6755
- EA6740
- EA3400
- MC3650
- MC3700
- STYRON™ 421
- STYRON™ 404
- STYRON™ 478
- STYRON™ 484
- STYRON™ 487
- STYRON™ 487R
- STYRON™ 498
- STYRON™ 663
- STYRON™ 666D
- STYRON™ 678C
- STYRON™ 693
- EA3130
- PolyRenew™ PS 1625

The Food Packaging Materials Section advises that each application is considered to be different even if many of the application's parameters are identical to another application for which they have previously offered an opinion.

Therefore, regardless of the above HPFB opinion, we recommend that you review the specifics of your application with HPFB and acquire the HPFB opinion in regard to your particular application.

Drug Master File (DMF)

The following resins currently have an associated Drug Master File on file at FDA.

- STYRON™ 685D
- STYRON™ 685DL
- STYRON™ 685P
- STYRON™ 665
- STYRON™ 675
- STYRON™ 695
- STYRON™ 693
- STYRON™ 610
- STYRON™ 666D
- STYRON™ 668
- EA6740
- EA3130
- EA3400
- MB3150
- MC3650
- MC3700
- STYRON™ 478
- STYRON™ 498
- STYRON™ 484
- STYRON™ 487R
- STYRON™ 421
- EB6400
- EB6755
- EC6600
- XU 36400.00

Biocompatibility - USP Class VI Plastics certification

The following products have been tested for compliance against the United States Pharmacopoeia <88> Biological Reactivity Tests *In Vivo* for Class VI Plastics and determined to be compliant with USP Class VI requirements.

- STYRON™ 685D
- STYRON™ 666D
- STYRON™ 478
- STYRON™ 484
- STYRON™ 414
- MC3650
- MC3700
- EA3130
- EA6740
- STYRON™ A-TECH™ 1115
- EB6400
- MB3150

CONEG

Cadmium, hexavalent chromium, lead, or mercury is not intentionally introduced as an element during the manufacture or distribution of our polystyrene resins. The sum of the concentration levels of these elements incidentally present is not expected to exceed 100 ppm. Our GPPS and HIPS resins are therefore CONEG compliant.

RoHS Directive 2011/65/EU (RoHS 2)

Polystyrene resins manufactured by Americas Styrenics are in compliance with the requirements of EU-Directive 2011/65/EU (RoHS 2).

Animal Content/BSE/TSE

Our Polystyrene resins are not intentionally formulated with raw materials of animal origin. These products are formulated with raw materials that are either synthetic or derived from plant sources.

Allergen Content

The majority of our resins are not intentionally formulated with raw materials that originate from peanuts, soybeans, milk, eggs, fish, shellfish, tree nuts and/or wheat or gluten.

Ozone Depleting Substances

Our Polystyrene resins are not manufactured with Class I or II substances as defined in Title VI of the Clean Air Act of 1990 under the final rule published in the Federal Register on February 11, 1993 (58 FR 8136).

REACH SVHC Content

Our Polystyrene resins are not intentionally formulated with any substance classified as a REACH SVHC.

Underwriters Laboratories (UL)

Many of our resins are UL listed. Click on the link below for a list of resins:

[Americas Styrenics UL Listings](#)

Miscellaneous

Polystyrene resins manufactured by Americas Styrenics are not intentionally formulated with the following regulated chemicals or substances of concern (not an exhaustive list):

- Formaldehyde
- Asbestos
- Melamine
- Bisphenol A or Bisphenol F
- Phthalates
- Cadmium & Cadmium Components
- Hexavalent Chromium Compounds
- Lead and Lead Components
- Mercury and Mercury Compounds
- Antimony and Antimony Compounds
- Arsenic and Arsenic Compounds
- Beryllium and Beryllium Compounds
- Bismuth and Bismuth Compounds
- Nickel
- Selenium and Selenium Compounds
- Polyvinyl Chloride (PVC) and PVC blends
- Brominated Organic compounds (PBB, PbDE, DecaBDE)
- Chlorinated Organic Compounds (PCB, PCN, PCT, SCCP)
- Tributyl Tin(TBT) & Triphenyl Tin(TPT)
- Tributyl Tin Oxide (TBTO)
- Latex or Natural Rubber
- Azocolorants and azodyes
- Radioactive Substances
- Perfluorooctane Sulfonate/Perfluorooctanoic Acid (PFOS, PFOA)

Americas Styrenics Medical Application Policy

Americas Styrenics will not knowingly sell or sample any product or service ("Product") into any commercial or developmental application that is intended for:

- a. permanent (long term) contact with internal body fluids or internal body tissues. "Long term" is defined as a use which exceeds 72 continuous hours.
- b. use in cardiac prosthetic devices regardless of the length of time involved (cardiac prosthetic devices include, but are not limited to, pacemaker leads and devices, artificial hearts, heart valves, intra-aortic balloons and control systems and ventricular bypass assisted devices).
- c. use as a critical component in medical devices that support or sustain human life.
- d. use in applications designed specifically to promote or interfere with human reproduction.

Contact Information

Americas Styrenics LLC
24 Waterway Avenue, Suite 1200
The Woodlands, TX 77380
Phone: 844-512-1212 toll free
E-mail: productsteward@amsty.com
Email: [AmSty Corporate Communications](#)

NOTICE:

This information is considered accurate and reliable as of the date appearing above and is presented in good faith. Because use conditions and applicable laws may differ from one location to another and may change with time, Recipient is responsible for determining whether the information in this document is appropriate for recipient's use. Since Americas Styrenics has no control over how this information may be ultimately used, all liability is expressly disclaimed and Americas Styrenics assumes no obligation or liability therefore. No warranty, express or implied, is given nor is freedom from any patent owned by Americas Styrenics or others to be inferred.

Revision history

The table below documents at least the last 3 changes to this document, with all the changes listed for the last 6 months.

Date	Revised By	Changes
3/5/2013	Melissa Martinez	Updated HPFB, DMF, USP Biocompatibility, RoHS, and Miscellaneous sections.
10/08/2013	Melissa Martinez	Updated FDA conditions of use, C-H
04/16/2014	Melissa Martinez	Updated company logo, phone numbers, links, USP
12/01/2014	Sarah Henderson	Updated email address, USP