



Power Polymer Plast Sp.z.o.o.  
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# Styrenic



Polymers and Compounds

Technical Data Sheets

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# ABOUT US

## Power Polymer Plast Sp.z.o.o

Power Polymer Plast (aka PPPCO) is a reputed, professionally managed business organization with sound business ethics engaged in the field of Chemical and Petrochemical Products. We have offices in different countries to make business smoothly with our clients. Today, we are one of the leaders in the progressive world of Petrochemicals, and pride ourselves in supplying range of commodities in this field that not only meet market requirements of today, but also those of the future.



PPPCO mission is to Provide customers with competitive products that deliver quality and value, just-in-time deliveries of a variety of top-quality products at competitive prices, Act with honesty and integrity in all our dealings, encourage commitment and accountability by all staff, at all levels. Furthermore, maintain our unique corporate culture: always having the courage to think outside the box, and to have a “can-do” attitude to simply make things happen.



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## OUR VISION



1. To be the world leader in the market by meeting customer demands in a timely, responsible, reliable and efficient business behavior.
2. In an ever-changing world, we aim to be an indispensable part of our customers' lives.
3. Develop our business, build strong lasting partnerships and create an innovative industry leading trade & supply experiences.

## OUR MISSION



1. We seek to generate value in products' and to deliver superior service to our customers and manufacturers by understanding their specific market needs in terms of quality, cost, financial advice, and environmental friendly distribution.
2. Our mission is to exceed the expectations of every client by offering them outstanding customer's service.
3. PPPCO produces intelligent solutions that are based on innovative and tailor-made products and services. Integrated with its reputable and reliable partnerships, PPPCO becomes a long-term solution partner for its customers and suppliers and this aspect also creates achievement opportunities for its shareholders. In meeting the requirements of international customers in plastics raw material, PPPCO adopts a management approach that is focused on continuous improvement, most effective and efficient use of its resources to create added value for the honorable customers.



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## GENERAL PURPOSE POLYSTYRENE

# GPPS

General Purpose Polystyrene (GPPS) is manufactured by continuous mass polymerization of styrene monomer. It has high molecular weight, high heat grade, high melt strength, good clarity and mechanical strength. These grades are recommended for injection, good clarity goods, disposable cups, glass layer co-extrusion, packing articles, Petri dishes, etc.





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GPPS

## GENERAL PURPOSE POLYSTYRENE GPPS-1018

**A. Product Description:** General Purpose Polystyrene (GPPS) 1018 is manufactured by continuous mass polymerization of styrene monomer. It has very high molecular weight, high heat grade, high melt strength, good clarity and mechanical strength.

**B. Application:** It is recommended for Foamed meat trays, foamed labels. In mixture with high impact Polystyrene for coffee cups, lids. In addition, for insulation board, clamshells for fast food, BOPS sheet and shower screens.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	1.5–1.7	g/10min	ASMT D1238
Tensile Strength	56-59	Mpa	ASTM D638
Flexural modulus	3300	Mpa	ASTM D790
Charpy impact strength (Unnotched)	52	Kj/m <sup>2</sup>	ASTM D256
Vicat Softening point @ 50°C/hr,1 kg	105	°C	ASTM D1525
Izod Impact (Notched)	3.5	Kj/m <sup>2</sup>	ISO 180



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## GENERAL PURPOSE POLYSTYRENE GPPS-1018

GPPS

### Note:

\*All mechanical properties measured under standard conditions 50% RH and 23C.

\*\* Melt Flow Index has a tolerance of  $\pm 0.4$  g/10min.

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).

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GPSS

## GENERAL PURPOSE POLYSTYRENE GPSS-1028

**A. Product Description:** General Purpose Polystyrene (GPSS) 1028 is manufactured by continuous mass polymerization of styrene monomer. It has very high molecular weight, high heat grade, high melt strength, good clarity and mechanical strength.

**B. Application:** It is recommended for Polystyrene sheets and extruded embossed sheets, BOPS sheet, Insulation board, Foamed sheets for thermoforming of fruit trays, meat trays, egg boxes, and it is suitable for food applications.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	2.4-3	g/10min	ASMT D1238
Tensile Strength	54-56	Mpa	ASTM D638
Flexural modulus	3200	Mpa	ASTM D790
Charpy impact strength (Unnotched)	11	Kj/m <sup>2</sup>	ASTM D256
Vicat Softening point @ 120°C,1kg	102	°C	ASTM D1525



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## GENERAL PURPOSE POLYSTYRENE GPPS-1028

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).



GPSS

## GENERAL PURPOSE POLYSTYRENE GPSS-1034

**A. Product Description:** General Purpose Polystyrene (GPSS) 1034 is manufactured by continuous mass polymerization of styrene monomer. It has high molecular weight, high melt strength, good clarity and mechanical strength.

**B. Application:** It is recommended for food contact consumer good, cups and other products by in line extrusion.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	3.1-3.4	g/10min	D1238
Tensile Strength	55	Mpa	D638
Flexural modulus	3200	Mpa	D790
Charpy impact strength (Unnotched)	11	Kj/m <sup>2</sup>	D256
Vicat Softening point @ 120°C,1kg	90	°C	D1525



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## GENERAL PURPOSE POLYSTYRENE GPPS-1034

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).





GPSS

## GENERAL PURPOSE POLYSTYRENE GPSS-G1161L

### A. Product Description:

This grade is high heat for PS foam (XPS).

### B. Application:

Parts for large Home Electrical, Appliances Name Plates, Transparent Display (Covers for VTR, etc.), office stationery, Foamed PS, etc.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	3 – 5	g/10min	D1238
Tensile Strength (Yield)	520	(kg/cm <sup>2</sup> )	D 638
Tensile Modulus of Elasticity	2.7×10 <sup>4</sup>	(kg/cm <sup>2</sup> )	D 638
Izod Impact Strength (notched,t=6.4 mm)	2.2	(kg/cm <sup>2</sup> )	D 256
Vicat Softening point @ 50°C/hr,1000 gr	104	°C	D1525



## GENERAL PURPOSE POLYSTYRENE GPPS-G1161L

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food
- Regulation (EC) 2023/2006 of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).



GPSS

## GENERAL PURPOSE POLYSTYRENE GPSS-1038

**A. Product Description:** General Purpose Polystyrene (GPSS) 1038 is manufactured by continuous mass polymerization of styrene monomer. It is a crystal-like, it is suitable for use on its own or in blends with impact polystyrene both for extrusion and injection Moulding. It is an economical alternative to SAN and Polycarbonate.

**B. Application:** It is recommended for manufacturer of packaging application and household applications and petri dishes, electronics, office accessories appliance components.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	3.3 – 4	g/10min	D1238
Tensile Strength	55	Mpa	D 638
Flexural modulus	3100	Mpa	D 790
Charpy impact strength (Unnotched)	10	Kj/m2	D 256
Vicat Softening point @ 120°C/hr,1Kg	101	°C	D1525



## GENERAL PURPOSE POLYSTYRENE GPPS-1038

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).



GPSS

## GENERAL PURPOSE POLYSTYRENE GPSS-1047

**A. Product Description:** General Purpose Polystyrene (GPSS) 1047 is a high molecular weight crystal polystyrene, which allows maximum dilution rates with high impact polystyrene grades.

In dilution, polystyrene crystal 1047 gives excellent processing in both extrusion and thermoforming with good finished product dimensional stability.

**B. Application:** It is recommended for cups and other products by in line extrusion /thermoforming, foamed trays by direct gassing, dairy sheets, CD boxes, toys, office equipment.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	3.8 – 4.3	g/10min	D1238
Tensile Strength	50	Mpa	D 638
Flexural modulus	3100	Mpa	D 790
Charpy impact strength (Unnotched)	10	Kj/m <sup>2</sup>	D 256
Vicat Softening point @ 120°C,1Kg	99	°C	D1525



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## GENERAL PURPOSE POLYSTYRENE GPPS-1047

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).





GPPS

## GENERAL PURPOSE POLYSTYRENE GPPS-1077

**A. Product Description:** General purpose polystyrene (GPPS) 1077 is manufactured by continuous mass polymerization of styrene monomer. It is a high melt flow; high heat crystal polystyrene designed for fast cycle injection Moulding. It is also designed for high output, direct injection profile extrusion for foam

**B. Application:** It is recommended for houseware, containers, drinking cup, tableware, optical parts, plastic bangles, cosmetic packing parts, stationery products, foam boards and wood replacements, Insulation board (XPS).

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	6.8 – 7.4	g/10min	D1238
Tensile Strength	52	Mpa	D 638
Flexural modulus	3100	Mpa	D 790
Charpy impact strength (Unnotched)	8	Kj/m <sup>2</sup>	D 256
Vicat Softening point @ 120°C,1Kg	98	°C	D1525
Styrene Residual Monomer	<500	PPM	CLGLABPSG004 (ATOFINA TEST METHOD)



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## GENERAL PURPOSE POLYSTYRENE GPPS-1077

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).



GPSS

## GENERAL PURPOSE POLYSTYRENE GPSS-1084

**A. Product Description:** General Purpose Polystyrene (GPSS) 1084 is manufactured by continuous mass polymerization of styrene monomer. It has high molecular weight, medium melt strength, good clarity and mechanical strength.

**B. Application:** : Injection Moulding. It is recommended for food contact consumer good, cups, dishes.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	8	g/10min	D1238
Tensile Strength	50	Mpa	D 638
Flexural modulus	3100	Mpa	D 790
Charpy impact strength (Unnotched)	10	Kj/m <sup>2</sup>	D 256
Vicat Softening point @ 120°C,1Kg	91	°C	D1525
Styrene Residual Monomer	<500	PPM	CLGLABPSG004 (ATOFINA TEST METHOD)



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## GENERAL PURPOSE POLYSTYRENE GPPS-1084

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).

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GPPS

## GENERAL PURPOSE POLYSTYRENE GPPS-1097

**A. Product Description:** General Purpose Polystyrene (GPPS) 1097 is manufactured by continuous mass polymerization of styrene monomer. It has medium heat grade, Medium melt strength, good clarity, mechanical strength and free of internal lubricants.

**B. Application:** : It is recommended for injection, Extrusion, house ware, containers, tableware, optical parts, stationery products, isolation and XPS sheets and plates.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	9 - 10	g/10min	D1238
Tensile Strength	52	Mpa	D 638
Flexural modulus	3100	Mpa	D 790
Charpy impact strength (Unnotched)	7.5	Kj/m <sup>2</sup>	D 256
Vicat Softening point @ 120°C,1Kg	99	°C	D1525
Styrene Residual Monomer	<500	PPM	CLGLABPSG004 (ATOFINA TEST METHOD)





## GENERAL PURPOSE POLYSTYRENE GPPS-1097

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).

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GPSS

## GENERAL PURPOSE POLYSTYRENE GPPS-1115

**A. Product Description:** General Purpose Polystyrene (GPPS) 1115 with easy flow and good clarity. It is recommended for application where a specific balance of flow and strength are important. In injection, molding GPPS 1115 possesses low viscosity at high shear rate. It is particularly suitable for glossy-layer co- extrusion.

**B. Application:** Injection moulding, disposable cups, pen barrels, crisper boxes for refrigerators, food containers, gloss layer co-extrusion, loose fill packaging and it can blend with HIPS.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	9 -11	g/10min	ASTM-D1238
Vicat Softening point (10N)	95	°C	ASTM-D1525
Notched IZOD impact strength(23°C)	1.5	KJ/m2	ASTM-D256
Unnotched IZOD impact strength(23°C)	8	KJ/m2	ASTM-D256
Tensile strength at break	42	Mpa	ASTM-D638
Elongation at break	2.5	%	ASTM-D638
Tensile Modulus	2900	Mpa	ASTM-D638
Water absorbtion	<0.09	%	ASTM-D570
Moulding shrinkage	0.4-0.8	%	ASTM-D955



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## GENERAL PURPOSE POLYSTYRENE GPPS-1115

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).



GPSS

## GENERAL PURPOSE POLYSTYRENE GPPS-G1551

**A. Product Description:** This grade is high strength & high cycle polystyrene

**B. Application:** Thin-walled food Containers, Medical ware (petri dishes etc), Office stationary, housewares, etc.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	9-11	g/10min	D1238
Tensile Strength (Yield)	440	(kg/cm <sup>2</sup> )	D 638
Tensile Modulus of Elasticity	2.6×10 <sup>4</sup>	(kg/cm <sup>2</sup> )	D 790
Izod Impact Strength (notched,t=6.4 mm)	2.4	(kg/cm <sup>2</sup> )	D 256
Vicat Softening point @ 50°C /hr,1000 gr	92	°C	D1525



## GENERAL PURPOSE POLYSTYRENE GPPS-G1551

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).





GPSS

## GENERAL PURPOSE POLYSTYRENE GPSS-1144

**A. Product Description:** General Purpose Polystyrene (GPSS) 1144 is manufactured by continuous mass polymerization of styrene monomer.

**B. Application:** It is recommended for packaging articles, Injection Moulding, petri dishes, office equipment, and pen barrels.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	13-15	g/10min	ASTM-D1238
Tensile strength at break	42	Mpa	ASTM-D638
Flexural Modulus	2.5	Mpa	ASTM-D790
Vicat softening point	2900	°C	ASTM-D1525



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## GENERAL PURPOSE POLYSTYRENE GPPS-1144

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).



GPSS

## GENERAL PURPOSE POLYSTYRENE GPSS-1233

**A. Product Description:** General Purpose Polystyrene (GPSS) 1233 is manufactured by continuous mass polymerization of styrene monomer. It has low operation cost, clarity, high ability.

**B. Application:** It is recommended for injection, good clarity goods, thin and long goods and master batches.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	21-23	g/10min	D1238
Tensile strength at break	40	Mpa	D638
Flexural Modulus	3100	Mpa	D790
Charpy impact strength (Un notched)	9	KJ/m2	D256
Vicat softening point	2900	°C	D1525



## GENERAL PURPOSE POLYSTYRENE GPPS-1233

GPPS

- Regulation (EC) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.
- Regulation (EC) 2023/ 2006 Of 22 December 2006 amended on good manufacturing practices and articles intended to come into contact with food.
- Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)).
- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) refer to RoHS directive 2011/65/ EU.
- Four hazardous substances determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).



## HIGH IMPACT POLYSTYRENE

# HIPS

High Impact Polystyrene (HIPS) is a low cost and tough plastic that is easy to thermoforming and fabricating. HIPS is used for wide range of extrusion, food packaging as beverage cups, packing for dairy products, and Refrigerator industry.



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HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 7026

### A. Product Description:

HIPS-7026 gives excellent processing in both extrusion with good finished product dimensional stability.

### B. Typical Applications:

It use for wide range of extrusion, for sheet, Film, disposable dish-ware, electronic packaging, cable reels.

. Air ducting for car heater, TV and tape recorder equipment.

### C. Typical Data:

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	2.3–2.6	g/10min	ASTM D-1238
Tensile strength	30	Mpa	ASTM D-638
Flexural modulus	2100	Mpa	ASTM D-790
Charpy Izod impact strength	12.5	Kj/m <sup>2</sup>	ASTM D-256
Vicat softening point @120°C,1kg	96	°C	ASTM D-1525



## HIGH IMPACT POLYSTYRENE HIPS - 7026

HIPS

**Note:** All mechanical properties measured under standard conditions 50% RH and 23C.

**Packing:** HIPS-7026 is supplied in the form of cylindrical of approximately 2.5×2.5 mm. the material can be supplied in either 25 kg bags.

**Regulatory information:** It is responsibility of the manufacturers of food contact articles and industrial food packers to make sure the article in their actual use are in compliance with the imposed migration requirements.

**Note:** All mechanical properties measured under standard conditions 50% RH and 23C.

- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous substances (RoHS) (10 Substance) refer to RoHS directive 2011/65/ EU and its amendment (EU) 2015/863





## HIGH IMPACT POLYSTYRENE HIPS - 7026

- Four hazardous substances (Cadmium, Lead, Mercury, Hexavalent Chromium) determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).
- Cadmium (Cd) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- Lead (Pb) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- PAHs content - refer to Annex XVII of Regulation (EC) No. 1907/2006. (7P)
- Phthalates Content Refer to Annex XVII of Regulation (EC) No. 1907/2006.
- Migration of certain toxic elements – refer to EN71-3:2013+A2:2018category III scraped-off materials meet the obligations and requirements of the new EU Toy Safety Directive 2009/48/EC
- TCEP, TCPP, TDCP content refer to Toy Safety Regulation Directive 2009/48/EC.
- Overall migration and soluble metals–refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213,2018/79, 2015/174).



## HIGH IMPACT POLYSTYRENE HIPS - 7026

HIPS

- TCEP/TCPP/TDCP refer to Regulation (EC) (2009/48/EC) Specific migration of TNPP (26523-78-4)
- Migration of Phthalates, Aromatic Primary Amines and 1,3- Butadiene and metal solutions – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213,2018/79, 2015/174)
- Specific migration of TNPP (26523-78-4)

Substance Name	CAS No.(EC Number)	Registration No.
Styrene Monomer	202-851-5	01-2119457861-32-0301
Buta-1, 3-Diene	203-450-8	01-2119471988-16-0229



HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 6045

**A. Product Description:** HIPS-6045 gives excellent extrusion. Also it can be used for injection molding.

**B. Application:** It use for wide range of injection molding applications, office, kitchen and bathroom articles. It use for wide range of extrusion, food packaging as beverage cups, packaging for dairy products, for sheet, disposable dishware, toys , internal parts and housings of household.

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	3.5 – 4.5	g/10min	ASTM D-1238
Tensile strength	24	Mpa	ASTM D-638
Flexural modulus	1900	Mpa	ASTM D-790
Charpy Izod impact strength	11	Kj/m <sup>2</sup>	ASTM D-256
Vicat softening point @120°C,1 kg	91	°C	ASTM D-1525

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## HIGH IMPACT POLYSTYRENE HIPS - 6045

HIPS

**Note:** All mechanical properties measured under standard conditions 50% RH and 23C.

**Packing:** HIPS-6045 is supplied in the form of cylindrical of approximately 2.5×2.5 mm. the material can be supplied in either 25 kg bags.

**Regulatory information:** It is responsibility of the manufacturers of food contact articles and industrial food packers to make sure the article in their actual use are in compliance with the imposed migration requirements.





HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 7055 ESCR

### **A. Product Description:**

HIPS 7055 ESCR is a high impact polystyrene grade with improved stress cracked resistance compared to conventional high impact polystyrene. The excellent melt strength of this grade makes it particularly suited for deep-draw thermoforming. It offers good environmental stress crack resistance at low temperatures, rendering it suitable for frozen packaging, refrigerator liners and door paneling while retaining good mechanical properties.

### **B. Application:**

It use for refrigerator liners for refrigerator inserts and door paneling.it use for packaging applications for oily food and dairy products and for sheet extrusion application.



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## HIGH IMPACT POLYSTYRENE HIPS - 7055 ESCR

HIPS

### C. Typical Data:

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	3 – 4.5	g/10min	ASTM D-1238
Tensile strength	30	Mpa	ASTM D-638
Flexural modulus	2100	Mpa	ASTM D-790
Charpy Izod impact strength	9 – 11.5	Kj/m <sup>2</sup>	ASTM D-256
Vicat softening point @120°C,1kg	92Min	°C	ASTM D-1525
Residual Styrene Monomer	500Max	PPM	ATOCHEM PSG-004
Elongation @ Break	50	%	ASTM D-638

**Note:** All mechanical properties measured under standard conditions 50% RH and 23C.

- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) (10 Substance) refer to RoHS directive 2011/65/ EU and its amendment (EU) 2015/863

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## HIPS

### HIGH IMPACT POLYSTYRENE HIPS - 7055 ESCR

- Four hazardous substances (Cadmium, Lead, Mercury, Hexavalent Chromium) determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).
- Cadmium (Cd) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- Lead (Pb) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- PAHs content - refer to Annex XVII of Regulation (EC) No. 1907/2006. (7P)
- Phthalates Content Refer to Annex XVII of Regulation (EC) No. 1907/2006.
- Migration of certain toxic elements – refer to EN71-3:2013+A2:2018 category III scraped-off materials meet the obligations and requirements of the new EU Toy Safety Directive 2009/48/EC
- TCEP, TCPP, TDCP content refer to Toy Safety Regulation Directive 2009/48/EC.
- Overall migration and soluble metals – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174).





## HIGH IMPACT POLYSTYRENE HIPS - 7055 ESCR

HIPS

- TCEP/TCPP/TDCP refer to Regulation (EC) (2009/48/EC)  
Specific migration of TNPP (26523-78-4)
- Migration of Phthalates, Aromatic Primary Amines and 1,3- Butadiene and metal solutions – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)
- Specific migration of TNPP (26523-78-4)

Substance Name	CAS No.(EC Number)	Registration No.
Styrene Monomer	202-851-5	01-2119457861-32-0301
Buta-1, 3-Diene	203-450-8	01-2119471988-16-0229

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HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 5073

### A. Product Description:

HIPS-5073 gives excellent injection molding. Also it can be used for extrusion.

### B. Typical Applications:

It use for injection molding applications, especially for dairy, sheet and food containers.it use for house hold too.

### C. Typical Data:

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	7	g/10min	ASTM D-1238
Tensile strength	25	Mpa	ASTM D-638
Flexural modulus	2100	Mpa	ASTM D-790
Charpy Izod impact strength	7 - 10	Kj/m <sup>2</sup>	ASTM-D256
Vicat softening point @120°C,1 kg	85	°C	ASTM D-1525



## HIGH IMPACT POLYSTYRENE HIPS - 5073

HIPS

**Note:** All mechanical properties measured under standard conditions 50% RH and 23C.

- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) (10 Substance) refer to RoHS directive 2011/65/ EU and its amendment (EU) 2015/863
- Four hazardous substances (Cadmium, Lead, Mercury, Hexavalent Chromium) determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).
- Cadmium (Cd) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- Lead (Pb) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- PAHs content - refer to Annex XVII of Regulation (EC) No. 1907/2006. (7P)



HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 5073

- Phthalates Content Refer to Annex XVII of Regulation (EC) No. 1907/2006.
- Migration of certain toxic elements – refer to EN71-3:2013+A2:2018 category III scraped-off materials meet the obligations and requirements of the new EU Toy Safety Directive 2009/48/EC
- TCEP, TCPP, TDCP content refer to Toy Safety Regulation Directive 2009/48/EC.
- Overall migration and soluble metals – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174).
- TCEP/TCPP/TDCP refer to Regulation (EC) (2009/48/EC) Specific migration of TNPP (26523-78-4)
- Migration of Phthalates, Aromatic Primary Amines and 1,3- Butadiene and metal solutions – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)



## HIGH IMPACT POLYSTYRENE HIPS - 5073

HIPS

- Specific migration of TNPP (26523-78-4)

Substance Name	CAS No.(EC Number)	Registration No.
Styrene Monomer	202-851-5	01-2119457861-32-0301
Buta-1, 3-Diene	203-450-8	01-2119471988-16-0229

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HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 4125

### A. Product Description:

HIPS-4125 gives excellent processing in injection with good finished product dimensional stability. Also we can use this grade for extrusion processing.

The high melt flow index of this grade makes it particularly suited for fact cycling injection molding.

### B. Typical Applications:

It use for house hold, toys and food containers

### C. Typical Data:

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	12	g/10min	ASTM D-1238
Tensile strength	30	Mpa	ASTM D-638
Flexural modulus	2600	Mpa	ASTM D-790
Charpy Izod impact strength	6.3	Kj/m <sup>2</sup>	ASTM-D256
Vicat softening point @120°C,1 kg	95	°C	ASTM D-1525

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## HIGH IMPACT POLYSTYRENE HIPS - 4125

HIPS

Note: All mechanical properties measured under standard conditions 50% RH and 23C.

Packing: HIPS-4125 is supplied in the form of cylindrical of approximately 2.5×2.5 mm. the material can be supplied in either 25 kg bags.

Regulatory information: It is responsibility of the manufacturers of food contact articles and industrial food packers to make sure the article in their actual use are in compliance with the imposed migration requirements.

Note: All mechanical properties measured under standard conditions 50% RH and 23C.

- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) (10 Substance) refer to RoHS directive 2011/65/ EU and its amendment (EU) 2015/863
- Four hazardous substances (Cadmium, Lead, Mercury, Hexavalent Chromium) determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).

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HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 4125

- Cadmium (Cd) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- Lead (Pb) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- PAHs content - refer to Annex XVII of Regulation (EC) No. 1907/2006. (7P)
- Phthalates Content Refer to Annex XVII of Regulation (EC) No. 1907/2006.
- Migration of certain toxic elements – refer to EN71-3:2013+A2:2018 category III scraped-off materials meet the obligations and requirements of the new EU Toy Safety Directive 2009/48/EC
- TCEP, TCPP, TDCP content refer to Toy Safety Regulation Directive 2009/48/EC.
- Overall migration and soluble metals – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174).
- TCEP/TCPP/TDCP refer to Regulation (EC) (2009/48/EC) Specific migration of TNPP (26523-78-4)



## HIGH IMPACT POLYSTYRENE HIPS - 4125

HIPS

Migration of Phthalates, Aromatic Primary Amines and 1,3- Butadiene and metal solutions – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174)

- Specific migration of TNPP (26523-78-4)

Substance Name	CAS No.(EC Number)	Registration No.
Styrene Monomer	202-851-5	01-2119457861-32-0301
Buta-1, 3-Diene	203-450-8	01-2119471988-16-0229

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HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 3163

### A. Product Description:

HIPS-3163 gives excellent processing in injection with good finished product.

The high melt flow index of this grade makes it particularly suited for fact cycling injection molding.

### B. Typical Applications:

It use for injection applications, Printers and copiers, venti-  
lators, TV back covers, Office machines, monitor cabinets.

### C. Typical Data:

Property	Value	Unit	Test Method
Melt Flow Rate (200°C/5KG)	16	g/10min	ASTM D-1238
Tensile strength	32	Mpa	ASTM D-638
Flexural modulus	2500	Mpa	ASTM D-790
Charpy Izod impact strength	5	Kj/m <sup>2</sup>	ASTM-D256
Vicat softening point @120°C,1 kg	85	°C	ASTM D-1525

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## HIGH IMPACT POLYSTYRENE HIPS - 3163

HIPS

Note: All mechanical properties measured under standard conditions 50% RH and 23C.

Packing: HIPS-3163 is supplied in the form of cylindrical of approximately 2.5×2.5 mm. the material can be supplied in either 25 kg bags.

Regulatory information: It is responsibility of the manufacturers of food contact articles and industrial food packers to make sure the article in their actual use are in compliance with the imposed migration requirements.

Note: All mechanical properties measured under standard conditions 50% RH and 23C.

- One hundred and ninety-one (191) Substances of Very High Concern (SVHC) analysis. SVHC list is based on the publication by European Chemical Agency (ECHA), regarding regulation (EC) No 1907/2006 concerning the REACH (191) SVHC are less than concentration of 0.1% weight by weight (w/w).
- Residual of Hazardous Substances (RoHS) (10 Substance) refer to RoHS directive 2011/65/ EU and its amendment (EU) 2015/863



HIPS

## HIGH IMPACT POLYSTYRENE HIPS - 3163

- Four hazardous substances (Cadmium, Lead, Mercury, Hexavalent Chromium) determination to the requirements of Directive 94/62/EC and its amendments (Regulation 1882/2003/EC, 2004/12/EC, 2005/20/EC, 2013/2/EC).
- Cadmium (Cd) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- Lead (Pb) content – refer to Annex XVII of Regulation (EC) No. 1907/2006
- PAHs content - refer to Annex XVII of Regulation (EC) No. 1907/2006. (7P)
- Phthalates Content Refer to Annex XVII of Regulation (EC) No. 1907/2006.
- Migration of certain toxic elements – refer to EN71-3:2013+A2:2018 category III scraped-off materials meet the obligations and requirements of the new EU Toy Safety Directive 2009/48/EC
- TCEP, TCPP, TDCP content refer to Toy Safety Regulation Directive 2009/48/EC.
- Overall migration and soluble metals – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174).



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## HIGH IMPACT POLYSTYRENE HIPS - 3163

HIPS

- TCEP/TCPP/TDCP refer to Regulation (EC) (2009/48/EC)  
Specific migration of TNPP (26523-78-4)
- Migration of Phthalates, Aromatic Primary Amines and 1,3- Butadiene and metal solutions – refer to Regulation (EC) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with (food and its amendments (2018/831, 2017/752, 2018/213, 2018/79, 2015/174))
- Specific migration of TNPP (26523-78-4)

Substance Name	CAS No.(EC Number)	Registration No.
Styrene Monomer	202-851-5	01-2119457861-32-0301
Buta-1, 3-Diene	203-450-8	01-2119471988-16-0229



# EXPANDED POLYSTYRENE

# EPS

Expanded Polystyrene or trademarked name, STYROFOAM, is an extremely lightweight product that is made of expanded polystyrene beads which is produced through polymerization of styrene monomer. EPS is one type of this polymer characterized by its increase in volume when exposed to heat. The expandability is caused by uniform distribution of hydrocarbon agent, like Pentane, within EPS structure. It is used for construction, insulation, packing, etc.





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## EPS

### Expanded Polystyrene F grades

Polystyrene is one of petrochemical products widely used in various industries, which is produced through polymerisation of monomer styrene. Expandable polystyrene (EPS) is one type of this polymer characterised by its increase in volume when exposed to heat. This expandability is caused by uniform distribution of a hydrocarbon agent, like pentane, within EPS structure. Manufacturers can expand the beads inside moulds of different shapes to obtain a plastic object of the same shape. Consumption rate of raw material is much lower in this method, compared to other types of polymers and this makes the produced objects to be much lighter. The gas stored in constitutive cells of expanded polystyrene products places them among good insulators against cold, heat and sound. Very low density of the final product makes it much easier to be cut in totally customisable shapes, compared to other plastics.

Many advantages of EPS, including lower costs of application makes it popular in many industries such as construction, packaging, industrial and domestic equipment's, decoration, etc.



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## EXPANDED POLYSTYRENE F grades

EPS

Grade	Bead Size	Pre-expansion Density (Kgf/Cm <sup>2</sup> )	Foam Multiply	Foam Density (g/L)
F50	1.6 – 1.9	11	60 - 75	10 - 20
F100	1.2 – 1.6	13	47 - 65	14 - 22
F150	1.0 – 1.2	14	42 - 60	16 - 30
F250	0.73 – 1.0	15	35 - 55	20 - 35
F350	0.5 – 0.73	16	28 - 50	22 - 40

Grade	Usage
F50	Insulation, big packing products
F100	Insulation, big packing products
F150	Insulation, big packing products
F250	Medium-density Insulation and packing products
F350	High Density Insulation, special use products

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EPS

## Expanded Polystyrene F grades

### Model: F / Self-Extinguishing Grades

Polystyrene Content	93 ~ 94 %	Moisture Content	1 % Max.
Pentane Content	5 ~ 7 %	Foam Water Absorption	100 gr/m <sup>2</sup> Max.
Flame Retardant	1 % Max	Foam Compressive	0.5 kgf/cm <sup>2</sup> Min.
MV (*1000)	250 Approx.	Strength	
Specific Gravity			

### EC Classification No. 1272/2008

Hazardous Ingredient(s)	%W/W	CAS No	REACH REGISTRATION No.
n-Pentane	<7	109-66-0	01-2119459286-30-0028
Residual Styrene as Homopolymer building Monomer	<93	100-42-5	01-2119457861-32-0301

Hazardous Ingredient(s)	EC No.	EC Classification and Risk Phrases
n-Pentane	203-692-4	F+; R12, Xn; R65, R66, R67, N; R51/53.
Residual Styrene as Homopolymer building Monomer	202-851-5	F+; R12, Xn; R65, R66, R67, N; R51/53.



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## EXPANDED POLYSTYRENE R grades

EPS

EPS<sup>®</sup> R Grades Used mainly as raw materials for the manufacturing of foamed thermal insulation and for an extensive range of cushioning and insulation packaging. The finished goods are produced with a molding process combined with the use of steam.

Grade	Bead Size	Pre-expansion Density (Kgf/Cm <sup>2</sup> )	Foam Multiply	Foam Density (g/L)
<b>R100</b>	1.2 –1.6	13	47 - 65	14 - 22
<b>R150</b>	1.0 –1.2	14	42 - 60	16 - 30
<b>R250</b>	0.73 –1.0	15	35 - 55	20 - 35
<b>R350</b>	0.5 – 0.73	16	28 - 50	22 - 40

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EPS

## EXPANDED POLYSTYRENE R grades

Grade	Usage
<b>R100</b>	is used for cases and packaging product suitable for food contact, insulation applications which is not requiring fire classification.
<b>R150</b>	is used for cases and packaging product suitable for food contact, insulation applications which is not requiring fire classification.
<b>R250</b>	is used for cases and packaging product suitable for food contact, insulation applications which is not requiring fire classification.
<b>R350</b>	is used for cases and packaging product suitable for food contact, Production of expanded foam moldings with thin walls insulation applications which is not requiring fire classification.



## EXPANDED POLYSTYRENE R grades

EPS

### EC Classification No. 1272/2008

Hazardous Ingredient(s)	%W/W	CAS No	REACH REGISTRATION No.
n-Pentane	<7	109-66-0	01-2119459286-30-0028
Residual Styrene as Homopolymer building Monomer	<93	100-42-5	01-2119457861-32-0301

Hazardous Ingredient(s)	EC No.	EC Classification and Risk Phrases
n-Pentane	203-692-4	F+; R12, Xn; R65, R66, R67, N; R51/53.
Residual Styrene as Homopolymer building Monomer	202-851-5	F+; R12, Xn; R65, R66, R67, N; R51/53.

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# ACRYLONITRILE BUTADIENE STYRENE ABS

Acrylonitrile butadiene styrene (ABS) is a common thermoplastic. ABS is a specific type of plastic polymer made from the fusion of styrene and acrylonitrile with polybutadiene used to make light, rigid, molded products such as pipes, automotive body parts, wheel covers, enclosures, and protective headgear.







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ABS

## Acrylonitrile Butadiene Styrene ABS-10

**A. Classification:** General purpose, General grade

**B. Characteristic:** Electronic and Electrical parts, Automobile parts, Refrigerator knobs, Cosmetic case

**C. DRYING:** It is recommended that ABS Resins be dried at (80-85°C) for 3 hours.

### PRODUCT DATA SHEET:

PROPERTY	ABS-10 specification	UNIT	TEST METHOD
Izod impact (6.4 mm, notched)	24 - 30	Kj/m <sup>2</sup>	D-256
Melt flow index ( 220°C , 10 kg)	26 - 34	gr/10 min	D-1238
Rock well hardness	95 - 115	R-scale	D-785
HDT (1.82 m pa)	82 - 84	°C	D-648
Vicat softening Temp (5kg/50°C)	93 - 94	°C	D-1525
Tensile strength (23°C, 50 mm/min)	380 - 420	Kg/cm <sup>2</sup>	D-638
Tensile elongation (23°C, 50 mm/min)	20 - 25	%	D-638
Flexural strength (23°C, 2.8 mm/min)	570 - 600	Kg/cm <sup>2</sup>	D-790
Flexural Modulus (23°C, 2.8 mm/min)	17000-19500	Kg/cm <sup>2</sup>	D-790
Specific Gravity (23°C)	1.04	.....	D-792
Molding Shrinkage	0.4-0.7	%	D-955
Flammability ( 1/8inch(3.2mm))	HB	.....	UI94





## Acrylonitrile Butadiene Styrene ABS-10

ABS

### D. Typical properties:

These are not to be construed as specifications. Some modifications may be required depending on the specific molding equipment and part configuration.

### INJECTION MOLDING

Rear Temp (°c)	Center Temp (°c)	Center Temp (°c)	Front Temp (°c)	Nozzle Temp (°c)	Melt Temp (°c)
190 - 200	200 - 210	210 - 220	210 - 220	215 - 225	230
Mold Temp(°c)	Filling Speed				
60 - 80	Slow-Med				

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ABS

## Acrylonitrile Butadiene Styrene ABS-40

**A. Classification:** General purpose, High Impact Strength

**B. Characteristic:** High Impact Resistance, Automobile parts (radiator grill & etc.), Helmets, Toys, Suitcase, shoe heels, skis, Golf club heads, Sports equipment, suitcases & etc.

**C. DRYING:** It is recommended that ABS Resins be dried at (80-85°C) for 3 hours.

### PRODUCT DATA SHEET:

PROPERTY	ABS-40 specification	UNIT	TEST METHOD
Izod impact (6.4 mm, notched)	32	Kj/m <sup>2</sup>	D-256
Melt flow index ( 220°C , 10 kg)	25	gr/10 min	D-1238
Rock well hardness	98	R-scale	D-785
HDT (1.82 m pa)	82	°C	D-648
Vicat softening Temp (5kg/50°C)	92	°C	D-1525
Tensile strength (23°C, 50 mm/min)	400	Kg/cm <sup>2</sup>	D-638
Tensile elongation (23°C, 50 mm/min)	30	%	D-638
Flexural strength (23°C, 2.8 mm/min)	580	Kg/cm <sup>2</sup>	D-790
Flexural Modulus (23°C, 2.8 mm/min)	18000	Kg/cm <sup>2</sup>	D-790
Specific Gravity (23°C)	1.04	.....	D-792
Molding Shrinkage	0.4-0.7	%	D-955
Flammability ( 1/8inch(3.2mm))	HB	.....	UI94

**D. Typical properties:** These are not to be construed as specifications.



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## Acrylonitrile Butadiene Styrene ABS-50

ABS

**A. Classification:** General purpose, Medium Impact Strength

**B. Characteristic:** Medium Impact Resistance, Medium Flow, Electronic and Electrical parts, vacuum cleaner, washing machine cover and Refrigerator door cap & etc

**C. DRYING:** It is recommended that ABS Resins be dried at (80-85°C) for 3 hours.

### PRODUCT DATA SHEET:

PROPERTY	ABS-50 specification	UNIT	TEST METHOD
Izod impact (6.4 mm, notched)	23	Kj/m <sup>2</sup>	D-256
Melt flow index ( 220°C , 10 kg)	35	gr/10 min	D-1238
Rock well hardness	109	R-scale	D-785
HDT (1.82 m pa)	85	°C	D-648
Vicat softening Temp (5kg/50°C)	95	°C	D-1525
Tensile strength (23°C, 50 mm/min)	455	Kg/cm <sup>2</sup>	D-638
Tensile elongation (23°C, 50 mm/min)	20	%	D-638
Flexural strength (23°C, 2.8 mm/min)	650	Kg/cm <sup>2</sup>	D-790
Flexural Modulus (23°C, 2.8 mm/min)	20000	Kg/cm <sup>2</sup>	D-790
Specific Gravity (23°C)	1.04	.....	D-792
Molding Shrinkage	0.4-0.7	%	D-955
Flammability ( 1/8inch(3.2mm))	HB	.....	UI94

**D. Typical properties:** These are not to be construed as specifications.

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ABS

## Acrylonitrile Butadiene Styrene ABS-70

**A. Classification:** Extrusion, Injection

**B. Characteristic:**

Super High Impact Resistance, Automobile parts (radiator grill & etc.), Helmets, Toys, Suitcase, Profiles Released extruded product, Bobbin sleeve, Boats, pipe, bath tubs & etc.

**C. DRYING:**

It is recommended that ABS Resins be dried at (80-85°C) for 3 hours.



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## Acrylonitrile Butadiene Styrene ABS-70

ABS

### PRODUCT DATA SHEET:

PROPERTY	ABS-70 specification	UNIT	TEST METHOD
Izod impact (6.4 mm, notched)	26	Kj/m <sup>2</sup>	D-256
Melt flow index ( 220°C , 10 kg)	14	gr/10 min	D-1238
Rock well hardness	113	R-scale	D-785
HDT (1.82 m pa)	90	°C	D-648
Vicat softening Temp (5kg/50°C)	100	°C	D-1525
Tensile strength (23°C, 50 mm/min)	470	Kg/cm <sup>2</sup>	D-638
Tensile elongation (23°C, 50 mm/min)	25	%	D-638
Flexural strength (23°C, 2.8 mm/min)	670	Kg/cm <sup>2</sup>	D-790
Flexural Modulus (23°C, 2.8 mm/min)	22000	Kg/cm <sup>2</sup>	D-790
Specific Gravity (23°C)	1.04	.....	D-792
Molding Shrinkage	0.4-0.7	%	D-955
Flammability ( 1/8inch(3.2mm))	HB	.....	UI94

**D. Typical properties:** These are not to be construed as specifications.

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ABS

## Acrylonitrile Butadiene Styrene ABS-75 SW

**A. Classification:** General purpose, Medium Impact Strength

**B. Characteristic:** It is recommended that ABS Resins be dried at (80-85°C) for 3 hours. Extruder with one-stage or two-stage venting are recommended for extrusion of sheet compression.

**C. DRYING:** Sheet Grade, Extrusion grade, High rigidity & high impact strength.

Typical Applications:

- Refrigerator interior container and door liner (cyclopentane Blowing agent use) and etc.



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## Acrylonitrile Butadiene Styrene ABS-75 SW

ABS

### PRODUCT DATA SHEET:

PROPERTY	ABS-75 specification	UNIT	TEST METHOD
Izod impact (6.4 mm, notched)	Min 33	Kj/m <sup>2</sup>	D-256
Melt flow index ( 220°C , 10 kg)	4 -10	gr/10 min	D-1238
Rock well hardness	95-110	R-scale	D-785
HDT (1.82 m pa)	Min 85	°C	D-648
Vicat softening Temp (5kg/50°C)	Min 94	°C	D-1525
Tensile strength (23°C, 50 mm/min)	Min 440	Kg/cm <sup>2</sup>	D-638
Tensile elongation (23°C, 50 mm/min)	Min 25	%	D-638
Flexural strength (23°C, 2.8 mm/min)	Min 640	Kg/cm <sup>2</sup>	D-790
Flexural Modulus (23°C, 2.8 mm/min)	Min 20000	Kg/cm <sup>2</sup>	D-790
Specific Gravity (23°C)	1.04	.....	D-792
Molding Shrinkage	0.4-0.7	%	D-955
Flammability ( 1/8inch(3.2mm))	HB	.....	UI94

**D. Typical properties:** These are not to be construed as specifications.

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ABS

## Acrylonitrile Butadiene Styrene ABS-80

**A. Classification:** General purpose, Hi Flow, High rigidity.

**B. Characteristic:** Electronic and Electrical parts, vacuum cleaner, washing machine cover and Refrigerator door cap & et.

**C. DRYING:** It is recommended that ABS Resins be dried at (80-85°C) for 3 hours.

### PRODUCT DATA SHEET:

PROPERTY	ABS-80 specification	UNIT	TEST METHOD
Izod impact (6.4 mm, notched)	16 - 20	Kj/m <sup>2</sup>	D-256
Melt flow index ( 220°C , 10 kg)	45 - 55	gr/10 min	D-1238
Rock well hardness	100 - 120	R-scale	D-785
HDT (1.82 m pa)	82 - 85	°C	D-648
Vicat softening Temp (5kg/50°C)	93 - 95	°C	D-1525
Tensile strength (23°C, 50 mm/min)	450- 470	Kg/cm <sup>2</sup>	D-638
Tensile elongation (23°C, 50 mm/min)	14 - 19	%	D-638
Flexural strength (23°C, 2.8 mm/min)	650 - 670	Kg/cm <sup>2</sup>	D-790
Flexural Modulus(23°C, 2.8 mm/min)	20000 -22000	Kg/cm <sup>2</sup>	D-790
Specific Gravity (23°C)	1.04	.....	D-792
Molding Shrinkage	0.4 - 0.7	%	D-955
Flammability ( 1/8inch(3.2mm))	HB	.....	UI94



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## Acrylonitrile Butadiene Styrene ABS-80

ABS

**D. Typical properties:**

These are not to be construed as specifications. Some modifications may be required depending on the specific molding equipment and part configuration.

**INJECTION MOLDING**

Rear Temp (°c)	Center Temp (°c)	Center Temp (°c)	Front Temp (°c)	Nozzle Temp (°c)	Melt Temp (°c)
190 - 200	200 - 210	210 - 220	210 - 220	215 - 225	230
Mold Temp(°c)	Filling Speed				
60 - 80	Slow-Med				

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ABS

## Acrylonitrile Butadiene Styrene ABS-90

**A. Classification:** General Purpose

**B. Characteristic:** Super High Impact

**C. Application:** Automobile Parts (radiator grill & etc.), Helmet, Toys, Suitcase, Profile released extruded products, bobbin sleeves, boats, pipes, bath tubes.

**D. Drying:** it is recommended that ABS resins be dried at (80 – 85 °C) for 3 hours.

PROPERTY	Value	UNIT	TEST METHOD
Izod impact (6.4 mm, notched)	39	Kj/m <sup>2</sup>	D-256
Melt flow index ( 220°C , 10 kg)	10	gr/10 min	D-1238
Rock well hardness	95	R-scale	D-785
HDT (1.82 m pa)	82	°C	D-648
Vicat softening Temp (5kg/50°C)	92	°C	D-1525
Tensile strength (23°C, 50 mm/min)	400	Kg/cm <sup>2</sup>	D-638
Tensile elongation (23°C, 50 mm/min)	35	%	D-638
Flexural strength (23°C, 2.8 mm/min)	550	Kg/cm <sup>2</sup>	D-790
Flexural Modulus (23°C, 2.8 mm/min)	16500	Kg/cm <sup>2</sup>	D-790
Specific Gravity (23°C)	1.04	.....	D-792
Molding Shrinkage	0.4-0.7	%	D-955
Flammability ( 1/8inch(3.2mm))	HB	.....	UI94

• All above-mentioned data are typical values and not to be construed as real specifications. Users should confirm results by their own tests.



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Note:.....

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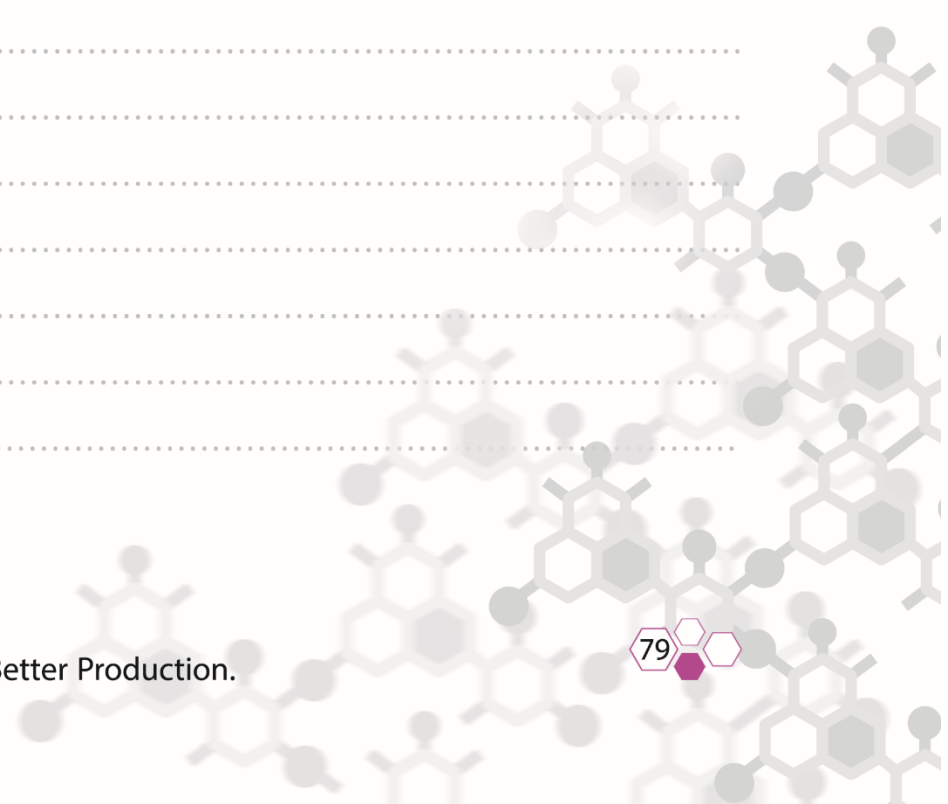
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