PJPC
PADJAM
Polymer Development Co.

General information

www.pjpc.ir

PADJAM Polymer Development Company(a-joint-stock company) has been established in 2014 with the aid of developing and operation of ABS/Rubber plant by jam petrochemical company.

The project is located in the Pars Energy Special Economic Zone in Assaluyeh, on an area of 15 hectares, with a production capacity of 200,000 metric tons of ABS per year and 60,000 metric tons of rubber per year, licensed by one of the most advanced technologies in the world Versalis-Eni SpA, is under construction.The basic engineering of the project is done by Tecnimont Company.The PJPC is able to produce 9 different grades of ABS and 3 different rubber products in 7 different grades with the highest quality (for the first time and exclusively in Iran).The feed of this complex was styrene 1 and 3 butadiene and acrylonitrile and about half of the produced rubber in the Rubber Plant is used as a feed in ABS plant in order to adjust physical and mechanical properties of ABS, and the remaining rubber could be supplied to market.100% of the shares of this company are owned by JAM petrochemical company.

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ABS

ABS, among the thermoplastic styrenic polymers, is the most complex and performing one, by matching the characteristics of acrylonitrile-styrene copolymers with the ones peculiar of rubber modified materials. ABS is a heterophase copolymer in which there is a rubber phase, based upon polybutadiene elastomer, dispersed in a continuous matrix of styrene-acrylonitrile copolymer. PADJAM ABS process is an advanced continuous flow technology, based on mass Polymerization of acrylonitrile and styrene, together with poly-butadiene rubber. The various solutions available, related to the morphological structure as described above, confer upon PADJAM ABS many different characteristics. The flexibility of PADJAM Technology allows to manufacture all main ABS grades, covering the following fields of application:

- Excellent toughness even at low temperatures
- High mechanical strength, rigidity and excellent dimensional stability
- High surface gloss
- Good chemical, scratch and stress-cracking resistance
- Excellent processability
- High heat resistance

These properties can be particularly beneficial in numerous application sectors.

Processing Technologies

The continuous mass process

This process represents the latest production technology for ABS, through which it is possible to achieve a better balance in the overall performance of the material, utilizing different polymerization mechanisms, grafting and reinforcing of the SAN matrix with butadiene rubber. The process ensures products with greater thermal resistance, better thermal stability during the transformation process and a lower, more consistent yellow index, in addition to much reduced levels of residual volatiles. The most recent developments achieved using continuous mass technology, have led to the production of a new generation of grades which substitute the traditional materials obtained by compounding, in particular the thermally resistant grades used in the automotive industry. Continuous mass ABS is commercialized primarily in natural.

Injection moulding

The injection grades are normally processed in the range of 230-270 °C as the melt temperature and 40-70 °C as the mould temperature. PADJAM ABS is a moderately hygroscopic material; it is advisable to pre-dry the granules in a circulated air oven at about 80 °C for 1-2 hours prior to mould.

Extrusion

PADJAM ABS is normally extruded in film, sheet and profile, using standard extruders with vent. It is recommended to pre-dry the product at 80 °C for 1-2 hours.

Coloring of PADJAM ABS

The product is normally supplied in natural. Continuous mass grades, being characterized by a low and consistent yellow index in the natural version and exceptional processing stability, are particularly suited to the process of self-coloring by the processor (natural product + master batch). This technology carries with it a number of production and logistical advantages.

Supply and Storage

PADJAM ABS is supplied in the form of lenticular/spherical. The apparent granular density is 0.65 g/ml, which is an average value subject to variation for the special grades with particular additives/compounding.

PADJAM ABS is usually supplied in 25 kg polyethylene bags, in octabins of 1000 kg, as well as bulk. Other forms of packaging can also be made available.

RUBBER

Styrene and 1,3 Butadiene are the monomers used for the production of SBS, SB and LCBR grades: only 1,3 Butadiene in case of LCBR production and both Styrene and 1,3 Butadiene in case of SBS and SB productions.

PADJAM Low Cis Polybutadiene rubber (LCBR) are obtained by anionic polymerization initiated by lithium alkyls in aliphatic/cycloaliphatic media. Polymerization condition adopted in our process induce the formation of a minority fraction of the long chain branched polybutadiene that greatly modifies the rheological behavior of the material; geometrical constancy of the bales is then guaranteed. Main application of LCBR polymers are tyres, belting, moulded and extruded articles and production of High Impact Polystyrene (HIPS) and Polystyrene ABS grades.

Key features of PADJAM LCBR production technology are:

High flexibility in terms of product mix and good quality constancy

and reproducibility LCBR can be stabilized with an antioxidant system that has food contact approval;

- High consistency;
- High purity;
- Low cold flow;
- Low gel content;
- Low dissolution time in styrene;
- Wide range of solution viscosity;
- Low glass transition temperature

SBS

Styrene and 1,3 Butadiene are the monomers used for the production of SBS, SB and LCBR grades:

PADJAM SBS copolymers, made by styrene and butadiene linked homopolymer blocks, belong to the class of thermoplastic elastomers (TPE), whose elastic behavior – the properties to change and recover the shape when a force is first applied and then removed – and thermoplastic behavior – the property to become soften, viscous and free-flowing like a liquid when heated and return solid when cooled at room temperature – are joined together in the same material.

The elastic/rubbery and thermoplastic/viscous behaviours are displayed at room and high temperatures respectively allowing the fabrication of TPE goods having the same rubbery feeling than traditional vulcanized rubbers, but considerably less expensive in manufacturing process due to the full recyclability of scraps, the shorter cycle, time and the easier process automation/robot assistance.

This balance between properties and process ability leads SBS based material focusing on unique applications instead of only replacing general-purpose rubber PADJAM SBS technology is well-known for its high flexibility in tailoring the different product grades required by the SBS market which is characterized by a continuous product innovation to meet new application requirements.

PADJAM SBS technology allows then competitive production of the most common SBS grades, as well as additional grades for special applications. Key features of PADJAM SBS production technology are:

- high flexibility in terms of product mix and good quality constancy and reproducibility.
- high plant capability as well as easy operability due to both specifically designed feeding system for chemicals and batch automation.
- cyclopentane, cyclohexane or blend highly compatible with all different polymer compositions; can be used as solvent depending on local climate conditions.
- high purity linear and radial triblock polymers, with four arms, are allowed by the proper selection of halosilane structure as coupling agent;
- production in the same unit of Low Cis Butadiene Rubber (LCBR) grades and/or SB (diblock styrene-butadiene polymers) used mainly for plastic modification or tyre market is possible.
- process design advanced features in polymerization and purification sections.
- optimized configuration of the stripping section with three stages arrangement to minimize steam consumption without impact emissions of VOC.
- small quantity of volatile organic compounds (solvent) enter finishing section (low release during extrusion).