

ExxonMobil TECHNOLOGY

ExxonMobil Chemical is one of the largest worldwide petrochemical companies. ExxonMobil Chemical technologies resources enable to develop innovative products, processes, and technology solutions to provide safety, reliability and margin improvements. ExxonMobil Chemical Company licenses a multitude of technologies covering a broad range olefins and polymers:

✓ Polymers Technologies Licensing:

➤ LDPE Autoclave

ExxonMobil Chemical is an industry expert in high pressure autoclave technology. ExxonMobil has developed large, high pressure technology including a 100+ KTA autoclave reactor for extrusion coating products and HEVA (high ethylene vinyl acetate) grades. ExxonMobil Chemical has designed and has built the world's first autoclave reactor to commercially produce metallocene-catalyzed products. With ExxonMobil Chemical's high pressure autoclave technology can produce: Homopolymer LDPE ranging from 0.910 to 0.935 density; HEVA up to 40 wt % ; High clarity grades. Important features of ExxonMobil's high pressure autoclave technology include: Low reactor decomposition frequency, averaging two every five years; Lower investment cost than tubular, based on the cost of the reactor system.

➤ LDPE Tubular

ExxonMobil Chemical's high pressure tubular process has been proven in the field for the long-term. Utilizing ExxonMobil's world-scale tubular reactors enables you to produce polyethylene at a low total cost, even below state-of-the-art gas-phase reactors. Using ExxonMobil's high pressure tubular technology, you can produce: Homopolymer LDPE (low density polyethylene) with density levels that range from 0.915 to 0.935; EVA (ethylene vinyl acetate) copolymers up to 10 wt % . Compared to competition, the key advantages of ExxonMobil's high pressure tubular technology are: Very high clarity grades; Extremely broad density window; Expanded grade slate for a variety of applications; Advanced product tailoring capabilities; Broad range of line capacities up to 300-400 kta; Low reactor decomposition frequency, averaging one every five years; Higher operating factor than other LDPE technologies; Lower operating cost versus autoclave technology because of higher conversion in the tubular reactor. With either high pressure tubular or high pressure autoclave technology, you can expect outstanding safety (by design and in operations); process flexibility and capacity; and product quality

✓ Olefins Technologies Licensing:

ExxonMobil Chemical Company and Kellogg Brown & Root (KBR) announced the introduction of the Selective Cracking Optimum Recovery (SCORE) ethylene process. This technology offering was made possible by a worldwide ethylene technology licensing arrangement between ExxonMobil and M.W. Kellogg, followed by the merger of Kellogg and Brown & Root, allowing the best features of three leading technology companies to be combined into one package. The combined technology offers producers improved efficiency, higher selectivity, and lower capital cost.

ExxonMobil PE Trademark:

• **NTX™ LLDPE**

NTX™ LLDPE is a Super Strength Blown Film Resins. NTX Super Strength hexene blown film resins are designed for applications requiring exceptional strength for maximum downgauging potential. Key property improvements are significantly superior impact and tear strength. NTX resins are formulated with various additive packages for use in all high performance film applications.

• **Paxon™**

Paxon™ is a HDPE resins. Paxon are unique materials that offer rotational molders the advantage of high-flow molding and high molecular weight part performance.

• **Exceed™ mLLDPE, mVLDPE**

Exceed™ resins provide nearly unlimited ways to enhance the competitiveness of your products while reducing costs. For virtually any polyethylene application, Exceed delivers resin value and exceptional product performance over conventional LLDPE. The consistent, uniform distribution of polymer molecules, based on single-site catalysts, result in a range of property improvements and a flexible way to reduce costs for a broad variety of applications. Exceed™ mVLDPE is produced at a target 0.912 density is designed to compete with conventional VLDPE products. Primary applications include flexible food packaging such as ice bags, frozen foods, poultry, meat and cheese packaging. This new metallocene-based PE offers: Exceptional impact and toughness; Dart impact three times that of conventional VLDPE; Exceptional puncture resistance; Downgauging advantages/economical alternative for poultry and meat packaging; Better cold temperature impact performance; Excellent optical properties; Low extractables.

• **Paxon™**

Paxon™ HDPE resins are used for blow molded or extruded applications for liquid food containers, automotive fuel tanks and large volume drums. They are also used in thermoforming applications and for rotational molding applications, such as vessels and tanks.