

## DOW TECHNOLOGY

The Dow Chemical Company is a leading science and technology company providing innovative chemical, plastic and other products and services to many essential consumer markets. The Dow Technology Licensing business licenses the next process technologies in the plastic industry today:

- ✓ UNIPOL™ Polypropylene Process Technology;
- ✓ DOWLEX™ Polyethylene Resins Process Technology;
- ✓ ATTANE™ Ultra Low Density Polyethylene Resins Process Technology;
- ✓ SHAC™ Polypropylene Catalysts Process Technology.

- **Unipol™**

The UNIPOL™ Process for polypropylene is used by 21 operating licensees, in 36 lines, located in 15 countries on 6 continents and produces over 6 million tons of polypropylene resin annually. UNIPOL PP is a simple and elegant system, consisting of either one or two gas-phase fluidized-bed reactors. To produce homopolymers and random copolymers, a single reactor is used. For impact copolymers, a second-stage reactor adds the key elastomeric component to the growing polymer chains. The thoroughly back-mixed nature of the reactors leads to exceptional product consistency. UNIPOL™ PP technology continues to build on the simple platform, with its low investment and operating costs, by adding new catalyst systems, design methods and product families that give even more flexibility to the process user.

- **DOWLEX™**

DOWLEX™ Polyethylene Resins are ethylene-octene copolymers. These resins show a unique molecular structure with controlled side chain distribution. This provides excellent stress crack resistance properties combined with very good long-term hydrostatic strength. The narrow molecular weight distribution makes extrusion of DOWLEX Polyethylene Resins different from that of LDPE or HDPE, which may require adjustment of the extrusion equipment and processing parameters.

- **ATTANE™**

Developed as a line extension to DOWLEX™ Polyethylene Resins, ATTANE™ Ultra Low Density Polyethylene Resins meet demanding performance requirements in very specific market segments, such as stretch wrap, food packaging, health and hygiene. Compared to DOWLEX PE Resins, ATTANE ULDPE Resins offer greater low temperature flexibility and flex crack resistance, ideal for containing liquids that move freely within a package. Leaks and spills are avoided, and the package still offers excellent optics, high tear resistance, and other key properties for customers. Key packaging applications for ATTANE ULDPE Resins include heavy duty sacks, turf bags, consumer bags, and packaging for cheese, meat, coffee, and detergents. They are also widely used to produce silage wrap, mulch films, extruded membranes, heating and water pipes, and injection-molded products.

- **SHAC™**

A range of commercial SHAC™ Polypropylene Catalysts is available for a multitude of polypropylene products and applications, including specialty grades and improved process efficiency. Operators choose the SHAC Polypropylene Catalysts that best meet their needs for specific product families and operations objectives. All SHAC Polypropylene Catalysts are produced to the highest quality standards in dedicated production units. Dow's on-going commitment to catalyst development and commercialization has been significantly enhanced and will ensure that new and improved catalysts are consistently created to meet customers' market needs.