Fact Sheet – ENGAGE™ Polyolefin Elastomers

ENGAGE™ Polyolefin Elastomers (POEs) provide exceptional performance with an unmatched balance of properties, allowing them to serve as a bridge between rubber and plastic and inspire new design possibilities. The family of ENGAGE™ POEs:

- Was created using INSITE™ technology, a proprietary Dow catalyst and solution process technology.
- Includes ethylene butene and ethylene octene copolymers across a wide range of densities and melt flow rates.
- Is designed to offer customers opportunities for improved impact performance, melt strength, and processability across a broad spectrum of markets and applications. ENGAGE™ POEs can offer exceptional performance and a distinct balance of properties when used alone or in compounds and blends.
- Has become the impact modifier of choice for automotive thermoplastic polyolefins (TPOs). Exterior applications include bumper fascia, trim, and rocker panels, while interior applications include instrument and door panels, pillars, and airbag covers.
- Provides solid evidence that Dow is committed to innovation and to delivering winning solutions that meet their customers’ changing needs.

About ENGAGE™ Polyolefin Elastomers

- ENGAGE™ POEs are engineered to process like a thermoplastic and perform like a flexible, tough elastomer. This distinct combination of characteristics often makes them a material of choice for advanced products and optimized manufacturing.
- Products made with ENGAGE™ POEs are tough, flexible, soft, and resilient. They are also durable and impact resistant, resist weathering and UV effects, have outstanding color and clarity, weigh less, have a thinner gauge, and are more ductile.
- Since ENGAGE™ POEs are highly compatible, they can be used as a key component in blends with other polymers. ENGAGE™ POEs offer opportunities for improved melt strength, outstanding filler acceptance, thermal stability, excellent colorability, manufacturing consistency, and cost benefits. They can also be used as the primary polymer for selected applications.
- In impact-modification applications, ENGAGE™ POEs can provide cost savings and improved performance over ethylene propylene diene copolymer (EPDM) and other impact modifiers. When used to modify polypropylene, compounds containing ENGAGE™ POEs offer improved mold flow and low temperature impact modification.
- ENGAGE™ POEs can be compounded with other olefins to provide an alternative to flexible polyvinyl chloride (f-PVC) for a wide range of interior automotive components, including instrument and door trim panels and skins. The resulting TPO compounds:
  - Do not necessarily require plasticizers, which could lead to brittleness with aging and an increase in fogging
  - Typically produce articles weighing 20 to 30 percent less than parts made with f-PVC
  - Can potentially be used in in-process, post-industrial, or post-consumer recycling. The primary by-products of incineration are water and carbon dioxide.
- The next generation of ENGAGE™ products – ENGAGE™ XLT Polyolefin Elastomers – offers opportunities for modified TPO formulations with benefits such as:
  - Higher stiffness and/or impact strength
  - Reduced coefficient of linear thermal expansion for improved fit and finish
  - Thinner parts for reduced weight
  - Improved processing for producing complex part geometries
- Dow testing versus an industry-leading modifier(1) shows that:
  - At equivalent elastomer loading, ENGAGE™ XLT POEs offer the potential for improved impact strength while maintaining the stiffness required for low temperature impact applications
  - At reduced elastomer loading, TPOs formulated with ENGAGE™ XLT combine enhanced stiffness and processability with comparable impact performance, creating the potential to mold even thinner or more complex parts

(1) Data per tests conducted by Dow. Test protocols and additional information available upon request. Properties shown are typical, not to be construed as specifications. Users should confirm results by their own tests.
**Typical Applications**

End-use applications for ENGAGE™ POEs include, but are not limited to:

- Exterior (hard) and interior (soft) automotive TPOs
- Plastics modification
- Thermoplastic elastomers (TPEs)
- Wire and cable coatings
- Consumer goods
- Foams
- Footwear
- Noise vibration harshness (NVH) applications
- Extrusion or injection molded goods (including toys and other household items)

**Performance and Processing Benefits**

The following attributes are offered by ENGAGE™ POEs:

- Excellent impact resistance
- Easy colorability
- Tough yet flexible
- Low density and light weight
- Easy mixing, forming, and processing on plastic or rubber equipment
- Recyclable for in-process scrap re-use
- Excellent melt strength and processability
- Lower shrinkage

**Typical Property Ranges**

(1) Typical properties; not to be construed as specifications. Users should confirm results by their own tests.

**About Dow**

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