

lotek™ 8000

The material **lotek™ 8000** is produced by **ExxonMobil**. It is an **ionomer resin**, specifically an **ethylene-methacrylic acid (E/MAA) copolymer** that has been neutralized with **sodium ions (Na⁺)**.

Chemical Structure

In lotek-type ionomers, a portion of the methacrylic acid units has been converted into a sodium salt. This creates "**ionic clusters**" between the polymer chains. These bonds act as "**reversible**" **cross-links**:

- **In solid state:** They provide excellent strength, toughness, and clarity.
 - **In melt state:** These bonds "relax," allowing the material to be processed as a thermoplastic in extruders.
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1. Material Description & Applications

Ionomers are thermoplastic polymers with unique properties due to the ionic bonds in their chain. **lotek 8000** is primarily used for:

- **Flexible Packaging:** Multi-layer food films (e.g., meat, cheese) due to its exceptional **sealability**.
 - **Extrusion Coating:** Applied onto paper, aluminum foil, or other films.
 - **Sporting Goods:** Frequently used in golf ball covers or footwear components (due to high abrasion resistance).
 - **Industrial Uses:** Applications requiring high clarity, **puncture resistance**, and chemical resistance.
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Behavior in Blown Film (LDPE Blend)

Since lotek 8000 is a sodium-neutralized E/MAA, adding it to your **LDPE** will yield the following benefits:

- **Improved Sealing:** The film seals at lower temperatures and much faster. It can also achieve a hermetic seal even if there is **contamination** (e.g., powder or grease) in the seal area.
- **Hot Tack Strength:** This is its strongest advantage. If the film is intended for high-speed Vertical Form Fill Seal (**VFFS**) machines, the seal can support the weight of the product before the plastic has even cooled.
- **Oil Resistance:** If the film comes into contact with fatty foods, the E/MAA ionomer layer prevents oil from "wicking" into the seal and causing it to peel open.
- **Clarity:** Lotek 8000 improves the optical clarity and gloss of the film. E/MAA tends to reduce the crystal size of the polyethylene when blended correctly, resulting in a "**glass-like finish.**"
- **Puncture Resistance:** It significantly increases the film's resistance to being pierced by sharp objects.
- **Stiffness:** It can provide slightly increased stiffness compared to neat LDPE.
- **Elasticity:** It improves overall tensile strength.

Blending Ratio: If used as a "dry blend" in **monolayer film**, it is typically added at levels of **10% to 25%** to impart specific properties without excessively increasing costs (as ionomers are more expensive than LDPE).

2. Technical Characteristics (Typical TDS)

Typical values include:

- **Melt Index (MI):** Approximately 0.7 - 1.0 g/10 min (@ 190°C).
- **Density:** Approximately 0.940 - 0.950 g/cm³.
- **Melting Point:** Approximately 90°C - 95°C.
- **Key Feature:** Very low **Seal Initiation Temperature (SIT)** and high **Hot Tack** strength.

Summary: It is an "upgrading" material. If you want to produce a film with superior sealing performance and high durability, adding lotek is an excellent choice.