



## OVERVIEW

Lubrizon's Engineered Polymers business continues to set the stage for enhancements in the halogen-free technology field. Lubrizon, first to offer flame-retardant thermoplastic polyurethane (TPU) and first to obtain a UL "Yellow Card" for TPU in the 1970s, recently expanded its Non-Halogenated Flame Retardant TPU product offering especially designed to meet current demands in the plastics industry. Environmental pressures in certain regions are driving the push for higher performing materials to meet strict regulations related to flame retardancy.

Estane® TPU resins are tough, versatile materials with a good combination of processing and performance features. Lubrizon offers zero halogen flame-retardant TPUs with very good mechanical properties. For some specific applications in the building and construction markets and mass transit construction, flame retardancy and low-smoke fire materials are essential. Additionally, we offer a selection of halogenated and non-halogenated flame-retardant compounds for cable jacketing materials, injection-molded parts and other extrusion profiles.

## BENEFITS OF ESTANE® NON-HALOGENATED FLAME RETARDANT TPUs:

- Consistent flame performance over a wide range of cable designs
- Contains no Phosphate Ester
- No dripping of flames
- Forms very nice crust to protect insulator and conductor
- Very smooth surface

## APPLICATIONS

- Industrial
- Automotive
- Mass Transit
- Building/Construction
- Telecommunication
- Alternative Energy
- Oil & Gas
- Military
- Mining
- Marine

**PHYSICAL PROPERTIES OF AVAILABLE PRODUCTS:**

| Product           | Hardness | Finish | UL Vertical Burn Rating | Mechanical (Tensile) | Low Smoke (Yes or No) | Comment  |
|-------------------|----------|--------|-------------------------|----------------------|-----------------------|--|
| Estane® ZHF 80AT3 | 80A      | Gloss  | V2 / LOI 25             | High                 | No                    | Softest NHFR Silky Matte                         |
| Estane® ZHF 58202 | 89A      | Matte  | V2 / LOI 29             | High                 | Yes                   | Low Smoke, Low Toxicity and Low Gas Conductivity |
| Estane® ZHF 90AT8 | 89A      | Matte  | V0 / LOI 24             | High                 | No                    | VDE & UL Compliant UL 105°C                      |
| Estane® ZHF 90AT2 | 90A      | Matte  | V2 / LOI 25             | High                 | Yes                   | High Flame Performance                           |
| Estane® ZHF 90AT0 | 90A      | Gloss  | V2 / LOI 24             | High                 | No                    | Transparency and High Mechanicals                |
| Estane® 58244     | 90A      | Matte  | V0 / LOI 28             | Medium               | Yes                   | Low Smoke  |
| Estane® TS 92AP7  | 93A      | Gloss  | V2 / LOI 26.5           | Very High            | No                    | Transparency and High Mechanicals                |
| Estane® ZHF 95AT3 | 95A      | Matte  | V0 / LOI 39             | Medium               | No                    | High LOI   |



**LUBRIZOL**  
ENGINEERED  
POLYMERS

**ADVANCING MATERIALS.  
ELEVATING PERFORMANCE.**

