

Cable Brief: XLPO and XLPE in Automotive Standards

ISO automotive wire and cable standards⁽¹⁾ do not specifically reference insulation materials, but OEM standards often do. ISO standards address product performance, dimensions, construction, and test methodology, but leave the selection of insulation materials to OEM’s and suppliers.

This can bring confusion amongst OEM specifications when referencing insulation materials. For example, XLPO is often referenced as a wire insulation when in fact XLPO is actually a broad category of different polymers. For example, “Flexible XLPO” is sometimes referenced along with “XLPE”. From a material standpoint, XLPE is a type of XLPO. Flexibility is derived from the specific polymer formulation.

Cross linked polyolefin (XLPO) is a broad category of organic materials. Polymer is produced from a simple olefinic monomer that reacts with fellow chain members to form polymeric chains. Monomers are reactive single chain molecules. This polymer chain becomes it’s own new material. For wire and cable insulations, there are a number of specific materials which are in the polyolefin family, but should also be more specifically defined.

Polyolefin (PO) Type:	Description:
Neat Resins	
Polyethylene (PE)	Ethylene monomer is used to create the larger polymeric molecular chain. Can be high or low density.
Polypropylene (PP)	Propylene monomer is used to create the larger polymeric molecular chain.
Blended Compounds	
Ethylene Propylene Rubber (EPR)	Ethylene and propylene monomers are used to create a rubber polymer.
EPDM	Ethylene, propylene and diene monomers are used to create rubber polymer.
EXRAD ERGO-FLEX™ (XLPO)	Polyolefin monomers specifically tailored to create polymeric insulation for vehicular markets.

Cross linked polyolefin compounds can be designed to enhance performance such as to improve flexibility, fluid resistance, thermal endurance, wear resistance, and other properties.

EXRAD ERGO-FLEX is a state-of-the-art XLPO material with flexibility similar to many siloxanes (silicone) and elastomers such as EPDM, but with added tailored ingredients for improved performance in the automotive and commercial vehicle markets.

Champlain Cable has been using irradiation technology for over 45 years and is a world leader of polymer science and irradiation cross-linking in the wire and cable industry. Our eight irradiation units are capable of cross-linking wires ranging from 26awg to 700MCM,

Learn more about our ingenuity at www.champcable.com

(1) Ref ISO 6722-1 and 19542