

# tech.topic

## General Data Differences Between Injection and Compression Molded Samples

Equistar's technical data sheets for individual injection molding grades of Alathon® and Petrothene® polyethylene are frequently updated. The changes you may notice do not indicate any changes to the products themselves but are a result of changes in sample preparation techniques or the sampling itself.

The most notable changes affect the properties reported for the Alathon products. Historically, properties included on Alathon data sheets had been obtained using injection molded samples. The properties now reported come from tests using compression molded samples, per ASTM D 4976 and D 1928. The change in sample preparation affects the data for two primary reasons. First, the injection molding process causes orientation of the polyethylene molecules within the sample due to the shear introduced during injection. Second, the rapid cooling of parts within the mold produces parts with skin and core layers, caused by the different

crystallization rates of the polymer within the part. Compression molding does not orient the material because the process introduces no shear. In addition, the relatively slow cooling process in compression molding allows the crystallization of the polymer to continue for a longer time, resulting in larger and more uniform sized crystals within the part.

Tensile properties, flexural properties and impact properties are most affected by the change in sample preparation. The following table describes the trends that can be expected when compression molded samples are used instead of injection molded samples

Other changes to Alathon and Petrothene product data are a result of improved sampling and do not indicate changes to the products.

If you should have any questions regarding this subject, please call your Equistar sales or technical service representative.

PROPERTY	EFFECT OF COMPRESSION MOLDING ON DATA
<b>Tensile Strength @ Yield</b>	<b>Increase</b>
<b>Tensile Elongation @ Break</b>	<b>Increase</b>
<b>Tensile Elongation @ Yield</b>	<b>Decrease</b>
<b>Flexural Modulus</b>	<b>Increase</b>
<b>Izod Impact</b>	<b>Decrease</b>
<b>Tensile Impact</b>	<b>Increase</b>

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