

# Polymerization development and structure-properties relationship of High Density Polyethylene (HDPE) for the Pipe Applications.

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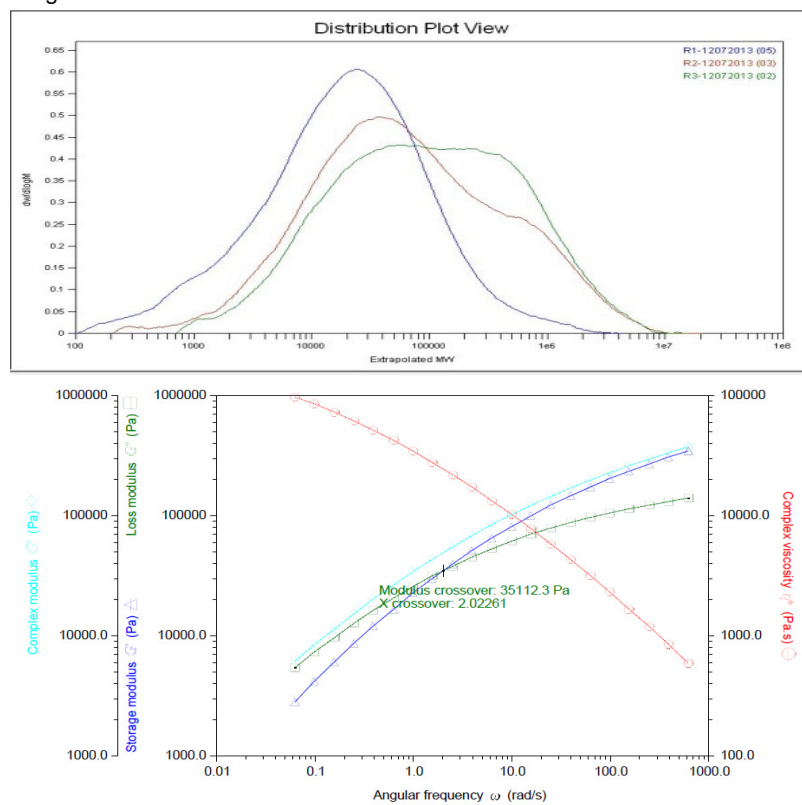
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Polyethylene is one of the most important commodity polymers produced worldwide. High Density Polyethylene (HDPE) is produced using one reactor system to multi-stage reactor system to modify the properties of the polymer based on its intended application [1].

High Density Polyethylene (HDPE) the polymer is growing in molecular weight and chain length to get the required characteristics especially to use in the pressure pipe application. Although multimodal HDPE resin derived from Hostalen Advanced Cascade Process (Hostalen ACP) technology have been long time produced and available on the market, there is very less articles reported related to this.

In this study we analysed three reactor products from the Hostalen ACP process for its number average molecular weight ( $M_n$ ), weight average molecular weight ( $M_w$ ) and molecular weight distribution (PDI), using high temperature gel permeation chromatography (GPC). These results showed the molecular weight and chain length in different stages of polymerization reaction.

To further understand the effect of this molecular weight and chain length, the rheological study of the reactor samples and subsequent resin samples produced were carried out and its results were correlated the molecular weight and rheological behaviour.



## References:

1. J. Qiao, M.Guo, L.Wang, D. Liu, X. Zhang, L.Yu, W.Song and Y.Liu, Polymer. Chem., 2, 1611 (2011)