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## Peroxide Modification of Linear Low-Density Polyethylene: A Comparison of Different Types Peroxides

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Organic peroxides have become increasingly important as initiators of free-radical degradation mechanisms in polyethylene (PE) in order to modify the polymer structure and properties. A commercial-grade LLDPE resin was crosslinked using two different types peroxides. The effect of two types peroxides (Trigonox 101 and Perkadox 14) on the molecular weight of a linear low density polyethylene (LLDPE) during a reactive extrusion process was studied. The experiments were arranged in a two level factorial design [1] in order to evaluate the temperature zones (X1), the effect of type peroxide (X2) and screw rpm (X3) on the crosslinking of LLDPE. The melt flow index (MFI) was used as a response variable. It is known that in crosslinking LLDPE with organic peroxides the extrusion process conditions must be controlled, since peroxide incorporation and the processing of the peroxide mixture should take place without premature crosslinking (scorching). Rheological properties were carried out in using a plate-parallel geometry. The results demonstrate that there was an increase of elasticity of the samples for the different types peroxides. This result can be an indication that there was an increasing chains irregularities in a polymer chain upon peroxide treatment and type peroxide [2].

### REFERENCES

- [1] Montgomery, D. C., *Design and Analysis of Experiments*, John Wiley & Sons, New York, (1984).
- [2] Bremner, T., Rudin, A., *Peroxide Modification of Linear Low-Density Polyethylene: A Comparison of Dialkyl Peroxides*, *J. Appl. Polym. Sci.* **49** (1993) 785.