

## Effect of Hydrostatic Stress on Yield Behavior of the High Density Polyethylene

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**Abstract :** The hydrostatic stress is, for polymers, a significant parameter which affects the yield behavior of these materials. In this work, we investigate the influence of this parameter on yield behavior of the high density polyethylene (hdpe). Some tests on specimens with diverse geometries are described in this paper. Uniaxial tests: tensile on notched round bar specimens with different curvature radii, compression on cylindrical specimens and simple shear on parallelepiped specimens were performed. Biaxial tests with various combinations of tensile/compressive and shear loading on butterfly specimens were also realized in order to determine the hydrostatic stress for different states of solicitation. The experimental results show that the yield stress is very affected by the hydrostatic stress developed in the material during solicitations.

**Keywords :** biaxial tests, hdpe, Hydrostatic stress, yield behavior

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