

POLYSORB®- a versatile monomer for improving thermoplastics and thermosetting properties

Isosorbide or 1,4-3,6 dianhydrohexitol, derived from starch and more precisely from sorbitol, is one of the chemical intermediates of interest in the field of thermoplastic materials and for curable resins application. It can be used directly as a monomer or after chemical modification.

Hence, isosorbide found its place as a monomer suitable for polycondensates synthesis¹ like polyesters, polycarbonates and thermoplastic polyurethanes. Concerning aliphatic² or semi-aromatic polyesters³, the addition of isosorbide increases glass transition temperature, opening to this new polymer several usual applications of amorphous polymers. The preparation of poly (ethylene-co-isosorbide) terephthalate with different ratios of isosorbide will be particularly detailed. The structure – properties relationship will permit a focus on the obtention of polyesters with semi-crystalline or amorphous structures. The influence of isosorbide on the polymerization, on the processing of the resulting polyester as well as the modification of the final properties will be enlightened.

The use of isosorbide as a precursor for epoxy derivatives has been studied as solution to obtain interesting thermosetting compositions with improved mechanical properties (UV resistance, high toughness). Some examples of the applications of these derivatives will be given.

References

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