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PREPARATION OF POLYSULFIDE RESIN BY PHASE TRANSFER CATALYZED: SYNTHESIS AND CHARACTERIZATION

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Polysulfide polymers are one of the important classes of polymers with good oil resistance, weather-ability, solvent resistance and excellent thermal stability. They are commercially derived from the reaction of dihalides and sodium polysulfides. Polysulfides are used in synthetic rubber compositions, epoxy resin modifiers, coatings, adhesives, sealants and many other products.

Sealants based on polysulfide liquid polymers are widely used in aircraft industry, construction, ship building, and gas main sealing. Polysulfide sealants will continue to grow in application, as performance demands increase. Thiol-terminated liquid polysulfide polymers are employed as the base polymers in the formulations of adhesives and sealants which are widely used in aerospace industry.

Despite this long history of commercial use, the detailed characterization of this important polymer because of difficulty of identifying has not been completely published in the open literature so far. We were required to pass the synthesis step of this resin at the beginning to perform the full characterization procedure. Here, we report the full description of our synthesized polysulfide resin using different methods including: ¹³C-NMR, ¹H-NMR, FT-IR, UV, CHNS, DSC, GPC, Refractive index and viscometry ways. All these analyses give a full perspective of this polymer characteristic.