

DEFENSIVE PUBLICATION

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AROMATIC POLYMERS

Ian Charles Taylor, Bengoe, England, assignor to Imperial Chemical Industries Limited, London, England

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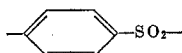
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No Drawing. 7 Pages Specification

Polyarylene sulphides are homogeneously oxidized to polyarylene sulphones according to the process disclosed, which is characterized by first dissolving the oxidant that is selected in a sulfuric acid medium, then adding the polyarylene sulphide to the oxidant-containing sulfuric acid medium. The oxidation reaction is conducted in solution and may be terminated, if desired, at any stage of reaction to produce a polymer which is homogeneously oxidized throughout to an intermediate oxidation stage between the polyarylene sulphide and the ultimate polyarylene sulphone. Partially oxidized polymers are conveniently fabricated into fibers without need of initial filtration.

Illustrative is the oxidation of poly(phenylene sulphide sulphone) where a 30 weight percent solution of hydrogen peroxide in water is added to concentrated sulfuric acid and the resulting solution is added to the poly(phenylene sulphide sulphone) at a temperature between about -30° and 100° C. The resulting polymer had repeating units of the formula:



Only partially oxidized polymers are prepared by using sufficient oxidant, such as hydrogen peroxide, to oxidize only a portion of the thioether linkages to sulphone linkages. Partially oxidized polymers thus formed where the number of $-SO_2-$ and $-S-$ linkages are about equal are soluble in concentrated sulfuric acid and may be wet spun into silky fibers.