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Polymerization of Perfluorobutadiene at Near-Ambient Conditions

Perfluorobutadiene may be homopolymerized to new linear perfluoropolyenes and vulcanizable fluoroelastomers through the use of a peroxide catalyst under mild conditions. The resulting poly-perfluorobutadiene is useful as a hard elastomer for seals and other applications where good chemical resistance is needed. The material can also serve as an intermediate in graft polymerizations and can be cross-linked to provide high molecular weight materials.

A peroxide catalyst is mixed with the monomer material to cause the desired polymerization. The catalyst and monomer are placed in a vacuum sealed flask, and the polymerization is permitted to proceed at autogenous pressure. The temperature can range from ambient to 393 K (120° C). One catalyst, di-tertbutyl peroxide, yields a low molecular weight material. Another peroxide, bis(trifluoromethyl)per-oxide, yields a higher molecular weight product and gives a much greater yield. Almost qualitative yields of up to 95% are obtainable using the latter catalyst and ultraviolet light.

Note:

Requests for further information may be directed to:

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Patent status:

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