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(54) Title: POLYMERS OF ISOPRENE FROM RENEWABLE RESOURCES

(57) Abstract: It has been found that certain cells in culture can convert carbon available in the cell culture medium into isoprene. These cells have a heterologous nucleic acid which is operably linked to a promoter and encodes an isoprene synthase polypeptide. The isoprene produced in such a cultured medium can then be recovered and polymerized into synthetic rubbers and other useful polymeric materials. The synthetic isoprene containing polymers of this invention offer the benefit of being verifiable as to being derived from non-petrochemical based resources. They can also be analytically distinguished from rubbers that come from natural sources. The present invention more specifically discloses a polyisoprene polymer which is comprised of repeat units that are derived from isoprene monomer, wherein the polyisoprene polymer has a $\delta^{13}\text{C}$ value of greater than -22‰. This type of polyisoprene can be a α -1 A- polyisoprene homopolymer rubber.



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