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(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,3,3,3-HEXAFLUOROPROPANE AND AT LEAST ONE OF 1,1,1,2,3,3-HEXAFLUOROPROPANE AND 1,1,1,2,3,3,3-HEPTAFLUOROPROPANE

(57) Abstract: A process is disclosed for the manufacture of 1,1,1,3,3,3-hexafluoropropane (HFC-236fa) and at least one 1,1,1,2,3,3-hexafluoropropane (HFC-236ea) and 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea). The process involves (a) reacting HF, Cl₂, and at least one halopropene of the formula CX₃CCl=CX₂ (where each X is independently F or Cl) to produce a product including both CF₃CCl₂CF₃ and CF₃CClFCClF₂; (b) reacting CF₃CCl₂CF₃ and CF₃CClFCClF₂ produced in (a) with hydrogen to produce a product comprising CF₃CH₂CF₃ and at least one compound selected from the group consisting of CHF₂CHF₂CF₃, and CF₃CHF₂CF₃; and (c) recovering from the product produced in (b), CF₃CH₂CF₃ and at least one compound selected from the group consisting of CHF₂CHF₂CF₃ and CF₃CHF₂CF₃. In (a), the CF₃CCl₂CF₃ and CF₃CClFCClF₂ are produced in the presence of a chlorofluorination catalyst including a ZnCr₂O₄/crystalline α-chromium oxide composition, a ZnCr₂O₄/crystalline α-chromium oxide composition which has been treated with a fluorinating agent, a zinc halide/α-chromium oxide composition and/or a zinc halide/α-chromium oxide composition which has been treated with a fluorinating agent.



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