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(54) Title: NON-COORDINATED ALKYLALUMINUM FREE CATION MODIFIED ALUMOXANES AND METHODS THERE-OF

(57) Abstract: The present disclosure relates to alumoxane compositions substantially or completely free of non-coordinated hydrocarbyl aluminum content, methods of forming such alumoxane compositions, catalyst systems having the alumoxane compositions, and methods of polymerizing olefins using catalyst systems having the alumoxane compositions. In some embodiments, a catalyst system includes at least one pre-catalyst compound. The catalyst system includes an unsupported or supported alumoxane. The alumoxane includes a monodentate siloxy ligand. In some embodiments, a method of making an alumoxane includes forming an ionic alkylalumoxane by reacting a supported or unsupported alkylalumoxane with a polydentate chelating agent to form a silane alkylaluminum complex. The method includes heating or aging the silane alkylaluminum complex to form a supported or unsupported alkylalumoxane comprising a monodentate ligand.



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