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(54) Title: SOLUTIONS AND CATALYSTS COMPRISING GROUP VI METAL, GROUP VIII METAL, AND PHOSPHORUS

(57) Abstract: This invention provides a process for forming a solution composition, which process comprises forming a primary solution by bringing together, in an aqueous medium, i) at least one phosphorus compound, ii) at least one Group VI metal compound, iii) at least one Group VIII metal compound, and iv) an additive which is a) tetraethylene glycol, b) polyethylene glycol having an average molecular weight in the range of about 200 to about 400, c) a mixture of tetraethylene glycol and polyethylene glycol having an average molecular weight in the range of about 200 to about 400, or d) a mixture of (1) tetraethylene glycol and/or polyethylene glycol having an average molecular weight in the range of about 200 to about 400 and (2) one or more of monoethylene glycol, diethylene glycol, and triethylene glycol. The molar ratio of additive to the total moles of Group VI metal and Group VIII metal is above 0.30:1, and the atomic ratio of phosphorus to Group VI metal is at least about 0.33:1. Optionally, the primary solution is heated at a temperature above about 40°C to form a heated solution. The heated solution is optionally cooled to form a cooled solution. Also provided are compositions formed by such processes, processes for forming catalyst compositions from these compositions, and catalyst compositions formed by these processes.



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