CLAIMS

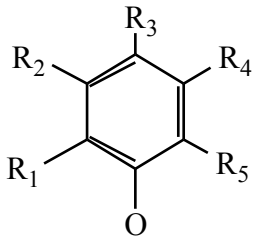
1. A composition comprising:

- at least one chromium compound;
- at least one aryloxy compound of an element M selected from the group formed by magnesium, calcium, strontium and barium, with general formula $[M(RO)_{2-n}X_n]_y$, in which RO is an aryloxy radical of a derivative ROH containing 6 to 80 carbon atoms, X is a halogen or a hydrocarbyl radical containing 1 to 30 carbon atoms, n is a whole number which may take the integer values 0 or 1 and y is a whole number in the range 1 to 10;
- at least one additive selected from ether compounds, in which the additive is selected from diethyl ether, dibutyl ether, diisopropylether, 2-methoxy-2-methylpropane, 2-methoxy-2-methylbutane, 2,5-dihydrofuran, tetrahydrofuran, 2-methoxytetrahydrofuran, 2-methyltetrahydrofuran, 3-methyltetrahydrofuran, 2,3-dihydropyran, tetrahydropyran, 1,3-dioxolane, 1,3-dioxane, 1,4-dioxane, dimethoxyethane, di(2-methoxyethyl)ether and benzofuran, used alone or as a mixture, and

wherein the molar ratio between the additive and the element M is in the range of 1 to 60.

2. The composition according to claim 1, in which the molar ratio between the element M and the chromium compound is in the range 1:1 to 30:1.

3. The composition according to one of the preceding claims, in which in the derivative ROH, the aryloxy radical RO has the general formula:



in which R_1, R_2, R_3, R_4 and R_5, which may be identical or different, represent a hydrogen, a halogen or a hydrocarbyl radical containing 1 to 16 carbon atoms.

4. The composition according to claim 3, in which the aryloxy radical RO is 2,6-diphenylphenoxy, 2-tert-butyl-6-phenylphenoxy or 2,4-di-tert-butyl-6-phenylphenoxy.

5. The composition according to one of the preceding claims, in solution in a solvent constituted by a saturated, unsaturated, olefinic or diolefinic or aromatic hydrocarbon.

6. The composition according to one of the preceding claims, further comprising at least one aluminium compound selected from the group formed by tris(hydrocarbyl)aluminium and chlorine- or bromine-containing hydrocarbylaluminium compounds having general formula AlR'_mY_{3-m} in which R' is a hydrocarbyl radical containing 1 to 6 carbon atoms, Y is a chlorine or bromine atom and m is a number from 1 to 3, and aluminoxanes, used alone or as a mixture.

7. A composition according to claim 6, in which the chlorine- or bromine-containing hydrocarbylaluminium compound is selected from dichloroethylaluminium, ethylaluminium sesquichloride, chlorodiethylaluminium, chlorodiisobutylaluminium and the tris(hydrocarbyl)aluminium compound is selected from triethylaluminium, tripropylaluminium and triisobutylaluminium and the aluminoxane is methylaluminoxane.

8. The composition according to one of the preceding claims, in which the chromium compound is present with a molar ratio between the aluminium compound and the chromium compound in the range 1:1 to 35:1.

9. A kit comprising:

a) at least one chromium compound and

b) an intermediate composition comprising:

- at least one aryloxy compound of an element M selected from the group consisting of magnesium, calcium, strontium and barium, with general formula $[M(RO)_{2-n}X_n]_y$, in which RO is an aryloxy radical of a derivative ROH containing 6 to 80 carbon atoms, X

is a halogen or a hydrocarbyl radical containing 1 to 30 carbon atoms, n is a whole number which may take the integer values 0 or 1 and y is a whole number in the range 1 to 10;

- at least one additive selected from ether compounds, wherein the additive is selected from diethyl ether, dibutyl ether, diisopropylether, 2-methoxy-2-methylpropane, 2-methoxy-2-methylbutane, 2,5-dihydrofuran, tetrahydrofuran, 2-methoxytetrahydrofuran, 2-methyltetrahydrofuran, 3-methyltetrahydrofuran, 2,3-dihydropyran, tetrahydropyran, 1,3-dioxolane, 1,3-dioxane, 1,4-dioxane, dimethoxyethane, di(2-methoxyethyl)ether and benzofuran, used alone or as a mixture thereof, and

wherein the molar ratio between the additive and the element M is in the range of 1 to 60.

10. A process for the preparation of a kit according to claim 9, comprising

a) mixing:

- at least one compound MX_2 of an element M selected from the consisting of by magnesium, calcium, strontium and barium, X being a halogen or a hydrocarbyl radical containing 1 to 30 carbon atoms;
- at least one derivative ROH in which RO is an aryloxy radical of a derivative ROH containing 6 to 80 carbon atoms;
- and at least one additive selected from ether type compounds, which may or may not be cyclic, introduced in a near-stoichiometric quantity with respect to the element M, to form an intermediate composition, and

b) pairing said intermediate composition with at least one chromium compound.

11. A process for preparing the composition according to one of claims 1 to 8, comprising mixing:

- at least one chromium compound;

- at least one compound MX_2 of an element M selected from the group formed by magnesium, calcium, strontium and barium, X being a halogen or a hydrocarbyl radical containing 1 to 30 carbon atoms;
- at least one derivative ROH in which RO is an aryloxy radical of a derivative ROH containing 6 to 80 carbon atoms;
- at least one additive selected from ether compounds,
- wherein the additive is selected from diethyl ether, dibutyl ether, diisopropylether, 2-methoxy-2-methylpropane, 2-methoxy-2-methylbutane, 2,5-dihydrofuran, tetrahydrofuran, 2-methoxytetrahydrofuran, 2-methyltetrahydrofuran, 3-methyltetrahydrofuran, 2,3-dihydropyran, tetrahydropyran, 1,3-dioxolane, 1,3-dioxane, 1,4-dioxane, dimethoxyethane, di(2-methoxyethyl)ether and benzofuran, used alone or as a mixture thereof, and wherein the molar ratio between the additive and the element M is in the range of 1 to 60;
- optionally, at least one aluminium compound selected from the group formed by tris(hydrocarbyl)aluminium compounds and chlorine- or bromine-containing hydrocarbylaluminium compounds with general formula AlR'_mY_{3-m}, in which R' is a hydrocarbyl radical containing 1 to 6 carbon atoms, Y is a chlorine or bromine atom and m is a number from 1 to 3, and aluminoxanes, used alone or as a mixture;
- optionally, at least one solvent.

12. Use of the composition according to one of claims 1 to 8 in an ethylene trimerization process.

13. An ethylene trimerization process carried out discontinuously in accordance with the following steps:

- introducing the constituents of the composition according to one of claims 1 to 5 into a reactor;
- introducing ethylene at the desired pressure;

- adjusting the temperature to the desired value;
- and adding at least one aluminium compound selected from the group formed by tris(hydrocarbyl)aluminium compounds and chlorine- or bromine-containing hydrocarbylaluminium compounds with general formula AlR'_mY_{3-m}, in which R' is a hydrocarbyl radical containing 1 to 6 carbon atoms, Y is a chlorine or bromine atom and m is a number from 1 to 3, and aluminoxanes, used alone or as a mixture.

14. An ethylene trimerization process carried out continuously by simultaneously and separately injecting the constituents of the composition according to one of claims 6 to 8and ethylene into a reactor, the whole system being maintained at the desired temperature and pressure.

15. The process according to claim 13 or claim 14, in which the ethylene trimerization reaction is carried out at a total pressure of 0.5 to 15 MPa and at a temperature of 20°C to 180°C.