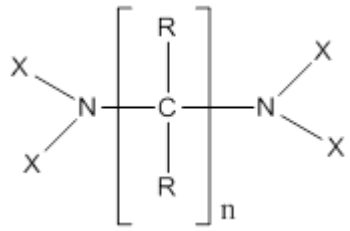
What is claimed is:

1. A process for preparing a procatalyst composition comprising the steps of

(a) reacting a hydrocarbon-soluble organomagnesium compound or complex thereof in a hydrocarbon solvent with an active non-metallic or metallic halide to form a magnesium halide support;

(b) contacting the magnesium halide support and a compound containing titanium to form a supported titanium procatalyst; and

(c) contacting the supported titanium procatalyst with an electron donor modifier having the formula (II):



(II),

wherein:

n is from 3 to 12;

R is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms; and

X is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms.

2. A solution process for polymerization of ethylene and at least one additional polymerizable monomer to form a polymer composition, the process comprising:

contacting ethylene and the additional polymerizable monomer with a catalyst composition under polymerization conditions;

wherein the catalyst composition comprises a procatalyst composition and an alkyl-aluminum cocatalyst;

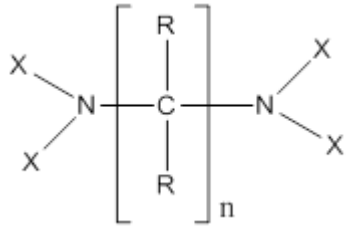
wherein the additional polymerizable monomer is a C_{3-20} α-olefin; and

wherein the procatalyst composition is prepared according to a process comprising the steps of:

(a) reacting a hydrocarbon-soluble organomagnesium compound or complex thereof in a hydrocarbon solvent with an active non-metallic or metallic halide to form a magnesium halide support;

(b) contacting the magnesium halide support and a compound containing titanium to form a supported titanium procatalyst; and

(c) contacting the supported titanium procatalyst with an electron donor modifier having the formula (II):



(II),

wherein:

n is from 3 to 12;

R is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms; and

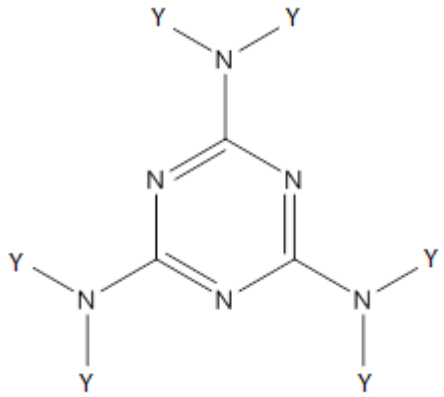
X is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms.

3. A process for preparing a procatalyst composition comprising the steps of:

(a) reacting a hydrocarbon-soluble organomagnesium compound or complex thereof in a hydrocarbon solvent with an active non-metallic or metallic halide to form a magnesium halide support;

(b) contacting the magnesium halide support and a compound containing titanium to form a supported titanium procatalyst; and

(c) contacting the supported titanium procatalyst with an electron donor modifier having the formula (III):



(III)

wherein:

Y is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms.

4. A solution process for polymerization of ethylene and at least one additional polymerizable monomer to form a polymer composition, the process comprising:

contacting ethylene and the additional polymerizable monomer with a catalyst composition under polymerization conditions;

wherein the catalyst composition comprises a procatalyst composition and an alkyl-aluminum cocatalyst;

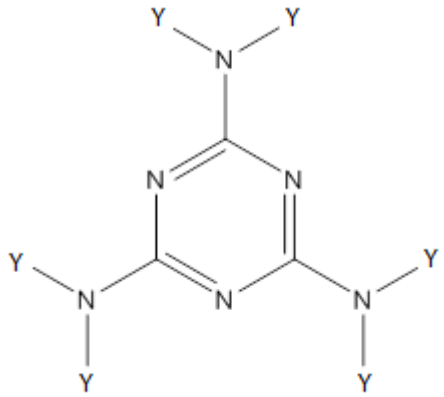
wherein the additional polymerizable monomer is a C_{3-20} α-olefin; and

wherein the procatalyst composition is prepared according to a process comprising the steps of:

(a) reacting a hydrocarbon-soluble organomagnesium compound or complex thereof in a hydrocarbon solvent with an active non-metallic or metallic halide to form a magnesium halide support;

(b) contacting the magnesium halide support and a compound containing titanium to form a supported titanium procatalyst; and

(c) contacting the supported titanium procatalyst with an electron donor modifier having the formula (III):



(III)

wherein:

Y is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms.

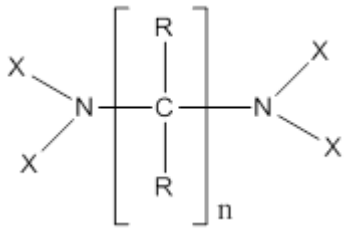
5. A process for preparing a procatalyst composition comprising the steps of:

(a) reacting a hydrocarbon-soluble organomagnesium compound or complex thereof in a hydrocarbon solvent with an active non-metallic or metallic halide to form a magnesium halide support;

(b) contacting the magnesium halide support and a compound containing titanium to form a supported titanium procatalyst; and

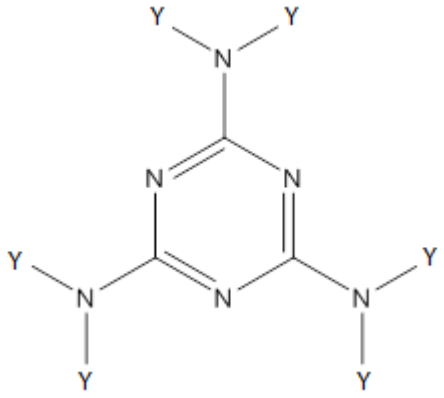
(c) contacting the supported titanium procatalyst with an electron donor modifier, wherein the electron donor modifier is an oligomeric or polymeric compound comprising more than one unit of at least one of the following:

(a) a compound having the formula (II):



(II),

(b) a compound having the formula (III):



(III),

or

(c) a compound having a substituted or unsubstituted piperidyl group, wherein

n is from 3 to 12;

R is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms;

X is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms; and

Y is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms.

6. A solution process for polymerization of ethylene and at least one additional polymerizable monomer to form a polymer composition, the process comprising:

contacting ethylene and the additional polymerizable monomer with a catalyst composition under polymerization conditions;

wherein the catalyst composition comprises a procatalyst composition and an alkyl-aluminum cocatalyst;

wherein the additional polymerizable monomer is a C_{3-20} α-olefin; and

wherein the procatalyst composition is prepared according to a process comprising the steps of:

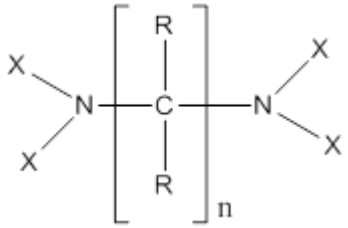
(a) reacting a hydrocarbon-soluble organomagnesium compound or complex thereof in a hydrocarbon solvent with an active non-metallic or metallic halide to form a magnesium halide support;

(b) contacting the magnesium halide support and a compound containing titanium to form a supported titanium procatalyst; and

(c) contacting the supported titanium procatalyst with an electron donor modifier,

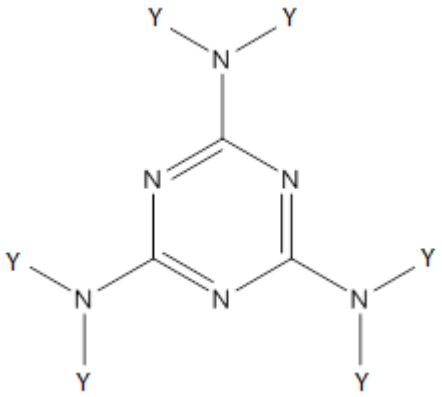
wherein the electron donor modifier is an oligomeric or polymeric compound comprising more than one unit of at least one of the following:

(a) a compound having the formula (II):



(II),

(b) a compound having the formula (III):



(III), or

(c) a compound having a substituted or unsubstituted piperidyl group, wherein

n is from 3 to 12;

R is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms;

X is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms; and

Y is hydrogen or a C_1-C_{20} hydrocarbyl that is optionally substituted with one or more heteroatoms.