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(54) Title: PROCESS FOR PREPARING DIHYDROCARBYLAMINO METAL COMPOUNDS

(57) Abstract: This invention provides a process of preparing dihydrocarbylamido metal compounds. This process comprises bringing together, in a liquid reaction medium, at least one metal halide, MX₄, where M is titanium, zirconium, or hafnium, and X is a halogen atom, with at least one dihydrocarbylamine, such that a mixture of (I) halometal amides in which the atom ratio of halogen to metal is greater than 0.1 and less than 2, and (ii) dihydrocarbylamine hydrohalide is produced. Then (I) and (ii) are separated from each other, and (I) is brought together with an alkali metal amide, ANR₂, where A is an alkali metal, and R is a hydrocarbyl group, in a liquid medium, to produce a product comprised of substantially halogen-free dihydrocarbylamido metal compound. This invention further provides for purifying dihydrocarbylamido metal compounds by contact with a nitrile.

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INTERNATIONAL SEARCH REPORT

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PCT/US 03/23840

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C07F7/00 C07F7/28 C23C16/18 C08F4/64		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC 7 C07F C23C C08F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BRADLEY D C ET AL: "Metallo-organic compounds containing metal-nitrogen bonds. Part I. Some dialkylamino-derivatives of titanium and zirconium" JOURNAL OF THE CHEMICAL SOCIETY, 1960, pages 3857-3861, XP009025082 ISSN: 0368-1769 cited in the application the whole document ---	25, 29-31, 34-38, 41-43
X	BRADLEY D C ET AL: "Dialkylamido-derivatives of titanium, zirconium, and tantalum" PROCEEDINGS OF THE CHEMICAL SOCIETY, August 1959 (1959-08), pages 225-226, XP009025083 cited in the application the whole document ---	25, 29-31, 34-38, 41-43
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents:		
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed		*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report	
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Elliott, A	

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>COWDELL R T ET AL: "Amine compounds of the transition metals. Part VI. The reaction of titanium(IV) chloride with some aliphatic amines" JOURNAL OF THE CHEMICAL SOCIETY, 1960, pages 2522-2526, XP009025079 ISSN: 0368-1769 cited in the application abstract</p>	1-54
A	<p>STEINBORN D ET AL: "An efficient synthesis of titanium and zirconium tetrakis(diethylamide)" SYNTHESIS, no. 4, 1989, page 304 XP001179306 ISSN: 0039-7881 cited in the application the whole document</p>	1-54
X	<p>REETZ M T ET AL: "An economical large-scale synthesis of titanium tetrakis'diethylamide! and chlorotitanium tris'diethylamide!" SYNTHESIS, no. 7, 1983, page 540 XP001179307 ISSN: 0039-7881 cited in the application the whole document</p>	25, 29-31, 34-38, 41-43
A	<p>US 3 370 041 A (ELI PERRY ET AL) 20 February 1968 (1968-02-20) cited in the application examples 1-4</p>	1-54
A	<p>ANTLER M ET AL: "Donor-acceptor bonding. VI. The reactions of trimethylamine, dimethylamine, monomethylamine and ammonia with titanium tetrachloride and of trimethylamine with titanium trichloride" JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, vol. 77, 20 October 1955 (1955-10-20), pages 5250-5253, XP002276101 ISSN: 0002-7863 the whole document</p>	1-54

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3370041	A	NONE	