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(54) Title: CATALYST MODIFIERS AND THEIR USE	IN TH	E POLYMERIZATION OF OLEFIN(S)

### (57) Abstract

The present invention relates to the use of at least one acid and at least one base and/or at least one reductant and at least one oxidant that when used with a polymerization catalyst in a polymerization process results in the controllable generation of a catalyst inhibitor that renders the polymerization catalyst substantially or completely inactive.

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## INTERNATIONAL SEARCH REPORT

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Category °	Citation of document, with indication,	where appropriate, of the r	elevant passages		Relevant to claim No.
X	EP 0 829 491 A (MI 18 March 1998 (199 column 10, line 20	8-03-18)			1-55
X	EP 0 630 910 A (UN PLASTIC) 28 Decemb page 2, line 45 -p 1-10	er 1994 (1994-	12-28)		1-55
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Furti	ner documents are listed in the continua	tion of box C.	X Patent family	members are listed	in annex.
"A" docume consid "E" earlier of filling d "L" docume which citation "O" docume other r	nt which may throw doubts on priority of is cited to establish the publication date on or other special reason (as specified) ant referring to an oral disclosure, use, e	aternational aim(s) or of another xhibition or	cited to understand invention  "X" document of particular cannot be consided involve an invention document of particular cannot be consided document is comb	I not in conflict with d the principle or the lar relevance; the cannot e step when the do alar relevance; the cannot e red to involve an in ined with one or main ination being obvious	the application but early underlying the claimed invention to considered to coument is taken alone claimed invention ventive step when the pre other such docuus to a person skilled
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# INTERNATIONAL SEARCH REPORT

information on patent family members

Inter anal Application No
PCT/US 99/28212

Patent document cited in search report	rt	Publication date	Patent family member(s)		Publication date	
EP 082 <b>949</b> 1	A	18-03-1998	JP CA CN SG US	10139802 A 2215269 A 1176257 A 65016 A 6013741 A	26-05-1998 12-03-1998 18-03-1998 16-11-1999 11-01-2000	
EP 0630910	A	28-12-1994	AU BR CA JP	6596694 A 9402553 A 2126796 A 7025925 A	05-01-1995 28-03-1995 29-12-1994 27-01-1995	