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(54) Title: PAINT FORMULATION FOR A LOW SURFACE ENERGY SUBSTRATE

(57) Abstract: The present invention relates to a curable paint formulation and a curing paint formulation prepared therefrom. The curable formulation comprises a curable acrylic-based paint and a trialkylborane-organonitrogen complex. Curing of this formulation can be initiated by contact with a borane-displacing. The curing paint formulation, when applied to a low surface energy substrate such as isotactic polypropylene, is capable of forming an adherent cured coating with little or no cross-hatch failure. Moreover, the application of the curing paint formulation onto the substrate can be carried out at room temperature and without the aid of substrate surface pretreatment or a tie layer.

INTERNATIONAL SEARCH REPORT

In pational Application No

A. CLASSI IPC 7	FICATION OF SUBJECT MATTER C09D133/06 C09D4/00 C09D7/12	C08J7/04					
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Electronic d	ata base consulted during the international search (name of data bas	se and, where practical, search terms used					
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C. DOCUMENTS CONSIDERED TO BE RELEVANT							
Category °	Citation of document, with indication, where appropriate, of the rele	evant passages	Relevant to claim No.				
Α	GB 1 018 991 A (MINNESOTA MINING	AND	1-5				
	MANUFACTURING COMPANY)						
	2 February 1966 (1966-02-02) claims 1-8						
Α	PATENT ABSTRACTS OF JAPAN		1				
	vol. 2000, no. 08,						
	6 October 2000 (2000-10-06) & JP 2000 143673 A (HOKKO CHEM IN	ID CO					
	LTD), 26 May 2000 (2000-05-26)						
	abstract						
			1 04				
Α	US 5 684 102 A (POCIUS ET AL) 4 November 1997 (1997-11-04)		1-24				
	claims 1-34						
Further documents are listed in the continuation of box C. Patent family members are listed in annex.							
i i		"T" later document published after the inte- or priority date and not in conflict with					
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INTERNATIONAL SEARCH REPORT

Information on patent family members

PCT/US2004/017988

	Patent document cited in search report			Patent family member(s)	Publication date
GB 1018991	A	02-02-1966	US DE SE	3238186 A 1162085 B 329501 B	01-03-1966 30-01-1964 12-10-1970
JP 200014367	73 A	26-05-2000	NONE		
US 5684102	A	04-11-1997	US AU BR CA CN DE DE JP WO US	5616796 A 5183296 A 9604934 A 2216471 A1 1181085 A ,C 1259430 A ,C 69607952 D1 69607952 T2 0820458 A1 11503729 T 9632397 A1 5795657 A	01-04-1997 30-10-1996 09-06-1998 17-10-1996 06-05-1998 12-07-2000 31-05-2000 07-12-2000 28-01-1998 30-03-1999 17-10-1996 18-08-1998