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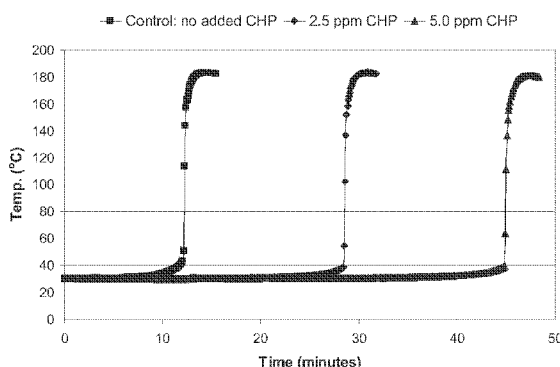
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[Continued on next page]

(54) **Title:** ADHESION PROMOTERS AND GEL-MODIFIERS FOR OLEFIN METATHESIS COMPOSITIONS

FIG. 1 Effect of Cumyl Hydroperoxide (CHP) on Exotherm Time



(57) **Abstract:** This invention relates to compositions and methods for improving the adhesion of resin compositions to substrate materials, pre-treating substrate materials to improve the adhesion of resin compositions to the substrate materials, and/or controlling gel formation of resin compositions. More particularly, the invention relates to compositions and methods for improving the adhesion of ring opening metathesis polymerization (ROMP) compositions to substrate materials using adhesion promoters containing isocyanate groups in a resin composition. The invention also relates to methods for improving the adhesion of resin compositions to substrate materials by pre-treating substrate materials with adhesion promoters containing isocyanate groups. The invention further relates to a method of providing a gel-modified ROMP composition, in which a hydroperoxide is added to a ROMP polymerizable resin composition in order to control gel formation of the polymerizing resin. An improved ROMP composition is further disclosed, comprising a cyclic olefin, a ROMP metathesis catalyst, an adhesion promoter, and an added hydroperoxide gel modifier. The polymer products produced via ROMP reactions of the invention may be utilized for a wide range of materials and composite applications. The invention has utility in the fields of catalysis, organic synthesis, and polymer and materials chemistry and manufacture.





TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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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)

C08L 45/00; B05D 5/12; C08J 5/04; C08F 4/80; C08F 2/00; B32B 31/20; C08F 36/00; C08J 9/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: cyclic olefin, metathesis, adhesion promoter, gel modifier, peroxide, radical, isocyanate

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007-0037946 A1 (TOMOO SUGAWARA) 15 February 2007	1-83
Y	See columns 1 to 13 and claims 1 to 10	1-83
Y	US 2010-0144924 A1 (YOSHIWARA AKIHIKO et al.) 10 June 2010 See paragraphes [0018] - [0035]	2, 18, 19, 21-27, 38
Y	US 2002-0166629 A1 (KENNETH C. CASTER et al.) 14 November 2002 See paragraph [0154] and claims 1 -25	4-9, 19, 21-26
Y	US 06107420 A (GRUBBS; ROBERT H. et al.) 22 August 2000 See column 5	1-83
Y	US 6310121 B1 (WOODSON, JR; CHARLES S. et al.) 30 October 2001 See claim 16	1-83

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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