

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 June 2003 (26.06.2003)

PCT

(10) International Publication Number
WO 03/051816 A1

(51) International Patent Classification⁷: C07C 69/732,
67/02, C08K 5/134, C09K 15/08

(74) Agent: REITENBACH, Daniel; Uniroyal Chemical
Company, Inc., 199 Benson Road, Middlebury, CT 06749
(US).

(21) International Application Number: PCT/US02/36337

(22) International Filing Date:
13 November 2002 (13.11.2002)

(81) Designated States (*national*): AU, BR, CA, CN, JP, MX,
SG.

(25) Filing Language: English

(84) Designated States (*regional*): European patent (AT, BE,
BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT,
LU, MC, NL, PT, SE, SK, TR).

(26) Publication Language: English

Published:

— with international search report

(30) Priority Data:
10/014,913 14 December 2001 (14.12.2001) US

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(71) Applicant: UNIROYAL CHEMICAL COMPANY,
INC. [US/US]; 199 Benson Road, Middlebury, CT 06749
(US).

(72) Inventors: BARANSKI, John, R.; 42 Lowery Drive,
Southington, CT 06489 (US). ROWLAND, Robert, G.;
10 N. Main Street, SH-401, Beacon Falls, CT 06403 (US).

(54) Title: METHOD OF PREPARING HYDROXYALKYL HINDERED PHENOLIC ANTIOXIDANTS

(57) Abstract: A method of preparing hindered phenolic antioxidants for lubrication oils or other organic media having reduced residual tin or titanium levels is disclosed herein. A low amount of a tin or titanium catalyst is used resulting in low residual metal levels. The method provides for deactivation of the metal transesterification catalyst with an oxidizing agent, a reducing agent or clay treatment. Treatment with clay, preferably acid treated clay, and more preferably acid treated bentonite clay, after deactivation with the oxidizing agent or reducing agent can further reduce residual tin levels to less than 10 ppm. By deactivating the metal catalyst prior to isolating the antioxidant from the reaction mixture, further reaction at the terminal diol of the reaction product is prevented. The final product mixture may be used without further purification and has improved solubility in lubrication oils and other organic media.



WO 03/051816 A1