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(54) **EASILY SYNTHESIZABLE, SPONTANEOUSLY WATER-SOLUBLE, ESSENTIALLY VOC-FREE, ENVIRONMENTALLY FRIENDLY (METH)ACRYLAMIDO-FUNCTIONAL SILOXANOL SYSTEMS, PROCESS FOR PREPARATION THEREOF AND USE**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,900,679	A *	8/1975	Marzocchi	428/378
4,762,759	A	8/1988	Vermeulen et al.	
4,927,951	A	5/1990	Kabeta et al.	
5,008,349	A	4/1991	Kosal et al.	
5,372,841	A	12/1994	Kleyer et al.	
5,885,341	A	3/1999	Standke et al.	
6,204,403	B1	3/2001	Pepe et al.	
6,641,870	B2	11/2003	Bartkowiak et al.	
6,767,982	B2	7/2004	Standke et al.	
7,834,073	B2	11/2010	Standke et al.	
8,039,110	B2	10/2011	Jenkner et al.	
8,101,682	B2	1/2012	Standke	
8,188,266	B2	5/2012	Edelmann et al.	
8,298,679	B2	10/2012	Albert et al.	
8,394,972	B2	3/2013	Wassmer et al.	
8,481,165	B2	7/2013	Edelmann et al.	
8,728,225	B2	5/2014	Standke et al.	
8,747,541	B2	6/2014	Scharfe et al.	
8,864,895	B2	10/2014	Albert et al.	
2006/0247329	A1	11/2006	Moszner et al.	
2008/0206572	A1	8/2008	Edelmann et al.	
2009/0005518	A1	1/2009	Just et al.	
2009/0007818	A1	1/2009	Militz et al.	
2012/0321803	A1	12/2012	Borup et al.	
2013/0167754	A1	7/2013	Wassmer et al.	

FOREIGN PATENT DOCUMENTS

CN	101798464	8/2010
EP	0 222 045	5/1987
EP	0 425 121	5/1991
EP	0 621 607	10/1994
EP	2 277 496	1/2011
JP	02-149587	6/1990
JP	07-157490	6/1995
JP	2003-501435	1/2003
WO	2010/121873	10/2010
WO	2011/116206	9/2011
WO	WO 2013/15618 A1	10/2013

OTHER PUBLICATIONS

International Search Report Issued Jun. 10, 2013 in PCT/EP13/053651 Filed Feb. 25, 2013.
Thavornyutikarn, B., et al. "Synthesis and Characterization of UV-Curable Poly(dimethylsiloxane) Dimethacrylate", Macromolecular Symposia, vol. 264, No. 1, pp. 144-148, XP0055064752, 2008.
U.S. Appl. No. 14/395,598, filed Oct. 20, 2014, Wassmer, et al.
U.S. Appl. No. 14/395,735, filed Oct. 20, 2014, Wassmer, et al.

* cited by examiner

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(57) **ABSTRACT**

The invention relates to a composition and to a process for producing the composition comprising essentially water-soluble (meth)acrylamido-functional siloxanols, and to the use thereof.

11 Claims, No Drawings