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08.02.95 Bulletin 95/0674 Representative: **Collier, Jeremy Austin Grey
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London WC1R 5LX (GB)**54 **Process for preparing overbased phenates.**

57 Overbased sulfurized alkaline earth metal alkylphenate having excellent water tolerance properties in lubricant formulations is prepared by charging into a reactor a preheated (280-380 °F) mixture of alkaline earth metal base and alkylphenol (preferably in oil), while simultaneously, but separately, charging a promoter solvent such as a glycol. Then a controlled amount of molten sulfur is charged at a rate that controls the reaction exotherm and off-gas evolution, while maintaining the 280-380 °F temperature. Upon completing the sulfur charge, the reactor contents are allowed to interact at 280-380 °F long enough to form the sulfurized alkylphenate. While keeping the temperature at 280-380 °F, the sulfurized alkylphenate is overbased by charging the reactor simultaneously with controlled amounts of alkaline earth metal base, promoter solvent, and carbon dioxide gas, at a controlled charge rate not much greater or less than the rate at which the reactants undergo reaction to form the overbased phenate. Upon completing the charging of the alkaline earth metal base and promoter solvent, the carbon dioxide charge is continued until completion of the carbonation reaction. Unreacted alkylphenol

and promoter solvent are stripped off under vacuum with inert gas purge at 400-480 °F, and the resultant reaction product is filtered and the filtered product recovered. The reaction cycle time is no more than about 6 hours, and the filtered product has water tolerance properties normally associated with a batch preparation of the same product requiring a reaction cycle time of at least 8 hours.

EP 0 601 721 A3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	GB-A-1 280 749 (MARUZEN OIL) * page 3, line 89 - page 4, line 87 * * page 4, line 105 - page 5, line 9 * ---	1-6,9-14	C10M159/22 C07G17/00 //C10N10/04, C10N70/00
D,Y	BE-A-876 119 (STANDARD OIL CO.) * page 4, paragraph 4 - page 5, paragraph 1 * * page 6, paragraph 2 - page 7, paragraph 1 * * page 8, paragraph 3 - page 11, paragraph 1; figures 1,2; example 1 * ---	1-14	
Y	WO-A-90 13619 (AMOCO CORP.) * page 14-15; claims 1-18; example 1 * ---	1-14	
A	EP-A-0 404 178 (COSMO OIL CO.) * the whole document * -----	1-14	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		14 December 1994	Rotsaert, L
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			