

EUROPEAN PATENT APPLICATION

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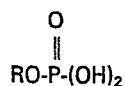
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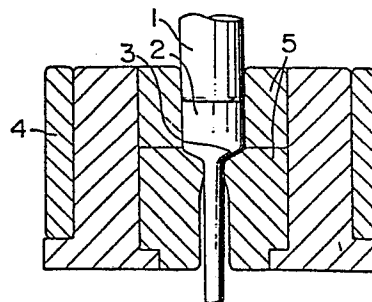
Lubricant for metal forming and process for metal forming.

A substantially water-free, liquid lubricant for metal forming, which comprises (a) a lubricating oil, and (b) at least one phosphoric acid monoester from the group represented by the general formula:



wherein R is alkyl, alkylalkenyl or aryl, and optionally (c) at least one member of the group including fatty acids, fatty acid amides and metal soaps, can form a lubricating film with a good heat resistance and good lubricating properties by virtue of the heat generated by deformation and friction during the forming only by wetting the surface of a metallic workpiece (2) or a die (5) with the liquid lubricant, and can work effectively for prevention of galling. Parts or articles with a higher reduction of area and complicated shape can be readily formed. Furthermore, a film having a lubricating effect equivalent to that of the conventional phosphate coating film can be simply obtained with a great contribution to product cost reduction.

FIG. 2





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.4)
X	GB-A- 965 445 (SHELL) * Claims 1,3-5,12-19; page 2, lines 40-60,75-95; page 3, lines 41-63 *	1-4	C 10 M 137/04 C 10 M 141/10 B 21 C 23/32 // C 10 N 40/24 (C 10 M 141/10 C 10 M 129:28 C 10 M 133:16 C 10 M 137:04)
A			
X	FR-A-2 289 601 (EXXON) * Claims 1,4,7-12; page 2, line 32 - page 3, line 11; page 3, lines 29-33; page 4, line 11 - page 5, line 22; page 8, lines 5-33 *	1-3,5,7,10	
A		4,6,8,9,11,12	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
X	US-A-2 391 631 (KINGERLEY) * Claim 1; column 1, lines 18-20; page 2, column 1, lines 11,52-54 *	1,2,5	C 10 M
A		4,6,9,10	
X	US-A-2 285 853 (BAXTER et al.) * Claims 1,2; page 3, column 2, lines 4,49-58 *	1-3,7	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 13-06-1986	Examiner DE LA MORINERIE B.M.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	---	4, 9, 10	
X	DE-A-2 145 296 (GAF CORP.) * Claims 1,4,6,7; page 6, lines 1-19 *	1, 2, 4, 7	
A	---	3, 5, 6, 9, 10	
E	EP-A-0 158 306 (HOECHST) * Claims 1,3,5; page 3, line 17 - page 4, line 5 *	1, 2, 4	
E	EP-A-0 135 932 (HITACHI) * Claims 1,2,5-7,10-16,18,20,22-28; page 13, lines 3-15 *	1-11	
A	-----	12	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
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