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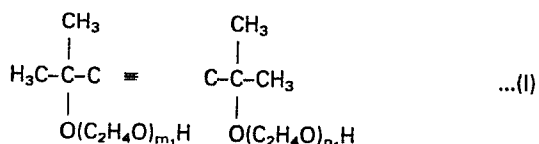
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(54) Chemical copper plating solution.

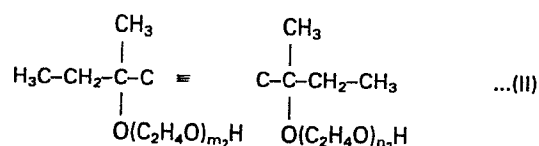
(57) There is disclosed a chemical copper plating solution containing a copper salt, a complexing agent, a reducing agent and a pH adjustor which further comprises at least one of the following Groups (A) and (B):

Group (A);

at least one non-ionic surface active agent selected from the group consisting of a non-ionic surface active agent having the formula:



(wherein m_1 and n_1 each represent an integer of 1 or more) and a non-ionic surface active agent having the formula:



(wherein m_2 and n_2 each represent an integer of 1 or more), and at least one compound selected from the group consisting of 1,10-phenanthroline, a 1,10-phenanthroline derivative, 2,2'-dipyridyl, 2,2'-biquinoline and a water-soluble cyan compound;

Group (B);

an organic sulfur compound and an ethyleneamine compound.



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	EP-A-0 039 757 (TOKYO SHIBAURA DENKI K.K.) * Claims 1-4; page 8, table; page 5, line 34 - page 6, line 6 *	1,2,4-7,10,11	C 23 C 18/40
X	FR-A-2 436 192 (KOLLMORGEN TECHNOLOGIES CORP.) * Claims 5,6,14,15; page 7, line 18 - page 8, line 16; example 2 *	1,13	
A	US-A-3 661 597 (M. GULLA) * Whole document *	1	
A	US-A-3 377 174 (E. TORIGAI et al.) * Claims 1,9 *	1	TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
A	EP-A-0 107 087 (HITACHI CHEMICAL CO. LTD) * Claim 1 *	1	C 23 C
A	US-A-3 959 531 (F.W. SCHNEBLE Jr. et al.) * Examples 1-8; column 8, line 64 - column 9, line 33 *	1,13	
A	US-A-3 902 907 (K. KISHITA) * Column 2, line 52 - column 3, line 62 *	1,13	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 30-10-1987	Examiner DE ANNA
<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>			



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

- 1) Claims 1A, 2, 4-7, 10, 11: The additive consists of a combination of an acetylenic surface active agent and phenanthroline etc.
- 2) Claims 1B, 3, 8, 9, 12-16: The additive consists of a combination of an organic sulfur compound and an ethylene amine

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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EUROPEAN SEARCH REPORT

0179212

Application number

EP 85 10 9921

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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)
A	PATENT ABSTRACTS OF JAPAN, vol. 8, no. 241 (C-250)(1678), November 6, 1984 & JP-A-59 123 760 (TOSHIBA K.K.) 17-07-1984 * Abstract * -----	1,13	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
CATEGORY OF CITED DOCUMENTS 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 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			