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- (54) Light-sensitive silver halide photographic material.

57 Disclosed is a light-sensitive silver halide photographic material comprising a support, at least one silver halide emulsion layer provided on at least one side of the support, and a protective layer provided on the silver halide emulsion layer, wherein the silver halide emulsion layer is formed of two kinds of emulsions each having different average grain size of the grains contained therein, the average grain size in the emulsion containing grains of a smaller average grain size comprises from 40 to 70 % of the average grain size in the emulsion containing grains of a larger average grain size, and the silver halide memulsion layer has a silver amount of 4.5 g/m<sup>2</sup> or Ness, and further at least one layer of the silver halide emulsion layer and the protective layer contains 300 mg/m2 or more of at least one kind of matting agent.

Disclosed is also a light-sensitive silver halide photographic material comprising a support and provided by coating thereon at least one hydrophilic colloid layer containing a matting agent, wherein the center-line average roughness of the light-sensitive material ranges from 0.15 to 0.8 µm, and the weight

percentage of a matting agent having a particle diameter more than 6  $\mu$ m is 5 % or less based on the whole matting agent.

Further disclosed is a light-sensitive silver halide photographic material for direct positives, comprising a support and provided thereon a direct positive silver halide emulsion layer containing silver halide grains applied with fog in the presence of a reduction fogging agent and a water-soluble gold compound, wherein at least 250 mg/m² of at least one kind of matting agent is contained and at least one of any compounds represented by Formulas (I), (II), (III), (IV) and (V) defined in the specification is contained, in a photographic layer of the side on which the direct positive silver halide emulsion layer is provided.

## **EUROPEAN SEARCH REPORT**

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Category	Citation of document with of relevant p	indication, where appropriate,		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X,Y	FR-A-2079012 (FUJI)			to ciaiii	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	* page 4, line 36 - pa	100 F 11-2 9 W	1		G03C1/02
	* page 5, lines 21 - 2	rye 5, line 3 ^			G03C1/76
				i	
	* claims 1-4 ** page 6	o, table 1 *	1	-20	
Y,D	US-A-3501305 (ILLINGSW	ORTH)			
	* column 1, lines 39 -	· 45 *			
	* column 2, lines 9 - 16 *			ĺ	
	* column 9, lines 32 - 34 *				
	* column 11, lines 64 - 67 *			-20	
Y	FD A 0110703 (VOUTOUT)				
	EP-A-0118793 (KONISHIROKU)				
	* page 8, lines 21 - 25 *				
	* page 11, lines 19 - 24 *				
	* claims 1, 4 *		1-	-20	
Y	EP-A-0019178 (AGFA-GEV	AFRT)	1,_	-20	
	* page 2, lines 5 - 11		,	20	
	-		İ	İ	
Y	US-A-3253926 (VAN PEE		1-	20	
	* column 1, lines 56 -	71 *		-	TECHNICAL FIELDS
Y,D	ED A 1167731 (KODAK)				SEARCHED (Int. Cl.4)
	FR-A-1167731 (KODAK)		1-	20	
	* page 14, left-hand co	olumn, lines 26 - 45 *			GO3C
Y	PATENT ABSTRACTS OF JAI	PAN	1-	20	
	vol. 9, no. 120 (P-358)		1-	20	
	& JP-A-60 6944 (MITSUBI	SHI) 14 January 1005			
	* the whole document *	.Silly 14 Dalidary 1965,			
	-				
	JP-A-601266488 (KONISHI		1-2	20	
	* page 3, right-hand column, lines 15 - 20 *				
	* page 6, table 1 *		f	]	
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	DE-A-1547642 (AGFA-GEVA	ERT)			
	* page 5, line 13 *	·		ł	
	* page 6, line 4 *		ļ		
	* page 8, line 1 *				
	* claim 1 *		1-2	n	
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•	The present search report has be	een drawn up for all claims			
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THE HAGUE		21 JUNE 1990		MAGRI	
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	ularly relevant if taken alone	E : earlier patent	t document	eriying the in t, but publish	vention ed on, or
		after the filin			

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P: intermediate document

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## EUROPEAN SEARCH REPORT

ΕP 88 10 6840

ategory	Citation of document with indication, wh of relevant passages	ere appropriate,	Relevant to claim	CLASSIFICATION OF TH APPLICATION (Int. Cl.4)
Y,D	US-A-3767651 (CHAPMAN)			
	* column 3, line 5 *			
	* column 3, lines 13 - 14 *			
	* claim 1 *		1-20	
	EP-A-0057933 (DU PONT)			
	* page 6, lines 17 - 22 *			
	* page 11, lines 20 - 26 *		1-20	
		ı		
			-	TECHNICAL FIELDS
				SEARCHED (Int. Cl.4)
		-		
	The present search report has been drawn up f			
	UE 11400E	of completion of the search JUNE 1990	MAGRIZ	Examiner ZOS S.
CA	TEGORY OF CITED DOCUMENTS	T : theory or principle E : earlier patent docu		

EPO FORM 1503 03.82 (P0401)

document of the same category
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