

**THIS OPINION WAS NOT WRITTEN FOR PUBLICATION**

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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**Ex parte** PAPU D. MANIAR

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Appeal No. 95-2063  
Application 07/965,314<sup>1</sup>

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ON BRIEF

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Before GARRIS, WEIFFENBACH, and ELLIS **Administrative Patent Judges**.

ELLIS, **Administrative Patent Judge**.

**DECISION ON APPEAL**

This is an appeal from the examiner's final rejection of claims 12, 13, 16, and 20 through 22, which are all the claims pending in the application.

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<sup>1</sup> Application for patent filed Oct. 23, 1992. According to the appellant, the application is a division of Application 07/650,119, filed Feb. 4, 1991, now Patent No. 5,186,745.

Appeal No. 95-2063  
Application 07/965,314

As an initial matter we note the appellant's statement in the main brief that the claims do not stand or fall together. Brief, p. 4; 37 CFR 1.192(c)(5)(1994); now 37 CFR § 1.192(c)(7). The appellant has (i) presented two claim groupings; i.e., Group A comprising claims 12, 13, and 16, and Group B comprising claims 20 through 22, and (ii) argued the two groups separately. Accordingly, for purposes of this appeal, we have considered the issues as they apply to representative claims from each group which in this case are, claims 12, 20 and 21. The claims are attached as an appendix to this decision.

The examiner does not rely on any prior art.

The appealed claims stand rejected as follows:

I. Claims 12, 13, 16, and 20 through 22 stand rejected under 35 U.S.C. § 112, first paragraph, as being based on specification which fails to provide an adequate written description of the invention and failing to provide support for the invention as now claimed.

II. Claims 12, 13, 16, and 20 through 22 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite in failing to particularly point out and distinctly claim the subject matter which the appellant regards as the invention.

Appeal No. 95-2063  
Application 07/965,314

We have carefully considered the entire record on appeal which includes the appellant's main Brief (Paper No. 12) and Reply Brief (Paper No. 14) and the examiner's Answer (Paper No. 13). We **reverse** Rejection I with respect to Group A, claims 12, 13 and 16, and **affirm** with respect to Group B, claims 20 through 22. We **reverse** Rejection II in its entirety.

The claimed invention is directed to a method of making a spin-on-glass (SOG) composition which comprises tetraethylorthosilicate (TEOS), nitric acid, alcohol, and water. According to the specification, the present SOG composition is used for constructing superconductor devices.

**Rejection I**  
**A**

The examiner urges that the preliminary amendment to subsection (c) of claim 16 which changes the original range of the alcohol volume from 70% to 90% to its current 70% to 85% lacks descriptive support in the specification and, therefore, constitutes the addition of new matter to the claim. According to the examiner, the specification, as originally filed, fails to

Appeal No. 95-2063  
Application 07/965,314

provide "expressive disclosure" of the claimed limitation.

Answer, p. 4. We find this position untenable.

To comply with the written description requirement, "the applicant must . . . convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession **of the invention**. The invention is, for purposes of the 'written description' inquiry, **whatever is now claimed**." [Emphases in original.] *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). It is not necessary that the specification describe the claim limitations exactly. *In re Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). In reviewing the specification, we do not find that the appellant has arbitrarily selected the presently claimed volume range of alcohol. Rather, we find that the specification discloses compositions having **approximately** 70-90% by volume of alcohol (p. 4, line 29) and 74.5-81.5% by volume of alcohol (p. 4, line 34). Moreover, in our view, one skilled in the art would have understood, in reading the specification, that because the alcohol content of the SOG composition must be balanced with the ingredients specified in subsections (a) and (b) of claim 12; i.e., the approximately 15% to 22% by volume of tetraethylorthosilicate (TEOS) and the approximately 0.2% to 1.3%

Appeal No. 95-2063  
Application 07/965,314

nitric acid, that the volume of alcohol could be no greater than approximately 85% by volume. One skilled in the art would have arrived at this realization by means of simple mathematics, and understood that it was not physically possible to have an upper limit of 90% by volume of alcohol. That is, one of skilled in the art would have recognized that an SOG composition cannot contain the lowest claimed limit of TEOS (15% by volume), the lowest claimed limit of nitric acid (0.2% by volume) and the maximum claimed limit of alcohol (90% by volume) because the total contents would exceed 100%. Accordingly, we find, as a factual matter, that the specification inherently discloses an upper limit of approximately 85% by volume alcohol and that persons skilled in the art upon reading the specification would have understood the alcohol content of the present invention to be approximately 70% to 85% by volume. *In re Wertheim*, 541 F.2d at 265, 191 USPQ at 98 ("[T]he invention claimed does not have to be described in *ipsis verbis* in order to satisfy the [written] description requirement of § 112.")

Accordingly, Rejection 1, with respect to claims 12, 13 and 16 is reversed.

**B**

The examiner urges that the addition of the phrases "not to exceed 10% by volume of the composition" and "not to exceed 5% by volume of the composition," to limit the volume of water present in the SOG composition, are not supported by the specification as originally filed and, therefore, constitute the addition of new matter. Answer, p. 4.

In response the appellant points to the teachings of the specification wherein (i) three different SOG compositions are disclosed which comprise a maximum water content of 29.9%, 14.8% and 8.3%, (specification, p. 4) and (ii) two precise SOG compositions are disclosed which comprise a water content of 3.4% and 3.6% (specification, p. 6). Brief, p. 9. According to the appellant, the claimed water limitations of "less than 5% and less than 10% are supported by Appellant's more preferred embodiment and by the working examples." Brief, p. 12, last para. We disagree.

Here, in reviewing the specification, we are unable to find any factual basis which supports limitations to an SOG composition having a water content wherein the upper limit is not to exceed 5%, or 10%, by volume as described in claims 20 through 22. To the contrary, the specification discloses ranges wherein

Appeal No. 95-2063  
Application 07/965,314

the water content is as high as 14.8% and 29.9% by volume. Specification, p. 4. We note the description on p. 4 of the specification that the preferred SOG compositions have a maximum water content of 8.3% by volume. However, we do not find from this teachings that those skilled in the art would have understood that the water content should not exceed 5% by volume, since 8.3% is greater than the claimed 5%. Nor do we find from said teaching that those skilled in the art would have understood that the maximum value could be higher, than 8.3% by volume, but not greater than 10%. Thus, we do not find that the specification disclosure conveys, in any manner, that the appellant was in possession of the now-claimed invention at the time the application was filed.

Accordingly, Rejection I with respect to claims 20 through 22 is affirmed.

### ***Rejection II***

The examiner urges that the claims are incomplete because "[t]he preamble of claim 12 recites 'A process for making a semiconductor device[,] yet the claims do not have any positive processing steps which would result in a semiconductor **device.**' (Emphasis in original.) Answer, p. 5. We disagree precisely for

the reasons set forth on p. 11 of the appellant's brief. Accordingly, without further elaboration, we adopt the appellant's reasoning and position as our own.

The examiner also urges that claim 12, subsection (c) is inaccurate in the recitation of an upper limit of 85% with respect to the volume of alcohol. According to the examiner if 85% by volume alcohol is present in combination with the ingredients required in subsections (a) and (b), the total will be greater than 100%. It is well settled that claims are not analyzed in a vacuum but, rather, they should be read in light of the teachings in the specification and the prior art, as they would be interpreted by one of ordinary skill in the art. *In re Moore*, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (Fed. Cir. 1971). As discussed we above, one skilled in the art would have recognized, based on simple mathematics, that exactly 85% by volume of alcohol could not be used in the claimed process in combination with the minimal, specified amounts of the additional ingredients. Moreover, the examiner has overlooked the fact that the upper limit of alcohol in the claim is **approximately** 85%.<sup>2</sup>

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<sup>2</sup> We point out that claim 12, subsection (a) is directed to between **approximately** 15% to 22% by volume of TEOS, and subsection (b) is directed to between **approximately** 0.2% to 1.3% by volume of nitric acid. Thus, volumes of less than 15% and

Appeal No. 95-2063  
Application 07/965,314

Thus, the claim does not mandate an upper limit of 85% by volume of alcohol.

Finally, the examiner urges that the recitation of "'balance of water, not to exceed 10% by volume of the composition' recited in claim 12 is incorrect." Answer, p. 5. In addition, the examiner urges that "in claim 16, the phrase 'balance water, not to exceed 5% by volume of the composition' is proven incorrect." Answer, p. 6. It appears that these rejections are a holdover from rejections made on pp. 5-6 in the first office action, mailed July 2, 1993 in Paper No. 6. The examiner has overlooked the appellant's amendment filed September 13, 1993 in Paper No. 7 wherein these phrases were deleted from the referenced claims. Since the contested phrases are no longer in claims 12 and 16, and no other claims have been rejected for these reasons, we consider this issue to be moot.

Accordingly, Rejection II is reversed.

The decision of the examiner is affirmed-in-part.

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0.2% of TEOS and nitric acid, respectively, are encompassed by the claim.

Appeal No. 95-2063  
Application 07/965,314

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR 1.136(a).

***AFFIRMED-IN-PART***

BRADLEY R. GARRIS	)	
Administrative Patent Judge)	)	
	)	
	)	
CAMERON WEIFFENBACH	)	BOARD OF PATENT
Administrative Patent Judge)	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
JOAN ELLIS	)	
Administrative Patent Judge)	)	

Appeal No. 95-2063  
Application 07/965,314

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Appeal No. 95-2063  
Application 07/965,314

JE/jrg

**APPENDIX**

12. A process for making a semiconductor device comprising the steps of:

providing a spin-on-glass having a composition consisting essentially of:

- a) between approximately 15% to 22% by volume of tetraethylorthosilicate;
- b) an amount of nitric acid equivalent to between approximately 0.2% to 1.3% by volume of 70% by weight nitric acid;
- c) between approximately 70% to 85% by volume of alcohol; and
- d) balance water;

providing a semiconductor substrate;

coating the semiconductor substrate with the spin-on-glass; and heating the coated semiconductor substrate in order to densify the spin-on-glass.

13. A process of claim 12 wherein the step of providing a spin-on-glass comprises providing a spin-on-glass having between approximately 70% to 85% by volume of isopropyl alcohol.

16. The process of claim 12 wherein the step of providing a spin-spin-on-glass ~~on the glass having~~ ~~comprising~~ providing a composition consisting essentially of:

- a) between approximately 16.8% to 19.0% by volume of tetraethylorthosilicate;

Appeal No. 95-2063  
Application 07/965,314

- b) an amount of nitric acid equivalent to between approximately 0.4% to 1.1% by volume of 70% by weight nitric acid;
  - c) between approximately 74.5% to 81.5% by volume of isopropyl alcohol; and
  - d) balance water.
20. The process of claim 12 wherein the step of providing a spin-on-glass comprises providing a spin-on-glass wherein the water does not exceed 10% by volume of the spin-on-glass composition.
21. The process of claim 13 wherein the step of providing a spin-on-glass comprises providing a spin-on-glass wherein the water does not exceed 5% by volume of the spin-on-glass composition.
22. The process of claim 16 wherein the step of providing a spin-on-glass comprises providing a spin-on-glass wherein the water does not exceed 5% by volume of the spin-on-glass composition.

APPEAL NO. 95-2063 - JUDGE ELLIS

APPLICATION NO. 07/965,314

APJ ELLIS

APJ WEIFFENBACH

APJ GARRIS

DECISION: ***AFFIRMED-IN-PART***

Typed By: Jenine Gillis

**DRAFT TYPED:** 20 Aug 97

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**FINAL TYPED:**