

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHANDRIKA KASTURI, MARK E. WANDSTRAT, and BRIAN X. SONG

Appeal No. 2005-1104
Application No. 09/795,211

ON BRIEF

Before KIMLIN, WALTZ, and JEFFREY T. SMITH, Administrative Patent Judges.

WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the primary examiner's refusal to allow claims 1 through 17 as amended subsequent to the final rejection (see the amendment dated May 12, 2003, entered as per the Advisory Action dated May 29, 2003).¹ Claims 1-17 are the only claims pending in this application. We have jurisdiction pursuant to 35 U.S.C. § 134.

¹The final rejection of claims 1-17 under the second paragraph of section 112 has been withdrawn in view of this amendment.

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According to appellants, the invention is directed to detergent compositions comprising a combination of boric acid or a compound capable of forming boric acid in the composition, a polyhydroxy compound, and a relatively high level of calcium ion to stabilize the selected α -amylase enzyme (Brief, page 2).

Appellants state that claims 1-10 and 12-16 stand or fall together but claims 11 and 17 are independently patentable (Brief, page 8). Accordingly, we select claim 1 from the first group of claims and claim 11 from the second group and decide the grounds of rejection in this appeal on the basis of these claims alone. See 37 CFR § 1.192(c)(7)(2003); *In re McDaniel*, 293 F.3d 1379, 1383, 63 USPQ2d 1462, 1465 (Fed. Cir. 2002). A copy of representative independent claim 1 is attached as an Appendix to this decision.

The examiner has relied upon the following references as evidence of obviousness:

Bisgård-Frantzen et al. (B-F '562)	6,093,562	Jul. 25, 2000
Markussen (filed Jun. 25, 1999)	6,268,329 B1	Jul. 31, 2001

Claims 1-10 and 12-16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over B-F '562 (Answer, page 3). Claims 11 and 17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over B-F '562 in view of Markussen (Answer, page 5). Based on the totality of the record, including due consideration of appellants' arguments

and evidence, we *affirm* both rejections on appeal essentially for the reasons stated in the Answer and those reasons set forth below.

OPINION

A. *The Rejection over B-F '562*

The examiner finds that B-F '562 teaches variants of a parent α -amylase within the scope of the claimed α -amylase enzyme (Answer, page 3). The examiner also finds that B-F '562 teaches liquid detergent compositions containing up to 70% water, and that liquid enzyme preparations may be stabilized by adding a polyol such as propylene glycol, a sugar or sugar alcohol, lactic acid or boric acid (Answer, page 4). The examiner further finds that example 9 of B-F '562 discloses a thixotropic liquid automatic dishwashing composition comprising 0-4.0% boric acid, 0-0.2% calcium formate, 0-9.4% 1,2-propanediol, 0.0001-0.1% enzyme, with the balance water (*id.*). From these findings, the examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of appellants' invention to formulate a detergent composition comprising the ingredients boric acid, 1,2-propanediol, calcium ion, water, protease and α -amylase (Answer, page 5). We agree.

Appellants argue that B-F '562 broadly discloses various detergent compositions, but has no specific teaching relating to the claimed composition and process (Brief, page 12). Appellants

argue that boric acid, calcium formate and 1,2-propanediol are taught as optional ingredients by B-F '562 (Brief, page 12; Reply Brief, page 3). Appellants further argue that B-F '562 fails to disclose a composition comprising all five components in the specific amounts as recited by the claim (*id.*).

Appellants' arguments are not well taken. Although the boric acid, propanediol and other stabilizers are disclosed as optional (see col. 21, ll. 20-25 and 56-60, and example 9), B-F '562 specifically teaches the use of these well known stabilizers and exemplifies the combination of ingredients as claimed (see example 9 at col. 30). All five claimed components are disclosed in example 9 (col. 30, ll. 1-20), including ranges of each component that overlap with the ranges set forth in claim 1 on appeal.² "In cases involving overlapping ranges, we and our predecessor court have consistently held that even a slight overlap in range establishes a *prima facie* case of obviousness. [Citations omitted]." *In re Peterson*, 315 F.3d 1325, 1329-30, 65 USPQ2d 1379,

²Although the examiner does not present any findings regarding the amounts of calcium ion in the composition of example 9 of B-F '562, we determine that the amount of calcium ion provided by the 0-0.2% calcium formate taught by B-F '562 would provide amounts of calcium ion per liter of detergent solution within the range claimed by appellants (see claim 1 on appeal and Table 2 on page 12 of the specification). We note that appellants do not specifically dispute that the amount of calcium ion taught by B-F '562 differs from the claimed range.

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1382 (Fed. Cir. 2003); see also *In re Geisler*, 116 F.3d 1465, 1469-70, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997).

Appellants argue that any *prima facie* case of obviousness has been rebutted by the showing of unexpected results found on page 12 of the specification (Brief, page 13; Reply Brief, pages 3-6).

This argument is not persuasive. As correctly stated by the examiner (Answer, page 8), any showing of unexpected results must be commensurate in scope with the subject matter sought to be patented. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). The showing on page 12 of the specification is limited to one specific enzyme (Natalase®) in a very specific detergent formulation (see Table 1 on pages 10-11 of the specification) while claim 1 is not so limited. Furthermore, an effective comparison must include the closest prior art, and appellants have not identified any example of B-F '562 as included in the showing. See *In re Burckel*, 592 F.2d 1175, 1179, 201 USPQ 67, 71 (CCPA 1979); see also *In re Geisler*, *supra*. Additionally, all variables must be fixed with the exception of one to establish the non-obviousness of that variable. See *In re Dunn*, 349 F.2d 433, 439, 146 USPQ 479, 483 (CCPA 1965). Some of the comparisons recited in Table 2 on page 12 of the specification have more than one variable (e.g., formulas 4 and 5 differ as to the enzyme as

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well as the amount of calcium ion present). Finally, appellants must establish that the results truly are unexpected and not just a difference in degree. See *In re Merck*, 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986).

For the foregoing reasons and those stated in the Answer, we determine that the examiner has established a *prima facie* case of obviousness in view of the reference evidence. Based on the totality of the record, including due consideration of appellants' arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of section 103(a). Accordingly, we affirm the examiner's rejection of claim 1, and claims 2-10 and 12-16 which stand or fall with claim 1, under section 103(a) over B-F '562.

B. The Rejection over B-F '562 in view of Markussen

The examiner relies on B-F '562 as discussed above and in the Answer, further finding that B-F '562 does not specifically teach the use of the Natalase® alpha-amylase as recited in claims 11 and 17 (Answer, page 5). Therefore the examiner applies Markussen for its teaching of an improved enzyme-containing granule such as Natalase® as a detergent additive (Answer, paragraph bridging pages 5-6). From these findings, the examiner concludes that it would have been obvious to one of ordinary skill in this art at the time

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of appellants' invention to use Natalase® enzyme for the advantages taught by Markussen in place of the alpha-amylase enzyme in the detergent composition of B-F '562 (Answer, page 6). We agree.

Appellants argue that Markussen does not cure the deficiencies of B-F '562 (Brief, page 15). For reasons discussed above and in the Answer, we determine that B-F '562 discloses all components of the claimed composition and process and therefore this argument is not well taken.

Appellants argue that Markussen fails to disclose the claimed composition (Brief, page 16). This argument is not persuasive since Markussen was not relied upon to show the claimed composition but merely to establish the advantages of using Natalase® as an alpha-amylase enzyme in detergent compositions.

We note that the showing of unexpected results on page 12 of the specification is still not persuasive of non-obviousness even though claims 11 and 17 are commensurate in scope with the enzyme used in the comparisons, for the additional reasons discussed above.

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For the foregoing reasons and those stated in the Answer, we determine that the examiner has established a *prima facie* case of obviousness in view of the reference evidence. Based on the totality of the record, including due consideration of appellants' arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of section 103(a). Accordingly, we affirm the examiner's rejection of claims 11 and 17 under section 103(a) over B-F '562 in view of Markussen.

C. Summary

The rejection of claims 1-10 and 12-16 under 35 U.S.C. § 103(a) over B-F '562 is affirmed. The rejection of claims 11 and 17 under 35 U.S.C. § 103(a) over B-F '562 in view of Markussen is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv)(effective Sep. 13, 2004; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat. Office 21 (Sep. 7, 2004)).

AFFIRMED

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
THOMAS A. WALTZ)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
JEFFREY T. SMITH)	
Administrative Patent Judge)	

TAW/jrg

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APPENDIX

1. An aqueous liquid or gel detergent composition comprising, by weight:

(1) from about 0.1% to about 15% of boric acid or a boron compound capable of forming boric acid in the composition;

(2) from about 0.1% to about 10% of a polyhydroxy compound selected from the group consisting of ethylene glycol, propylene glycol, 1,2-propanediol, butylene glycol, hexylene glycol, glycerol, mannitol, sorbitol, erythritol, glucose, fructose, lactose, erythritol-1,4-anhydride, and mixtures thereof;

(3) from about 10 to about 100 millimoles of calcium ion per liter of composition;

(4) from about 5% to about 90% of water; and

(5) an α -amylase enzyme selected from the group consisting of:

(a) α -amylase having a specific activity at least 25% higher than the specific activity of a *Bacillus licheniformis* α -amylase having the amino acid sequence of SEQ ID No.5 at a temperature range of 25°C to 55°C and at a pH value in the range of 8 to 10;

(b) α -amylase according to(a), comprising the amino [sic, acid] sequence shown in SEQ ID No. 1 or an α -amylase being at least 80% homologous with the amino acid sequence shown in SEQ ID No. 1;

(c) α -amylase according to (a), comprising the amino [sic, acid] sequence shown in SEQ ID No. 2 or an α -amylase being at least 80% homologous with the amino acid sequence shown in SEQ ID No. 2;

(d) α -amylase according to (a), comprising the following amino [sic, acid] sequence in the N-terminal: His-His-Asn-Gly-Thr-Asn-Gly-Thr-Met-Met-Gln-Tyr-Phe-Glu-Trp-Tyr-Leu-Pro-Asn-Asp (SEQ ID No. 3) or an α -amylase being at least 80% homologous with the amino acid sequence shown (SEQ ID No. 3) in the N-terminal;

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(e) α -amylase according to (a), (b), (c) or (d), wherein the α -amylase is obtainable from an alkalophilic Bacillus species;

(f) α -amylase according to (e), wherein the amylase is obtainable from any of the strains NCIB 12289, NCIB 12512, NCIB 12513 and DSM 935;

(g) α -amylase showing positive immunological cross-reactivity with antibodies raised against an α -amylase having an amino acid sequence corresponding respectively to SEQ ID No. 1, ID No. 2 or ID No. 3;

(h) variant of a parent α -amylase, which parent α -amylase (i) has one of the amino acid sequences shown in SEQ ID No. 1, ID No. 2 or ID No. 4 respectively, or (ii) displays at least 80% homology with one or more of said amino acid sequences, displays immunological cross-reactivity with an antibody raised against an α -amylase having one of said amino acid sequences, is encoded by a DNA sequence which hybridizes with the same probe as a DNA sequence encoding an α -amylase having one of said amino acid sequences, or combinations thereof, in which variants:

(i) at least one amino acid residue of said parent α -amylase has been deleted,

(ii) at least one amino acid residue of said parent α -amylase has been replaced by a different amino acid residue;

(iii) at least one amino acid residue has been inserted relative to said parent α -amylase; or

(iv) combinations thereof; said variant having an α -amylase activity and exhibiting at least one of the following properties relative to said parent α -amylase: increased thermostability, increased stability towards

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oxidation, reduced Ca ion dependency, increased stability and/or α -amylolytic activity at neutral to relatively high pH values, increased α -amylolytic activity at relatively high temperature and increase or decrease of the isoelectric point (pI) so as to better match the pI value for α -amylase variant to the pH of the medium; and

(i) mixtures thereof.