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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/323,188	12/30/2016	Dave R. Allen	102-278US	1083
74275	7590	12/17/2019	EXAMINER	
DILWORTH IP, LLC 2 CORPORATE DRIVE, SUITE 206 TRUMBULL, CT 06611			SULLIVAN, DANIELLE D	
			ART UNIT	PAPER NUMBER
			1617	
			NOTIFICATION DATE	DELIVERY MODE
			12/17/2019	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DAVE R. ALLEN and ANDREW D. MALEC¹

Appeal 2019-004715
Application 15/323,188
Technology Center 1600

Before ERIC B. GRIMES, RACHEL H. TOWNSEND, and
CYNTHIA M. HARDMAN, *Administrative Patent Judges*.

GRIMES, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) involving claims to an agricultural composition, which have been rejected as obvious. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

STATEMENT OF THE CASE

“Ethoxylated fatty amine surfactants are well-known adjuvants for agricultural applications.” Spec. 1:8–9. “Many of the commercial materials

¹ Appellant identifies the real party in interest as Stepan Company. Appeal Br. 1. We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a).

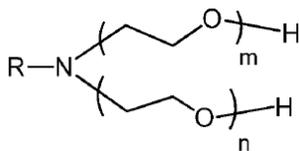
are ethoxylated tallow amines, . . . and their use in agricultural compositions, particularly glyphosate formulations, is well documented.” *Id.* at 1:12–16.

“Tallowamine ethoxylates are . . . moderately toxic in aquatic invertebrate acute toxicity tests, so less-toxic alternatives are needed.” *Id.* at 1:23–24. The Specification discloses “agricultural compositions compris[ing] a monounsaturated C₁₀–C₁₂ fatty amine ethoxylate. Preferably, the fatty amine ethoxylate is a monounsaturated C₁₁ fatty amine ethoxylate.” *Id.* at 7:19–21. The Specification states that “[u]nexpectedly, the monounsaturated C₁₀–C₁₂ fatty amine ethoxylates have reduced aquatic toxicity when compared with their saturated analogs.” *Id.* at 2:22–24.

Claims 1, 3–5, 7, 9–13, and 15–20 are on appeal. Claim 1, reproduced below, is illustrative:

1. An agricultural composition having reduced aquatic toxicity, comprising:

- (a) an agricultural active;
- (b) a monounsaturated C₁₁ fatty amine ethoxylate, wherein the fatty amine ethoxylate has the structure:



wherein R is linear or branched C₁₁H₂₁, each of m and n represents an average number of oxyethylene units, each of m and n is at least 1, and m+n has a value from 2 to 7;

- (c) optionally, water;
- (d) optionally, an auxiliary surfactant; and
- (e) optionally, a solvent;

and wherein the fatty amine ethoxylate has at most slight aquatic toxicity as measured in the Acute Mobilization Test as

reflected by a 48-hour EC₅₀ value with *Daphnia magna* greater than or equal to 10 mg/L.

Claims 17 and 19 are also independent and, like claim 1, are directed to agricultural compositions comprising a monounsaturated C₁₁ fatty amine ethoxylate having the same maximum toxicity recited in claim 1.

The claims stand rejected as follows:

Claims 1, 3–5, 7, 9–11, and 15–18 under 35 U.S.C. § 103 as obvious based on Forbes² (Ans. 3) and

Claims 12, 13, 19, and 20 under 35 U.S.C. § 103 as obvious based on Forbes and Kisenwether³ (Ans. 6).

OPINION

Obviousness

All of the claims stand rejected as obvious based on Forbes, or Forbes and Kisenwether. The same issue is dispositive for both rejections.

The Examiner finds that Forbes teaches compositions comprising glyphosate and C₈–C₂₂ fatty amine ethoxylates, but does not specifically teach a C₁₁ fatty amine ethoxylate. Ans. 4–6.⁴ The Examiner concludes that it would have been obvious to select a C₁₁ fatty amine ethoxylate surfactant because it is encompassed by the surfactants used by Forbes, and “[a] prior art reference that discloses a range encompassing a somewhat narrower

² Forbes et al., US 5,668,085, issued Sept. 16, 1997.

³ Kisenwether et al., US 2012/0040833 A1, published Feb. 16, 2012.

⁴ The rejection refers to “C10–C12 fatty amine ethoxylates” but the Examiner states that “any reference made to C10–C12 amine ethoxylate . . . was taken to refer the teaching of the C11 amine ethoxylate.” Ans. 10.

claimed range is sufficient to establish a prima facie case of obviousness.”
Id. at 6, citing *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003).

The Examiner cites Kisenwether as evidence that it would have been obvious to modify Forbes’ composition by including auxiliary surfactants or propylene glycol, or by diluting Forbes’ composition to comprise specific percentages of a glyphosate salt and water. Ans. 8–9.

Appellant argues that neither Forbes nor the combination of Forbes and Kisenwether supports a prima facie case of obviousness. Appeal Br. 4–7, 10. Appellant also argues that the Specification shows unexpected results in the “experimental demonstration that monounsaturated C₁₁ amine ethoxylates have reduced aquatic toxicity compared with a saturated C₁₁ analog.” *Id.* at 8. Appellant reasons that “[b]ecause the prior art did not evaluate aquatic toxicity at all, the skilled person expects, at best, equivalent performance from the claimed amine ethoxylates compared with any of compositions fairly taught or suggested by Forbes.” *Id.* Thus, Appellant argues, the “demonstration of a substantial reduction in aquatic toxicity from the claimed compositions when compared with their closest structural analog is therefore valuable and unexpected based on anything a skilled person could reasonably surmise from Forbes or other related art.” *Id.*

We agree with Appellant that the rejection is not supported by a preponderance of the evidence of record. As the Examiner finds, Forbes discloses a genus of alkyl or alkenyl, C₈ to C₂₂, fatty amine ethoxylates that includes the specific monounsaturated C₁₁ fatty amine ethoxylates recited in the claims. However, the Examiner has not pointed to any disclosure in Forbes, or provided other evidence or scientific reasoning, that would have

led a skilled artisan to choose the specific monounsaturated C₁₁ fatty acid ethoxylate of the claims from within the much larger genus disclosed by Forbes. Thus, the evidence supports only a weak prima facie case of obviousness.

Balanced against the evidence of obviousness is the Specification's data showing that a monounsaturated C₁₁ fatty acid ethoxylate has reduced toxicity compared to its saturated counterpart. The Specification's Example 3 describes combining potassium glyphosate "with a monounsaturated C₁₁ fatty amine 5EO ethoxylate." Spec. 14:7–9. This fatty amine ethoxylate corresponds to the compound recited in claim 1 where m+n is 5.

The Specification describes testing of the "[a]quatic toxicity of the saturated C₁₁ fatty amine 5EO ethoxylate and the unsaturated C₁₁ fatty amine 5EO ethoxylate on the Cladoceran, *Daphnia magna*." *Id.* at 14:18–19. The results showed that the saturated C₁₁ amine ethoxylate was "moderately toxic," with an EC₅₀ of 3.3 mg/L, while the unsaturated C₁₁ amine ethoxylate was "slightly toxic," with an EC₅₀ of 20 mg/L. *Id.* at 14:26–27.

The Specification states that "[t]he results indicate that the monounsaturated amine ethoxylate is more than one order of magnitude (i.e., more than 10x) less toxic toward *Daphnia magna* in the standard test." *Id.* at 14:29–31. The Specification also states that "[u]nexpectedly, the monounsaturated C₁₀–C₁₂ fatty amine ethoxylates have reduced aquatic toxicity when compared with their saturated analogs." *Id.* at 2:22–24; *see also id.* at 12:21–24 ("Surprisingly, . . . formulations comprising the monounsaturated C₁₀–C₁₂ fatty amine ethoxylates have a reduced level of

aquatic toxicity when compared with analogous formulations that incorporate saturated fatty amine ethoxylates.”).

Thus, Appellant has provided evidence that the monounsaturated C₁₁ amine ethoxylate is ten-fold less toxic than its unsaturated counterpart in a standard test, and the Specification states that these results are unexpected and surprising. “[W]hen an applicant demonstrates *substantially* improved results . . . and *states* that the results were *unexpected*, this should suffice to establish unexpected results *in the absence of* evidence to the contrary.” *In re Soni*, 54 F.3d 746, 751 (Fed. Cir. 1995).

In response to Appellant’s evidence, the Examiner does not provide evidence showing that a monounsaturated fatty amine ethoxylate would be expected to be less toxic than the corresponding saturated fatty amine ethoxylate. The Examiner reasons that “the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art’s functioning, does not render the old composition patentably new to the discoverer.” Ans. 11, citing *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1347 (Fed. Cir. 1999). The rejections on appeal, however, are based on obviousness, not anticipation, so this is not a case of discovering a new property of an old composition. The holding of *Atlas Powder* does not apply.

The Examiner also faults Appellant’s evidence on the basis that “Table 1 fails to show unexpected results commensurate in scope with the claimed invention. The data only compares unsaturated [sic, saturated] and unsaturated C₁₁ fatty amines (2EO and 5EO) with 540 g/L glyphosate against Roundup Powermax.” Ans. 12. The data shown in the

Specification's Table 1, however, does not pertain to aquatic toxicity, as recited in the claims, but to the herbicidal effectiveness of glyphosate formulations comprising either monounsaturated or saturated fatty amine ethoxylates, compared to the commercial product Roundup® Powermax®. Spec. 15:7 to 16:24.

Thus, the Examiner has not addressed the evidence of reduced toxicity that Appellant relies on as evidence of unexpected results. And, because the claims are limited to a monounsaturated C₁₁ fatty amine ethoxylate, and the Specification provides evidence of unexpected results for a monounsaturated C₁₁ fatty amine ethoxylate, the Examiner has not shown that the evidence of reduced toxicity is not commensurate in scope with the claims.

In summary, we conclude that a preponderance of the evidence of record fails to show that the claimed compositions would have been obvious based on Forbes, or on Forbes and Kisenwether. We therefore reverse the rejections on appeal.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 3-5, 7, 9-11, 15-18	103	Forbes		1, 3-5, 7, 9-11, 15-18
12, 13, 19, 20	103	Forbes, Kisenwether		12, 13, 19, 20
Overall Outcome				1, 3-5, 7, 9-13, 15-20

REVERSED