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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SOPHIA EBERT, BJOERN LUDOLPH,
CHRISTOPH MUELLER, STEPHAN HUEFFER, and
ALEJANDRA GARCIA MARCOS

Appeal 2019-000023
Application 14/763,203
Technology Center 1700

Before CATHERINE Q. TIMM, JEFFREY R. SNAY, and
MICHAEL G. McMANUS, *Administrative Patent Judges*.

McMANUS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ seeks review of the Examiner's decision to reject claims 1–11. We have jurisdiction under 35 U.S.C. § 6(b).

Oral hearing was held January 9, 2020.

We affirm in part.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as BASF SE. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The present application generally relates to an aqueous formulation for “hard surface cleaning such as hand dishware cleaning applications” and a process of making such formulations. Specification filed July 24, 2015 (“Spec.”) 1. The Specification teaches that such formulations comprise at least one alkoxyated polypropyleneimine,² and at least one nonionic surfactant, selected from either alkyl polyglycosides or alkoxyated Guerbet alcohols having from 8 to 14 carbons. *Id.* The Specification further teaches that the alkoxyated polypropyleneimine comprises alkoxy side chains and a backbone of polypropyleneimine. *Id.* at 2.

Claim 1 is illustrative of the subject matter on appeal and is reproduced below:

1. An aqueous formulation comprising
 - (A) at least one alkoxyated polypropyleneimine, and
 - (B) at least one non-ionic surfactant, selected from
 - (B1) alkyl polyglycosides and
 - (B2) alkoxyated C₈-C₁₄-Guerbet alcohols.

Appeal Br. 35 (Claims App.).

² The Specification and Appellant’s briefs refer to “polyethylenimine” and “polypropylenimine.” *See, e.g.*, Spec. 1. The Examiner generally refers to “polyethyleneimine” and “polypropyleneimine.” *See, e.g.*, Non-Final Act. 3. The present decision will use the same spellings as used by the Examiner except where quoting from the Specification or Appellant’s briefs.

REFERENCES

The Examiner relies upon the following prior art:

Name	Reference	Date
Haerer	US 5,602,093	Feb. 11, 1997
Cooremans et al. ("Cooremans")	US 2007/0275868 A1	Nov. 29, 2007
Evers et al. ("Evers")	US 2010/0323942 A1	Dec. 23, 2010
Hahn et al. ("Hahn")	US 2011/0183883 A1	July 28, 2011

REJECTIONS

The Examiner maintains the following rejections:

1. Claims 1–5 and 8–11 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Cooremans in view of Hahn. Non-Final Action dated Dec. 26, 2017 ("Non-Final Act.") 3–4.
2. Claim 6 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Cooremans in view of Hahn and further in view of Haerer. *Id.* at 4.
3. Claim 7 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Cooremans in view of Hahn and further in view of Evers. *Id.* at 5.

DISCUSSION

Rejection 1. The Examiner rejects claims 1–5 and 8–11 as obvious over Cooremans in view of Hahn. *Id.* at 3–4. In support of the rejection, the Examiner finds that Cooremans teaches an aqueous dishwashing composition that includes an alkoxyated polyalkyleneimine and nonionic surfactants such as alkylpolyglycoside. *Id.* at 3. The Examiner concedes

that the “polyalkyleneimine of Cooremans is a polyet[h]yleneimine, which is a derivative with one less carbon atom than what is instantly claimed.” *Id.* The Examiner explains that “the rejection is based on close structural similarity (analogous) between chemical compounds. This is founded on the expectation that compounds similar in structure will have similar properties.” *Id.* Thus, the Examiner relies on the structural similarity of polyethyleneimine and polypropyleneimine.

The Examiner additionally relies upon the Hahn reference. *Id.* The Examiner finds that Hahn teaches “a dishwashing composition comprising alkoxyated polypropyleneimine (C₂-C₅ alkyimines).” *Id.* The Examiner determines that Cooremans and Hahn are analogous art as they both relate to dishwashing compositions. *Id.* The Examiner further determines that a person of ordinary skill in the art would have had reason “to add (or substitute) alkoxyated polypropyleneimine of Hahn [to] Cooremans['] composition with the motivation of using a midrange alkyimine as equivalent (equal alternative) ingredient.” *Id.* at 3–4. The Examiner determines that “the chemical analogousness of the ethyleneimine and propyleneimine is such that it makes it very unlikely that an artisan of ordinary skill in the art would be unaware of propyleneimine’s utilization in the instantly claimed field of endeavor.” *Id.* at 6. The Examiner indicates that Hahn is relied upon “[t]o provide a more direct reason for obviousness.” Examiner’s Answer dated Aug. 10, 2018 (“Answer”) 6.

Appellant asserts error as to the rejection of claims 1, 8, 10, and 11 on several bases. Appeal Br. 7–24. Appellant additionally asserts error as to each of the rejections of claims 2, 3, and 9 and as to the rejection of claims 4

and 5 as a group. *Id.* at 24–27. To the extent the arguments raise separate issues, we address the arguments separately.

Claims 1, 8, 10, and 11

With regard to the rejection of claims 1, 8, 10, and 11, we select claim 1 as representative.

Appellant first argues that the test data provided in the Specification shows that “the inventive alkoxyated polypropylenimines are superior over formulations containing comparative alkoxyated polyethylenimines. Thus, there is no reasonable expectation that alkoxyated polypropylenimine and alkoxyated polyethylenimine are ‘functional equivalents.’” *Id.* at 9; *see also id.* at 9–12.

In the Answer, the Examiner contends that “polyalkyleneimines have a broad application . . . in many fields of endeavor including that of detergent industry (i.e. surface treating and dishwashing). Therefore, appellant’s argument above is construed as being about the intensity of a chemical effect and not the type of the effect.” Answer 6. The Examiner further explains that “[t]his has been the basic reason for the above mentioned rejection (Cooremans et al.) and the fact that appellant’s selection of a very similar structure has produced a better result is considered an obvious matter, indeed.” *Id.*

The Federal Circuit has offered the following guidance regarding structural similarity:

To be clear, we recognize that structural similarity is an important factor in assessing the motivation to combine and reasonable expectation of success. It has been long recognized that chemical compounds with similar structures often have

similar properties and that similarity in properties can be inferred from structural similarity. *In re Hass*, 141 F.2d 122, 125 (CCPA 1944). Our cases have held that the greater the structural similarity between the compounds, the greater the motivation to combine and reasonable expectation of success. *Eli Lilly & Co. v. Zenith Goldline Pharm., Inc.*, 471 F.3d 1369, 1377 (Fed. Cir. 2006) (noting that, for a new chemical compound, finding obviousness requires “structural similarity” and a “reason or motivation to make the claimed compositions” (quoting *In re Dillon*, 919 F.2d 688, 692 (Fed. Cir. 1990) (en banc))); *In re Deuel*, 51 F.3d 1552, 1558 (Fed. Cir. 1995) (“Structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds.”). The opposite is true, too: the less the structural similarity, the less the motivation to combine and the reasonable expectation of success. *In re Jones*, 958 F.2d 347, 350 (Fed. Cir. 1992) (reversing the prima facie obviousness finding because of the “lack of close similarity of structure”).

Anacor Pharm., Inc. v. Iancu, 889 F.3d 1372, 1384–85 (Fed. Cir. 2018).

Here, the Examiner relies upon the structural similarity between alkoxyated polypropyleneimine (as claimed) and alkoxyated polyethyleneimine (as taught by Cooremans). Non-Final Act. 3. The Examiner further relies upon Hahn as teaching that the two compounds are “equal alternative[s].” Non-Final Act. 4; Answer 4.

Appellant does not dispute the structural similarity of the compounds. Reply Brief filed Sept. 28, 2018 (“Reply Br.”) 3–4. Appellant does, however, dispute the functional similarity of the compounds. Appeal Br. 9. Appellant’s argument is largely predicated upon data set forth in its Specification which, it contends, shows that the inventive alkoxyated polypropyleneimines are superior to alkoxyated polyethyleneimines in the context of dishwashing. *Id.* That is, Appellant argues that a person of

ordinary skill in the art would not have regarded the two compounds as functionally similar because of its test results.

We do not find this reasoning persuasive. The Examiner has set forth a reasoned basis why one of ordinary skill in the art would have had reason to use alkoxyated polypropyleneimines in addition to, or instead of, the alkoxyated polyethyleneimines of Cooremans. Non-Final Act. 3–4. Appellant has not shown error in such reasoning. Data in the Specification indicating that the claimed composition possesses properties not taught by the references does not by itself defeat a *prima facie* case of obviousness. *See In re Dillon*, 919 F.2d 688, 693 (Fed. Cir. 1990) (en banc) (“There is no question that all evidence of the properties of the claimed compositions and the prior art must be considered in determining the ultimate question of patentability, but it is also clear that **the discovery that a claimed composition possesses a property not disclosed for the prior art subject matter, does not by itself defeat a *prima facie* case.**”) (emphasis added); *see also id.* (“In particular, the statement that a *prima facie* obviousness rejection is not supported if no reference shows or suggests the newly-discovered properties and results of a claimed structure is not the law.”).

As its second argument, Appellant argues that the combination of Cooremans and Han is improper. Appeal Br. 14–20. Appellant asserts that Cooremans is directed toward improved grease cleaning when washing by hand. *Id.* at 14–16. Appellant additionally contends that Hahn is directed toward the prevention of corrosion of glassware when subject to automatic dishwashing processes. *Id.* at 16–17.

Appellant seems to argue that one of skill in the art would not have combined the teachings of Cooremans and Hahn because Cooremans relates

to hand washing while Hahn relates only to machine washing. *Id.* at 14–17. This is not well supported by evidence. Hahn teaches a composition for the prevention of corrosion “in particular during an automatic dishwashing process.” Hahn, Abstract. Similarly, Hahn teaches that corrosion resistance “has been found particularly in automatic dishwashing processes.” *Id.* ¶ 44. The foregoing suggests that, while Hahn may have a “particular” use in automatic dishwashing, other applications are not precluded.

Moreover, it is not apparent that the Examiner seeks to rely on Hahn for its teachings regarding corrosion resistance. Rather, the Examiner relies on Hahn for its teaching of the functional similarity of alkoxyated polyethyleneimines and alkoxyated polypropyleneimines in a similar application. Answer 6. This teaching is not rebutted.

Appellant further argues that Hahn does not describe alkoxyated polypropyleneimine with specificity and does not teach that it is a preferred embodiment. *Id.* at 17–19. This is not persuasive. A reference must be considered for all that it teaches. *See In re Applied Materials, Inc.*, 692 F.3d 1289, 1298 (Fed. Cir. 2012) (“A reference must be considered for everything that it teaches, not simply the described invention or a preferred embodiment.”). Further, Federal Circuit precedent indicates that inclusion in a list does not render a particular formulation less obvious. *Merck & Co. v. Biocraft Labs. Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (“That the [reference] discloses a multitude of effective combinations does not render any particular formulation less obvious.”); *see also Purdue Pharma Prods. L.P. v. Par Pharm., Inc.*, 377 F. App’x 978, 982 (Fed. Cir. 2010) (finding claim obvious over argument that “a person of skill in the art would not have selected tramadol out of the myriad other possible active ingredients for use

in a once-daily formulation” where the prior art reference listed tramadol as one of fourteen different opioid analgesics). Accordingly, the teaching of compounds other than alkoxyated polypropyleneimine does not negate the teaching relied upon by the Examiner.

Appellant further argues that a person of ordinary skill in the art would have lacked a reasonable expectation of success that alkoxyated polypropyleneimine “would have provided successful properties to clean grease to the manual dish washing composition of Cooremans.” Appeal Br. 19–20. Appellant argues as follows:

One may try to use a different polyalkylenimine in the composition of Cooremans et al., but there is no evidence on the record that another polyalkylenimine would have reasonably successfully achieved the goal of Cooremans et al. Based on the composition of Hahn et al., a skilled person may at best try to use various polyalkylenimines (derivatized or not) for an automatic dishwashing in a manual dish washing composition, but there is no reasonable expectation that any other polyalkylenimine, not to mention specific alkoxyated polypropylenimine, would have provided successful properties to clean grease to the manual dish washing composition of Cooremans et al., which is the goal of Cooremans et al., or any other improved properties.

Appeal Br. 19–20.

The Examiner determines that the rejection “is founded on the expectation that compounds similar in structure will have similar properties.” Non-Final Act. 3. The Examiner further determines that “the chemical analogousness of the ethyleneimine and propyleneimine is such that it makes it very unlikely that an artisan of ordinary skill in the art would be unaware of propyleneimine’s utilization in the instantly claimed field of endeavor.” *Id.* at 6. Appellant does not dispute the structural similarity of

ethyleneimine and propyleneimine. This close similarity supports the Examiner's finding of a reasonable expectation of success.

Third, Appellant argues that, even if the Examiner has set forth an adequate prima facie case of obviousness, such case is rebutted by evidence of unexpected results. Appeal Br. 9–13, 20. Rebuttal evidence may include evidence of “secondary considerations,” such as “commercial success, long felt but unsolved needs, [and] failure of others.” *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Rebuttal evidence may also include evidence that the claimed invention yields unexpectedly improved properties not present in the prior art. *In re Fenn*, 639 F.2d 762, 765 (CCPA 1981) (“Although it is well settled that comparative test data showing an unexpected result will rebut a prima facie case of obviousness, the comparative testing must be between the claimed invention and the closest prior art.”).

The Examiner determines that the evidence of unexpected results is not commensurate with the scope of the claims. Answer 6–7. “It is the established rule that ‘objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.’” *Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 965 (Fed. Cir. 2014) (quoting *In re Tiffin*, 448 F.2d 791, 792 (CCPA 1971)). This is as true for evidence of unexpected results as it is for any other type of objective evidence of non-obviousness. See *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003) (“the applicant’s showing of unexpected results must be commensurate in scope with the claimed range”); *In re Clemens*, 622 F.2d 1029, 1035 (CCPA 1980) (“In order to establish unexpected results for a claimed invention, objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to

support.”); *In re Greenfield*, 571 F.2d 1185, 1189 (CCPA 1978) (“Establishing that one (or a small number of) species gives unexpected results is inadequate proof, for it is the view of this court that objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.”) (internal citation omitted).

Here, claim 1 generally requires an aqueous formulation comprising (A) an alkoxyated polypropylenimine, and (B) a nonionic surfactant. Appeal Br. 35 (Claims App.). Thus, claim 1 encompasses every formulation including any alkoxyated polypropyleneimine in combination with any of the surfactants meeting the requirements of claim elements (B1) or (B2). The claim lacks any limitation regarding the type or number of alkoxy groups bound to the polypropyleneimine. Further, it encompasses the alkoxyated polypropyleneimine when combined with any nonionic alkyl polyglycoside or with any nonionic alkoxyated C₈-C₁₄-Guerbet alcohols. Accordingly, in order to show unexpectedly beneficial results commensurate with the scope of the claim, Appellant must provide evidence indicating that formulations that include *every* alkoxyated polypropyleneimine demonstrate the asserted beneficial results. Further, Appellant must show that a formulation including an alkoxyated polypropyleneimine demonstrates the asserted benefits when combined with *any* nonionic alkyl polyglycoside (B1) or with *any* nonionic alkoxyated C₈-C₁₄-Guerbet alcohols (B2).

Appellant presents data indicating the results of two tests – the “oil test” and the “clean plate test.” Table 3 from the Specification and associated text, setting forth Appellant’s test data, are reproduced below.

Appeal 2019-000023
 Application 14/763,203

Table 3: Formulations according to the invention, comparative formulations, and their properties

	C-AF.1	C-AF.2	AF.3	AF.4	C-AF.5	AF.6	C-AF.7	AF.8
(A): GC.3		---	0.35	0.16	---	0.35	---	0.35
PEI	0.35	0.35	---	---	0.35	---	0.35	---
RF	C-RF.1	RF.3	RF.3	RF.4	RF.5	RF.5	RF.7	RF.7
Oil test 1	41	68	72	65	65	60	71	73
Oil test 2	33	61	70	62	60	65	69	72
Clean plates 1	18	27	30	26	25	27	28	32
Clean plates 2	22	29	31	28	28	30	31	33
Clean plates 3	16	26	29	24	26	28	29	32

All quantities in % by weight, based upon total formulation.

A difference of two plates is considered to be significant.

Table 3 (continued):

	AF.9	AF.10	C-AF.11	AF.12	AF.13	C-AF.14	AF.15
(A): GC.5	0.35	2.0	---	0.35	0.16	---	0.35
PEI	---	---	0.35	---	---	0.35	---
RF	RF.9	RF.10	RF.10	RF.10	RF.10	RF.14	RF.14
Oil test 1	64	63	70	74	68	71	73
Oil test 2	61	51	66	71	65	70	71
Clean plates 1	26	24	28	31	27	29	31
Clean plates 2	27	25	29	32	29	31	32
Clean plates 3	25	22	28	31	28	30	31

Spec. 34.

The two tables reproduced above collectively comprise Table 3 from the Specification. *Id.* In the top row of each chart, aqueous formulations designated “AF” fall within the claims while those designated “C-AF” are comparative and fall outside the scope of the claims. Appeal Br. 12. Row 2

indicates the concentration of “GC.3” and “GC.5” which are stated to be alkoxyated polypropyleneimines that fall within the scope of the claims. Appeal Br. 12; Spec. 28–29, ¶¶ 1.2.3, 1.2.5. In Row 3, “PEI” indicates polyethyleneimine which is regarded as a comparative prior art formulation. Appeal Br. 12. In Row 4, surfactants falling outside the scope of the claims are designated “C-RF” while those falling within the claims are designated as “RF.”

Appellant presents data for only two alkoxyated polypropyleneimines: GC.3 and GC.5. The Specification includes information regarding the synthesis of these alkoxyated polypropyleneimines. Spec. 28–29. Appellant has not, however, cited us to any information regarding the structure of GC.3 and GC.5. *Id.* Test results for two polymers of unspecified structure are inadequate to show unexpected results commensurate in scope with the claims. Appellant has not shown that GC.3 and GC.5 are representative of all alkoxyated polypropyleneimines regardless of differences in alkoxylation, molecular weight, and branching.

Further, the data includes results for only a single comparative surfactant (C-RF.1). *See* Table 3 (C-AF.1). The surfactant (C-RF.1) is included within a formulation that also includes polyethyleneimine (PEI) rather than a polypropyleneimine. Thus, Table 3 lacks even a single test result of a formulation having an alkoxyated polypropyleneimine in combination with a comparative surfactant. *See* Table 3.

Similarly, Appellant seeks to claim compositions having any concentration of nonionic surfactant but supplies data only for the range 1–4.5%. The Specification teaches that “formulations according to the invention are more efficient, for example with respect to dishwashing and

degreasing, if surfactant (B) is present in comparably low amount.” Spec. 14. This suggests that formulations including surfactant (B) at higher concentrations are less efficient and may not yield beneficial results. In view of all of the foregoing, Appellant has not shown beneficial results commensurate in scope with the claims at issue.

Additionally, one must show that the asserted benefit is surprising or unexpected. An appellant may show that the claimed invention has an unexpected property over the prior art “with evidence that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would find surprising or unexpected.” *In re Mayne*, 104 F.3d 1339, 1343 (Fed. Cir. 1997). An examination for unexpected results is a factual, evidentiary inquiry. *Id.* Here, Appellant has not cited to factual evidence in the Specification or elsewhere that indicates that the test results are unexpected. *See In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) (“Only if the ‘results of optimizing a variable’ are ‘unexpectedly good’ can a patent be obtained for the claimed critical range.”).

In view of the foregoing, we determine that Appellant has not shown error in the Examiner’s prima facie case of obviousness and has not rebutted the prima facie case as to claims 1, 8, 10, and 11.

Claim 2

Claim 2 depends from claim 1 and further requires that “the at least one alkoxyated polypropylenimine (A) is selected from those with a polypropylenimine backbone having a molecular weight M_n of from 300 to 4,000 g/mol.” Appeal Br. 35 (Claims App.).

In seeking reversal of the rejection, Appellant briefly describes the disclosures of Cooremans and Hahn, then concludes that they “do not describe or suggest selecting an alkoxyated polypropylenimine (A) with a polypropylenimine backbone having a molecular weight M_n of from 300 to 4,000 g/mol.” *Id.* at 24. However, Appellant does not address the Examiner’s reasoning underlying the rejection, which is based on the finding that the cited molecular weights overlap the range specified in claim 1 and such overlapping ranges are evidence of prima facie obviousness. Non-Final Act. 3; Ans. 8.

Further, we note that Cooremans teaches an embodiment that specifies “Polyethyleneimine (Backbone Molecular Weight 600).” Cooremans ¶ 29 (Example 4). Accordingly, Appellant has not shown error with regard to the rejection of claim 2.

Claim 3

Claim 3 depends from claim 1 and further requires that “the at least one alkoxyated polypropylenimine (A) is selected from those having alkylene oxide units and N atoms in a molar ratio of from 1 : 1 to 100 : 1.” Appeal Br. (Claims App.). In the Non-Final Rejection, the Examiner finds that Cooremans teaches a composition “wherein the molar ratio of N atom to EO units (EO = 1-40) is within the claimed range.” Non-Final Act. 3 (citing Cooremans ¶¶ 15–22, claim 1).

In its opening brief, Appellant asserts that the references “do not describe or suggest selecting an alkoxyated polypropylenimine (A) having alkylene oxide units and N atoms in a molar ratio of from 1: 1 to 100 : 1.” Appeal Br. 24. Appellant further asserts that the cited portions of

Cooremans “do not describe or suggest selecting the claimed molar ratio[.]” *Id.* at 25. This is not persuasive. Formula (I) found in ¶ 21 of Cooremans shows that there are “n” ethoxy groups attached to nitrogens in the polyethyleneimine backbone. Cooremans ¶ 21, formula (I). Cooremans teaches that “n of formula (I) has an average of 5-10.” *Id.* This indicates that there are approximately 5 to 10 ethoxy units per nitrogen. Accordingly, Appellant has not shown that the Examiner erred in finding that Cooremans teaches the claimed alkoxylation.

Claims 4 and 5

Claim 4 depends from claim 1 and further requires that “the at least one alkoxyated polypropylenimine (A) is selected from alkoxyated polypropylenimines (A) having a *linear polypropylenimine backbone.*” Appeal Br. 35 (Claims App.) (emphasis added). Claim 5 also depends from claim 1 and further requires that “the at least one alkoxyated polypropylenimine (A) is selected from alkoxyated polypropylenimines (A) having a *linear polypropylenimine backbone* that bears no hydroxyl groups.” *Id.* (emphasis added).

In the Non-Final Rejection, the Examiner finds that “the polyalkyleneimine of Cooremans is linear and bears no hydroxyl group.” Non-Final Act. 3. The Examiner, however, does not cite to any portion of Cooremans in support of this finding. *Id.* In the Answer, the Examiner finds that Cooremans formulae I and II teach that “each nitrogen (with electronic valence of 3) is connected to three linear alkoxylation chain(s).” Answer 8.

The Specification indicates that the “polypropylenimine backbone can be linear, predominantly linear or branched, predominantly linear being

preferred and linear being more preferred.” Spec. 2. The Specification further indicates that “L (linear) correspond[s] to the fraction of secondary amino groups.” *Id.* In formulae I and II, the amino groups are tertiary, not secondary. Cooremans ¶¶ 21, 22. Accordingly, Appellant has shown error in the Examiner’s finding that Cooremans teaches a linear polypropyleneimine backbone and claims 4 and 5 have been shown to be rejected in error.

Claim 9

Claim 9 depends from claim 1 and further requires that the formulation comprise “from 0.1 to 1.0 % by weight of the at least one alkoxyated polypropylenimine” and “from 0.5 to 5.0 % by weight of the at least one nonionic surfactant.” Appeal Br. 37 (Claims App.). Claim 9 further includes an optional claim element. *Id.*

In seeking reversal of the rejection, Appellant briefly describes the disclosures of Cooremans and Hahn, then concludes that the references fail to “describe or suggest selecting the claimed combination of specific ranges of the alkoxyated polypropylenimine (A) (0.1-1.0 wt. %); of the nonionic surfactant (B) (0.5-5.0 wt.%) . . . from the broad ranges of each of the components of a dishwashing formulation suggested in Cooremans et al. and Hahn.” Appeal Br. 26–27 (argument regarding optional limitation omitted).

In the Non-Final Rejection, the Examiner finds that “Cooremans teaches . . . alkoxyated polyalkyleneimine in the amount of 0.01-2%; [0014], and nonionic surfactant in the amount of 0.1-20%; [0045].” Non-Final Act. 4. In the Answer, the Examiner determines that “the instantly claimed ranges are taught by both prior arts of Hahn and Cooremans. More

importantly, the corresponding ranges, taught by prior arts, are not required to be exactly the same as questioned by appellant.” Answer 9.

Federal Circuit precedent provides that a prior art teaching of a broader range may establish a *prima facie* case of obviousness.

[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness. That is not to say that the claimed composition having a narrower range is unpatentable. Rather, the existence of overlapping or encompassing ranges shifts the burden to the applicant to show that his invention would not have been obvious.

In re Peterson, 315 F.3d at 1330. Here, Appellant simply asserts that the prior art references “do not describe or suggest selecting the claimed combination of specific ranges.” Appeal Br. 26; *see also* Reply Br. 9. This is inadequate to rebut the *prima facie* case of obviousness. Accordingly, Appellant has not shown error with regard to the rejection of claim 9.

Rejection 2. The Examiner rejects claim 6 as obvious over Cooremans, Hahn, and Haerer. Non-Final Act. 4. Claim 6 depends from claim 1 and further specifies a particular structure of alkyl polyglycoside (B1). Appeal Br. 36 (Claims App.). The Examiner finds that Cooremans does not teach the claimed alkyl polyglycoside but that Haerer does teach such structure. Non-Final Act. 4. The Examiner further determines that one of skill in the art would have had reason “to substitute Cooremans’ alkyl polyglycoside with that of Haerer with the motivation of promoting the homogeneity in the composition and enhancing the storage duration as taught by Haerer; [1:54-67].” *Id.*

Appellant argues that the Examiner has not advanced a persuasive reason to combine the teachings of Cooremans and Haerer. Appeal Br. 30–31. Appellant argues that the stated reason to combine, the promotion of homogeneity in the composition and enhancement of storage duration, relates only to rinsing aids that contain a foaming agent which are known to have such problems. *Id.* at 31. Appellant asserts that Cooremans is not known to have problems with homogeneity or storage duration. *Id.* We find this reasoning to be persuasive. The advantages of the alkyl polyglycoside disclosed by Haerer are taught in the context of maintaining the stability of a rinse aid. In the Non-Final Action, the Examiner does not show that the composition of the hypothetical combination lacked stability or would have otherwise benefited from the alkyl polyglycoside of Haerer.

In the Answer the Examiner modifies the reasoning underlying the rejection. Answer 9. There, the Examiner finds that Cooremans teaches alkyl polyglycosides having only “slightly different structures” from those of Haerer. *Id.* Cooremans teaches that “[t]he liquid detergent composition of the present invention may further comprise surfactants other than the mid-branched amine oxide discussed above, and are selected from nonionic, anionic, cationic surfactants . . . and mixtures thereof.” Cooremans ¶ 35. Under the heading for “Nonionic Surfactants,” Cooremans teaches that “[a]lso suitable are alkylpolyglycosides having the formula $R^2O(C_nH_{2n}O)_1$ (glycosyl)_x (formula (III)).” *Id.* ¶ 45.

The Examiner further determines as follows:

[A]ppellant’s argument that presence of a specific structure of alkyl polyglycoside which is useful in machine washing would not be useful for hand washing is not persuasive in absence of any evidence to the contrary. Because, chemically it is unlikely

that alkyl polyglycoside of Haerer would lose its chemical properties and advantages once placed in Cooremans' composition instead of another very similar alkyl polyglycoside.

Answer 9. Thus, in the Answer, the Examiner seems to regard the basis for the combination as a substitution of one nonionic surfactant for another nonionic surfactant that is somewhat structurally similar. The Examiner, however, has not shown the functional similarity of all alkyl polyglycosides as nonionic surfactants. *See* Reply Br. 11. Further, both Haerer and Cooremans include detailed teachings regarding their respective disclosed alkyl polyglycosides, suggesting that not all alkyl polyglycosides are regarded as equivalent in the prior art. Accordingly, the Examiner has not shown adequate reason to combine the teachings of Haerer and Cooremans.

In view of the foregoing, Appellant has shown error in the rejection of claim 6.

Rejection 3. The Examiner rejects claim 7 as obvious over Cooremans, Hahn, and Evers. Non-Final Act. 5. Claim 7 depends from claim 1 and further specifies that “an alkoxyated Guerbet C₈-C₁₄-Guerbet alcohol (B2) is present and is selected from alkoxyated C₈-C₁₄-Guerbet alcohols having from 3 to 40 alkoxide units per mole.” Appeal Br. 36 (Claims App.).

The Examiner determines that Evers teaches a dishwashing detergent comprising nonionic surfactant such as ethoxylated C₁₀-Guerbet alcohol and that one of skill in the art would have had reason to use Evers' Guerbet nonionic surfactant with Cooremans composition in order to enhance grease

removal and increase shine efficacy. Non-Final Act. 5 (citing Evers, Abstract).

In its brief, Appellant briefly summarizes Evers' teachings and then asserts that "[t]here is no motivation with a reasonable expectation of success in substitution of the nonionic surfactants described in Cooremans et al. with different nonionic surfactants." Appeal Br. 32. This is insufficient to present an issue for appeal. *See* 37 C.F.R. § 41.37(c)(1)(iv). Accordingly, Appellant has not shown error with regard to the rejection of claim 7.

CONCLUSION

The Examiner's rejections of claims 1–3 and 7–11 are affirmed. The Examiner's rejections of claims 4–6 are reversed.

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–5, 8–11	103(a)	Cooremans, Hahn	1–3, 8–11	4, 5
6	103(a)	Cooremans, Hahn, Haerer		6
7	103(a)	Cooremans, Hahn, Evers	7	
Overall Outcome			1–3, 7–11	4–6

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

AFFIRMED IN PART