

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADAMA MAKHTESHIM LTD.,
Petitioner

v.

FINCHIMICA S.P.A.,
Patent Owner.

Case IPR2016-00577
Patent 8,304,559 B2

Before RICHARD E. SCHAFER, SALLY GARDNER LANE, and
DEBORAH KATZ, *Administrative Patent Judges*.

LANE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. *Background*

Adama Makhteshim Ltd. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) to institute an *inter partes* review of all claims, i.e., claims 1–12,¹ of U.S. Patent No. 8,304,559 B2 (“’559 patent,” Ex. 1001) of Finchimica S.p.A. (“Patent Owner”). We instituted review concluding that Petitioner established a reasonable likelihood that it would prevail in an asserted ground of unpatentability of claims 1–12 of the ’559 Patent. (Paper 7, “Decision Instituting Review”). 35 U.S.C. § 314(a). In particular we instituted review on the asserted ground, ground 1 of the Petition, that the claimed subject matter would have been obvious under U.S.C. § 103(a) over EP 0295117 B in view of WO 2007/122440 A1 and further in view of CN 101250158 A for claims 11 and 12 only. (Decision Instituting Review, 17).

Patent Owner filed a Patent Owner Response (Paper 19, “PO Resp.”) and Petitioner filed a Reply to Patent Owner’s Response (Paper 22, “Reply”). An oral hearing was held before the Board on February 14, 2017. (Paper 29, “Hearing Transcript”).

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Having considered the record before us, we conclude that Petitioner has shown by a preponderance of the evidence that claims 1–12 of the ’559 patent are unpatentable. *See* 35 U.S.C. § 316(e).

B. *Related Matters*

The parties are involved in litigation² where the Patent Owner has alleged that the Petitioner infringed and will continue to infringe the ’559

¹ Patent Owner statutorily disclaimed claims 13–15 of the ’559 patent so now the patent contains only claims 1–12. (Interference 105,995, Paper 26, Ex. 1025).

² The litigation is said to be styled *Finchimica S.P.A. v. Adama Makhteshim Ltd et al* (1:14-cv-01516). (Pet., 2).

patent. (Pet., 2–3).

Interference 105,995, involving the '559 patent and Petitioner's U.S. patent application no. 13/926,389, was declared on February 6, 2014. (Interference 105,995, Paper 1, Ex. 1022, Declaration). In the interference, the Board entered judgment against junior party who is the Petitioner here. (Pet., 3 (indicating that Petitioner was a party in the interference) and Interference 105,995,³ Paper 260, Judgment and Paper 259, Ex. 2002, Decision on Priority and Other Motions).⁴

An application for the reissue of the '559 patent is pending before the USPTO. The examination of this application remains suspended. (Reissue application 14/534,001, filed November 5, 2014, Paper entered March 23, 2016).

C. Evidence Relied Upon

Ground 1, upon which we instituted review, relies upon the following references:

European Patent 0295117 B ("EP '117") (Ex. 1002).

PCT International Publication WO 2007/122440 A1 ("Gharda") (Ex. 1004).

Chinese Patent Application Publication 101250158 A ("CN '158") (Ex. 1003).

³ The interference is styled ANAT LEVIN and MICHAEL GRABARNICK, Junior Party, (Application 13/926,389) [Petitioner] v. ANDREA PASTORIO and PAOLO BETTI Senior Party, (Patent 8,304,559) [Patent Owner].

⁴ Petitioner requested rehearing of the Judgment and underlying Decision on Priority and Other Motions but the Judgment and Decision were not modified. (Interference 105,995, Paper 262, Request and Paper 271, Decision on Rehearing).

Petitioner also relies on the declaration testimony of Dr. Gordon Gribble. (“Gribble Decl.,” Ex. 1010). Based on his education and professional experience (see Gribble Decl. ¶¶ 1–3, and *curriculum vitae*, Ex. 1011), we find that Dr. Gribble is qualified to testify about issues raised in this trial. Dr. Gribble was deposed by Patent Owner and a transcript of the deposition has been filed. (“Gribble Deposition,” Ex. 2021).

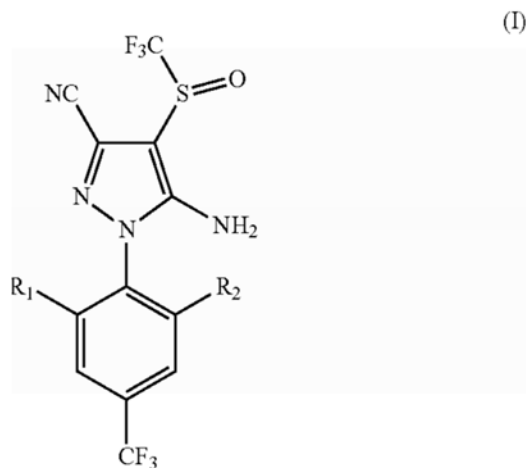
Patent Owner relies on the declaration of testimony of Dr. Dennis P. Curran. (“Curran Decl.,” Ex. 2026). Based on his education and professional experience (see Curran Decl. ¶¶ 2–4, and *curriculum vitae*, Ex. 2020), we find that Dr. Curran is qualified to testify about issues raised in this trial. Dr. Curran was deposed by Petitioner and a transcript of the deposition has been filed. (“Curran Deposition,” Ex. 1039).

D. The ’559 Patent Claims

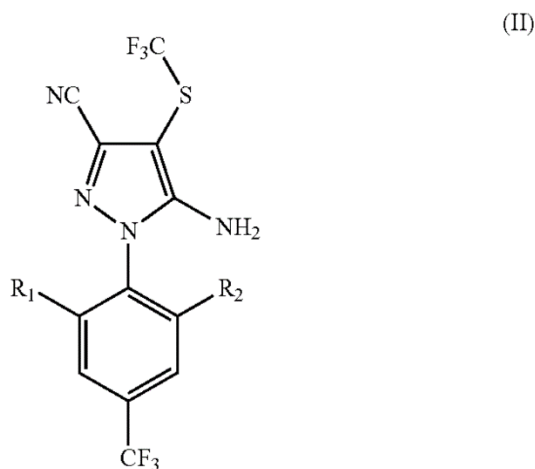
The ’559 claims are directed to a method of making the compounds of formula I, which includes a method of making the insecticidal compound fipronil.

Claim 1 of the ’559 patent is the only independent claim. It reads:

1. A method for the preparation of the compound having the following general formula (I):



wherein R1 and R2 are independently hydrogen or halogen;
through oxidation of a compound having the general formula (II)
in the presence of dichloroacetic acid and of an oxidising agent:



wherein R1 and R2 are defined as above, where the
oxidising agent is selected from the group comprising benzoyl
peroxides, sodium peroxides, t-butyl peroxides and/or hydrogen
peroxide, and wherein the oxidation is conducted in the absence
of trichloroacetic and/or trichloroperacetic acid.

('559 patent, Ex. 1001, 9:2–46).

When interpreting patent claims involved in an inter partes review of patentability we use the broadest reasonable construction in light of the specification of the patent in which the claims appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs. v. Lee*, 136 S. Ct. 2131 (2016). This is a different standard than is applied in evaluating the validity of an issued patent where, unlike in this proceeding, the patent owner may not move to amend the claims. *See Cuozzo* at 2145–46; 37 C.F.R. § 42.121(a).

In the Decision Instituting Review we noted that all of the challenged claims are directed to a method of making compound I, through the oxidation of compound II, in the presence of dichloroacetic acid (DCA) and an oxidizing agent which is selected from the group comprising benzoyl peroxides, sodium peroxides, t-butyl peroxides and/or hydrogen peroxide. We concluded that the claims do not require that DCA perform any particular function in the claimed reaction and that, for example, the claims do not require that DCA react with the claimed oxidizing agent.⁵ We concluded that, because “comprising” is an open phrase, it opens the “group” of the claim to oxidizing agents other than those listed, including those additional ones and combinations set forth in the ’559 specification at, e.g., column 8, lines 59–61.⁶ Further we concluded that because the ’559 claims provide that the oxidation is conducted in the absence of trichloroacetic (TCA) “and/or” trichloroperacetic acid (TCPA), the ’559 claims allow for, but do not require, the exclusion of both TCA and TCPA such that the oxidation may be in the absence of both TCA and TCPA or in the

⁵ We also noted that this construction is consistent with the construction given the ’559 claims in Interference 105,995. (Interference 105,995, Paper 259, Ex. 2002, Decision on Priority and Other Motions, 16 and Paper 271, Decision on Rehearing, 3–4).

⁶ We also noted that this construction is consistent with the construction given the ’559 claims in Interference 105,995. (Interference 105,995, Paper 144, Ex. 1028, Decision on Motions, 16).

absence of either TCA or TCPA.⁷ We concluded that no other components are excluded from the claimed method. (Decision Instituting Review, 6).

In deciding to institute review we did not make any final determination of the construction of any claim term. (Decision Instituting Review, 17). We have considered the additional arguments and supporting evidence now before us in making our final determination, discussed below.

II. DISCUSSION

A. 35 U.S.C. 103 Analysis

The legal question of obviousness is resolved on the basis of certain underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

The person of ordinary skill in the art is a person who is presumed to know the relevant prior art. *In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). The parties assert that

[o]ne of ordinary skill in the art relevant to the '559 patent would have a bachelor's or master's degree in chemistry or a related discipline and have several years of experience in synthetic organic chemistry [or] a Ph.D. degree in organic chemistry and 1-2 years of experience in synthetic organic chemistry.

(Gribble Declaration, Ex. 1010, ¶ 14; Curran Declaration, Ex. 2026, ¶¶13–14).

We agree that a person of ordinary skill may have the education and experiences asserted by the parties.

We instituted review on the ground that claims 1–12 of the '559 Patent

⁷ We noted that this construction is consistent with the construction given the '559 claims in Interference 105,995. (Interference 105,995, Paper 259, Ex. 2002, Decision on Priority and Other Motions, 15–16).

are unpatentable under 35 U.S.C. § 103(a) as obvious over EP '117 in view of Gharda, and further in view of CN '158 for claims 11 and 12 only. In doing so we did not make any final determination of the patentability of these claims. (Decision Instituting Review 17). Here we have considered the totality of the record before us, including any evidence of secondary considerations pointed out to us, recognizing that the Petitioner has the burden of proving that the challenged claims are unpatentable to Patent Owner. *Nike, Inc. v. Addidas, AG*, 812 F.3d 1326, 1338 (Fed. Cir. 2016) (Evidence of secondary considerations when present must be considered in making a determination of obviousness.); *In re Piasecki*, 745 F.2d 1468, 1472–73 (Fed. Cir. 1984) (All evidence, including rebuttal evidence, must be considered anew in determining whether claims would have been obvious); 35 USC § 316(e) (providing that the Petitioner has the burden of proving unpatentability by a preponderance of the evidence).

In instituting review, we stated that:

Petitioner argues that EP '117 teaches all the features of claim 1 except for the use of DCA as a solvent. In particular Petitioner points to portions of EP '117, including example 1 (p. 15) showing the formation of fipronil through the oxidation of compound II (“the sulfide precursor”) using m-chloroperobenzoic acid (mCPBA) as an oxidant in the solvent dichloromethane (DCM) [footnote omitted] where no TCA or TCPA is present. Petitioner notes that instead of DCA as called for by the '559 claims, EP '117 teaches using the solvent dichloromethane (DCM). (Pet. at 20–21).

Petitioner argues that one skilled in the art would have been motivated to replace DCM with DCA given Gharda’s disclosure of both DCM and DCA as preferred solvents for oxidizing the same sulfide precursor as is used in EP '117. According to Petitioner another reason to replace DCM with DCA in the EP '117 method is Gharda’s teaching that both DCM and DCA act as melting point depressants for the TCA which is said to be solid under the room temperature condition of

oxidation[footnote omitted]. (Pet. at 24–25, citing to Gharda at 7 and Gribble Decl. at ¶ 98). Petitioner notes that the oxidant mCPBA, used in EP '117, also is solid at room temperature. (Pet. at 23, citing Thermo Fischer Scientific technical data sheet for mCPBA (Ex. 1020)).

In deciding whether it would have been obvious to replace DCM with DCA in the EP '117 method we consider whether a person of ordinary skill would have had reason to select DCA as a predictable variation of the taught solvent, DCM. *KSR v. Teleflex Inc.*, 550 U.S. 398, [417] (2007). On the record before us, Petitioner has provided such a reason.

(Decision Instituting Review, 14–15).

In short, Petitioner's position is that EP '117 shows all the limitations of challenged claim 1 except for the use of DCA in the reaction. Instead, Petitioner argues, EP '117 teaches the claimed method but uses DCM as a solvent instead of DCA. Gharda shows that both DCM⁸ and DCA are preferred solvents for oxidizing the same sulfide precursor as is used in the EP '117 method such that it would have been obvious to replace the DCM of EP '117 with DCA. (Pet., 24–25). Petitioner asserts further that one skilled in the art would have had reason to make the replacement and would have expected to produce fipronil if DCA were used in place of DCM in the method of EP '117. (Reply, 24, citing Pet., 20–25; Gribble Decl., Ex. 1010, ¶¶ 89–102, 129–130, 143–148; EP '117, Ex. 1002, ¶ 0099; Gharda, Ex. 1004, 10:10–25).

We find that EP '117 teaches, at example 1, a method for the formation of fipronil through the oxidation of compound II (the sulfide precursor) using mCPBA as an oxidant and DCM as a solvent with no TCA

⁸ Gharda refers to methylene chloride which, as we've previously noted, we understand to be another name for DCM. (Decision Instituting Review, 14).

or TCPA being present. (EP '117, Ex. 1002, ¶¶ 0099, and 0066). We find that the EP '117 method differs from the method of the '559 claims because the EP '117 method fails to teach the presence of DCA. We find that Gharda teaches that both DCM and DCA are solvents, that also may act as “melting point depressants”, suitable for use in methods of oxidizing the same sulfide precursor as is used in EP '117. (Gharda, Ex. 1004, 7, 10 (example 1) and 11 (example 2)).

We conclude that one skilled in the art, knowing DCA to be a recognized alternative to DCM, would have had sufficient reason to replace DCM with DCA in the reaction of EP '117 and that, in view of all the argument and evidence before us, claims 1–12 of the '559 patent have been shown to be unpatentable under 35 U.S.C. § 103(a).

Patent Owner Response

Patent Owner acknowledges that EP '117 discloses a method of producing fipronil by oxidation of the sulfide precursor using the oxidant m-CPBA and the solvent DCM (PO Resp., 12). Patent Owner acknowledges that Gharda teaches a solvent mixture of TCA and an additional solvent which may be DCA or DCM and that the additional solvent also acts as a “melting point depressant.” (PO Resp., 9–10, citing the '559 patent, Ex. 1001, 2:30–63). Patent Owner disagrees that it would have been obvious to substitute DCA for DCM in the method of EP '117. Patent Owner makes three main arguments against obviousness. Patent Owner argues that there is no motivation to combine the EP '117 and Gharda references, even if combined the '559 claimed invention would not result, and the '559 claims fulfilled a long felt need.

We address each of Patent Owner's arguments below.

1. No motivation to combine

Patent Owner argues that there is no motivation to replace the reaction solvent DCM used in example 1 of EP '117 with DCA because Gharda teaches

that the reaction solvent is TCA. Patent Owner argues that DCA is used only in minor amounts sufficient to depress the melting point of TCA. (PO Resp., 30). In contrast, argues Patent Owner, DCM is used in large excess in EP '117 and does not require a melting point depressant because DCM is liquid at the reaction temperature. (PO Resp., 31–32 (citing Curran Decl., Ex. 2026, ¶ 54).

The '559 claims do not require a particular amount of DCA, only that the reaction be conducted “in the presence of [DCA].” Thus even a minor amount meets the claim requirement. Further, as Patent Owner’s argument recognizes, EP '117 teaches using an excess of the solvent in the reaction. (PO Resp., 31–32 (citing Curran Decl., Ex 2026, ¶ 54). We are convinced that one skilled in the art replacing DCM with another known solvent (here, DCA) would have had reason to follow the teaching of EP '117 to use an excess of solvent when using the replacement solvent. (Gribble Decl., Ex. 1010, ¶ 97).

Further, we are persuaded that one skilled in the art would have understood that in Gharda DCA is acting as both a solvent and what is referred to in Gharda as a melting point depressant. (Gribble Decl., Ex. 1010, ¶ 95).⁹ To the extent Dr. Gribble and Dr. Curran have presented conflicting testimony on this point, we credit the testimony of Dr. Gribble. Dr. Gribble’s testimony is consistent with Gharda which identifies DCA as being a component of a “solvent mixture.” (Gharda, Ex. 1004, 10 (example 1)). While Gharda teaches that TCA also is a component of the “solvent mixture,” we are convinced that one skilled in the art would have understood from Gharda that DCA is acting as a solvent as well. In this regard Dr. Gribble points to prior art in support of his testimony that one skilled in the art would have knowledge that DCA is

⁹ Our understanding is that the melting point of a compound itself is fixed and cannot be changed by a solvent. However, when the compound is mixed with a solvent having a lower melting point then the resulting mixture would have a lower melting point than the compound itself. (See, e.g., Curran Deposition, Ex. 1039, 58:4–17).

suitable in a reaction for oxidizing sulfides. (Gribble Decl., Ex. 1010, ¶ 87 (citing e.g., Zierer¹⁰, Ex. 1006, 2:56–62)). We also are persuaded by Dr. Gribble's testimony that one skilled in the art would have expected DCA to be a successful solvent because of this knowledge and further because DCA is structurally related to solvents specifically taught to be suitable in EP '117. (Gribble Decl., Ex. 1010, ¶¶ 87–90). We recognize that, as argued by Patent Owner (PO Resp., 44–46, citing, *inter alia*, Curran Decl., Ex. 2026, ¶¶ 75–77, 81), DCM and DCA are different substances having different properties and it would be expected that one may work better than the other in a given reaction. However, we are persuaded that, in view of (i) Gharda's teaching that both are useful solvents in the oxidation reaction of the sulfide precursor and (ii) the testimony of Dr. Gribble discussed above, one skilled in the art would have had sufficient reason to use DCA as a substitute for DCM in the EP '117 reaction.

Regarding m-CPBA, the oxidant used in example 1 of EP '117, Patent Owner acknowledges that it is a solid reactant but argues that it would not have required a melting point depressant since it is shown to be dissolved in the DCM reactive solvent. (PO Resp., 32 (citing Curran Decl., Ex. 2026, ¶ 54)). This argument does not address the scenario that is the basis for Petitioner's challenge, i.e., where DCM has been replaced by DCA. At any rate we agree with Petitioner that whether or not DCA is acting as a melting point depressant for m-CPBA, a skilled artisan would have had reason to replace some or all of the DCM with DCA given the prior art teaching that both are suitable solvents in the production of fipronil through the oxidation of the sulfide precursor.

Patent Owner argues that one skilled in the art would not have expected to be able to reduce the melting point of m-CPBA by incorporating DCA

¹⁰ Zierer, US Patent 6,013,761, issued 11 January 2000. (Ex. 1006).

because its melting point is about 40°C higher than that of TCA. (PO Resp., 32, citing Curran Decl., Ex. 2026, 54). Patent Owner argues that one would not even know if DCA would have been soluble in m-CPBA at the levels required to depress melting point without conducting experiments. (PO Resp., 32). We are persuaded though that one skilled in the art would have had reason to substitute DCA for DCM to act as a reaction solvent whether or not it acts to any particular degree as a melting point depressant.

Patent Owner points to Gharda's statement that "the preferred melting point depressant [DCA] is a poor medium for oxidation and the purpose of its addition is only to sufficiently depress the melting point of [TCA] to facilitate ease of processing" to support its argument that Gharda teaches DCA only as a melting point depressant, not as a solvent. (PO Resp., 17–18 (citing Gharda, Ex. 1004, 9:10–25)). Patent Owner does not explain how this statement of Gharda discourages the use of DCA as a solvent or as part of a solvent mixture, particularly since Gharda specifically indicates that DCA is part of the "solvent mixture." (Gharda, Ex. 1004, 10 (example 1)). While Gharda does describe DCA as a "poor medium for oxidation," we are not persuaded that this negates the teaching in Gharda that DCA is used as a cosolvent in a reaction mixture for the sulfide precursor. Instead we understand the phrase in Gharda to be referring to the oxidizing ability of DCA and not its suitability as a solvent. This understanding is consistent with Dr. Curran's testimony that, like TCA,¹¹ DCA itself is not an oxidizing agent. (Curran Deposition, Ex. 1039, 95:3–17).

Patent Owner argues that the Board already determined during the related interference that there was no motivation to substitute an oxidizing medium that worked well for one that is said to work poorly. (PO Resp., 39).

¹¹ Our understanding is that it is TCPA, not TCA, that acts as the oxidizing agent in the reaction. (Curran Decl., Ex. 2026, ¶ 54).

As we explained above though we do not understand an oxidizing medium to be the same as a solvent. Moreover, the issue presented in the interference (in Levin Motion 4) and the evidence considered there were not the same as in this proceeding. For instance the EP '117 reference was not considered in combination with Gharda during the interference. (Decision on Motions, Ex. 2002, Interference No. 105,995, Paper No. 259, 14-15). Our statement from the Interference Decision, pointed to by Patent Owner¹², related to whether it would have been obvious to remove TCA from the reaction of Gharda. Here we consider whether it would have been obvious to substitute DCA for DCM in the EP '117 reaction given the teachings of Gharda.

2. The '559 claimed invention would not result

Patent Owner argues that even if one combined the teachings of EP '117 and Gharda, the claimed invention would not result. Patent Owner argues that such a combination would require m-CPBA as an oxidizing agent as taught by EP '117 and a solvent combination of TCA and DCA as taught by Gharda. (PO Resp., 47).

First Patent Owner urges that, even though the claims do not expressly exclude any oxidizing agent, we should construe the claims to exclude certain ones, including and pertinent to the patentability issue before us, m-CPBA. Patent Owner argues that m-CPBA was “clearly and unambiguously disclaimed” from the scope of the claim because it was deemed “unsatisfactory” by the '559 specification. (PO Resp., 47). In support of its

¹² In that decision, we stated, “[w]e are not persuaded that one skilled in the art would have sufficient reason to eliminate what is said to be an effective medium[TCPA] to rely upon what is said to be a poor one [DCA].” (Decision on Motions, Ex. 2002, Interference No. 105,995, Paper No. 259, 17); *see also id.* at 16 (“We do not agree with Levin that Gharda’s disclosure of DCA as a poor medium for oxidation is a disclosure that DCA is a replacement for TCPA in the reaction medium.”).

argument Patent Owner points to the statement in the '559 patent that the method of EP '117 has “evident disadvantages both in terms of yield and of cost” including “impossibility of re-using the oxidiz[ing] agent.” (PO Resp., 25 (citing to Gribble Deposition, Ex. 2021, 70:12–72:3)). Patent Owner argues that the '559 patent therefore “clearly and unambiguously disavows the use of m-CPBA.” (PO Resp., 25).

We do not agree that the '559 claims exclude m-CPBA as an oxidizing agent. The portion of its patent specification that Patent Owner directs us to in support of disavowal asserts that there are “evident disadvantages” to the EP '117 method including “the impossibility of re-using the oxidiz[ing] agent” which is said to be a 3-chlorbenzoic derivative. ('559 patent, Ex. 1001, 1:60–65) This general criticism of the EP '117 method does not persuade us that any particular component used in the EP '117 method is disavowed. In fact the '559 specification indicates that “the peroxides illustrated earlier may be replaced or used in conjunction with a peracid and/or a persulphate.” ('559 patent, Ex. 1001, 8:59–64). As Petitioner points out, and we agree, m-CPBA is a peracid. (Reply 3 (citing Gribble Decl., Ex. 1010 ¶ 31; Curran Deposition, Ex. 1039, 22:21–23:4)). We also note that one skilled in the art would not have understood that m-CPBA was disavowed by virtue of its being characterized as non-reusable because, as acknowledged by Dr. Curran, at least one other non-reusable oxidant, i.e., hydrogen peroxide, lies within the express language of the '559 claims. (See Reply 4–5 (citing Curran Deposition, Ex. 1039, 31:7–34:4)).

The claims do not expressly exclude m-CPBA. Instead Patent Owner chose to use the open term “comprising” and thus the claim encompasses m-CPBA. *AFG Indus., Inc. v. Cardinal IG Co.*, 239 F.3d 1239, 1245 (Fed. Cir. 2001) (citations omitted) (“We have consistently held that the word ‘comprising’ is an open transition phrase.”). Patent Owner could have used

claim language that closes the group of oxidizing agents but chose not to do so. Nor did Patent Owner choose to include a negative limitation to exclude m-CPBA as it did in requiring that the reaction be conducted in the absence of trichloroacetic and/or trichloroperacetic acid.

The case law cited by Patent Owner on this point does not support a determination that the general criticism found in the '559 specification amounts to the disavowal of claim scope that is asserted here. For example in *Honeywell Int'l, Inc. v. ITT Indus.*, 452 F.3d 1312, 1320 (Fed. Cir. 2006), cited by Patent Owner (PO Resp., 26), the court found disavowal of carbon fibers based on repeated statements in the specification where “the patentee informed its readers specifically why carbon fibers would not be suitable as ‘electrically conductive fibers’ in the claimed invention.” Patent Owner does not direct us to a statement in its specification directly stating that, or explaining why, m-CPBA would not be suitable in the claimed method. We are not persuaded that the general criticism of the method of EP '117 constitutes disavowal of m-CPBA.

In further support of its position that combining EP '117 and Gharda would not result in the claimed invention, Patent Owner argues that Gharda teaches that the reaction solvent is TCA and that DCA acts only as a melting point depressant and not as a solvent. Patent Owner reasons that replacing the DCM solvent of EP '117 with the solvent of Gharda would lead to a reaction solvent that must contain TCA (which Patent Owner argues would result in formation of at least some TCPA). Such a combination, Patent Owner argues, would not result in the subject matter of the challenged claims because the claims expressly exclude TCA and/or TCPA. (PO Resp., 48–49).

We are persuaded though that one skilled in the art starting with the teaching of EP '117, and in particular example 1, would have been motivated to achieve the claimed invention because Gharda teaches that DCA and DCM

are, interchangeably, reaction solvents for the oxidation of the sulfide precursor. (Gharda, Ex. 1004, 2:3–9; examples 1 and 2). Substitution of DCM with DCA in example 1 of EP '117 reaction results in the claimed invention because the reaction does not use TCA and/or TCPA. (EP '117, Ex. 1002, 15 (example 1)). We are persuaded that one skilled in the art reading Gharda would have recognized DCA as an alternative solvent to DCM and would have had reason to substitute DCM with DCA in a similar reaction, i.e., the reaction described in EP '117. One skilled in the art would not have thought TCA or TCPA was required for such a reaction since EP '117 does not include either. (EP '117, Ex. 1002, 15 (example 1)).

3. Long felt need

We consider Patent Owner's argument and evidence directed to long felt need in combination with the other evidence before us in evaluating obviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966) (“Such secondary considerations as . . . long felt but unsolved needs, . . . etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.”). Long-felt need is established through objective evidence showing that there was a persistent art-recognized and unsolved need that was met by the claimed invention. *In re Gershon*, 372 F.2d 535, 539 (CCPA 1967); *Newell Companies v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988); *In re Cavanagh*, 436 F.2d 491, 496 (CCPA 1971).

Patent Owner argues that “[t]here was []a long-felt need for a more convenient process capable of producing good yields economically” and “a desire to develop a method for producing fipronil using cheaper, safer and less corrosive agents.” (PO Resp., 50 (citing Gribble Deposition, Ex. 2021, 64:16–65:7). In support of its argument Patent Owner states that “the inventors of

[Gharda], EP '117 and WO '760 were all presumably at least of 'ordinary skill' as that term has been defined by Petitioner . . . [y]et, none of them described a process for making fipronil using DCA as the solvent." (PO Resp., 50).

For reasons stated above we disagree that the art did not teach DCA as a solvent in a reaction for making fipronil. Gharda teaches DCA as a solvent in such a reaction, albeit in combination with TCA. (Gharda, Ex. 1004, 10 (example 1)). Further Dr. Gribble testified, providing supporting evidence, that DCA was known in the art to be suitable for use in the oxidization of sulfides. (Gribble Decl., Ex. 1010, ¶ 87 (citing e.g., Zierer¹³, Ex. 1006, 2:56–62); *see also* Curran Deposition, Ex. 1039, 49:14–50:6)). We credit Dr. Gribble's testimony regarding this known suitability of DCA.

The parties seem to agree that those making fipronil would have preferred to use a better process, e.g., a less expensive and safer process. (*See, e.g.*, Gribble Deposition, Ex. 2021, 64:16–65:7; Curran Deposition, Ex. 1039, 9:18–10:8). However, we have not been directed to objective evidence sufficient to show that the prior art recognized a specific persistent need or an explanation of how the claimed invention met this need. We have not been directed to objective evidence showing that those skilled in the art were aware of this need outside of a general preference for a less expensive, safer process. Further we have not been directed to objective evidence sufficient to show that the process of the '559 claims met any particular art recognized long felt need.

We have considered Dr. Curran's testimony regarding long-felt need but find much of it to be conclusory in nature. Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight. 37 C.F.R. 42.65(a); *see also Rohm and Haas Co. v.*

¹³ Zierer, US Patent 6,013,761, issued 11 January 2000. (Ex. 1006).

Brotech Corp., 127 F.3d 1089, 1092 (Fed. Cir. 1997) (stating that the fact finder need not credit unsupported or conclusory assertions). Dr. Curran’s testimony indicates that generally there was a preference for a more convenient, less expensive process. (Curran Declaration, Ex. 2026, ¶¶ 83, 84). Dr. Curran’s testimony does not provide sufficient discussion of the prior art and explain how it demonstrated a particular need or that the need remained unmet by the prior art. Nor does Dr. Curran explain how the claimed invention met the need. Dr. Curran seems to have based his evaluation in large part upon statements made in the ’559 patent specification itself and not an evaluation of the prior art. (Curran Deposition, Ex. 1039, 11:12–12:20). For these reasons, we give little weight to Dr. Curran’s testimony regarding long-felt need.

We have considered the evidence of long felt need in combination with the other evidence before us in reaching our decision, but for reasons discussed above we accord the long felt need evidence little weight.

B. *Dependent claims 2–12*

Patent Owner does not provide separate arguments addressing the Petitioner’s argument that claims 2–12 also are unpatentable over EP ’117 in view of Gharda, and further in view of CN 101250158 A for claims 11 and 12 only. Patent Owner relies upon its arguments addressing claim 1 noting that “[d]ependent claims are non-obvious if the independent claims from which they depend are non-obvious.” (PO Resp., 28, citing *In re Fine*, 897 F.2d 1071, 1076 (Fed. Cir. 1988)). Patent Owner has not presented evidence or arguments specifically addressing a particular limitation of a dependent claim and why it would not have been obvious even if claim 1 is determined to be so.

In the Decision Instituting Review, we stated:

Petitioner also points to portions of EP ’117 and Gharda

appearing to show the limitations of dependent claims 2–12. (Pet. at 25–30). Dr. Gribble’s testimony supports the Petitioner’s arguments as to these dependent claim limitations. (Gribble Decl. at ¶¶ 149–177). We conclude that, for reasons stated in the Petition and Dr. Gribble’s testimony, Petitioner has provided a reason why each of the dependent claims 2–12 would have been obvious over EP ’117 and Gharda.

As to claims 11 and 12 Petitioner further relies on the teachings of CN ’158 which appear to show, in the context of producing fipronil, the claimed steps of recovering the non-oxidized compound and purification by recrystallization using isopropanol as a solvent. (Pet. at 30–32). The testimony of Dr. Gribble supports Petitioner’s arguments regarding the dependent claim limitations of claims 11 and 12. (Gribble Decl. at ¶¶ 172–176). We conclude that, for reasons stated in the Petition and Dr. Gribble’s testimony, Petitioner has provided reason why dependent claims 11 and 12 would have been obvious over EP ’117, Gharda and CN ’158.

Thus, upon consideration of the record before us only, we conclude that Petitioner has shown a reasonable likelihood that Petitioner would prevail on the first ground presented as to dependent claims 2–12.

(Decision Instituting Review, 15–16).

We now have considered the totality of the arguments and evidence before us and conclude that Petitioner has shown by a preponderance of the evidence that claims 2–12 also are unpatentable under 35 U.S.C. § 103(a). In particular we are convinced by the portions of EP ’117, Gharda and CN ’158 discussed in the Petition (Pet., 25–32) as supported by Dr. Gribble’s testimony (Gribble Decl., Ex. 1010, ¶¶ 149–177).

III.CONCLUSION

Based upon a consideration of the totality of record before us, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–12 of the '559 patent are unpatentable under 35 U.S.C. § 103(a) over EP 0295117 B in view of WO 2007/122440 A1, and further in view of CN 101250158 A for claims 11 and 12 only.

IV. ORDER

It is

ORDERED that claim 1–12 of U.S. Patent 8,304,559 are unpatentable under 35 U.S.C. § 103(a) over EP 0295117 B in view of WO 2007/122440 A1, and further in view of CN 101250158 A for claims 11 and 12 only. 35 U.S.C. § 318(a).

This is a final decision. Any party seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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