

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DAICEL CORPORATION,
Petitioner,

v.

CELANESE INTERNATIONAL CORPORATION,
Patent Owner.

Case IPR2014-01514
Patent 8,076,507 B2

Before LINDA M. GAUDETTE, CHRISTOPHER L. CRUMBLEY, and
JON B. TORNQUIST, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION
Denying Petitioner's Request for Rehearing
37 C.F.R. § 42.71

On May 1, 2015, Daicel Corporation (“Petitioner”) filed a Request for Rehearing (Paper 13, “Req. Reh’g”) of our Decision denying *inter partes* review (Paper 11, “Dec.”) of claims 25–28, 31–35, 37, and 39–41 of U.S. Patent No. 8,076,507 B2 (Ex. 1002, “the ’507 patent”). In the Decision, we determined the information presented in the Petition (Paper 3, “Pet.”) does not show sufficiently that there is a reasonable likelihood Petitioner would prevail at trial with respect to at least one claim of the ’507 patent. Accordingly, we denied the Petition and declined to institute trial.

For the reasons that follow, the Request for Rehearing is denied.

I. ANALYSIS

When considering a request for rehearing of a decision on a petition, the Board reviews the decision for an abuse of discretion. 37 C.F.R. § 42.71(c). An abuse of discretion may arise if a decision is based on an erroneous interpretation of law, if a factual finding is not supported by substantial evidence, or if an unreasonable judgment is made in weighing relevant factors. *Star Fruits S.N.C. v. U.S.*, 393 F.3d 1277, 1281 (Fed. Cir. 2005); *Arnold P’ship v. Dudas*, 362 F.3d 1338, 1340 (Fed. Cir. 2004); *In re Gartside*, 203 F.3d 1305, 1315-16 (Fed. Cir. 2000). The party requesting rehearing has the burden of showing that the decision should be modified, and “[t]he request must specifically identify all matters the party believes the Board misapprehended or overlooked.” 37 C.F.R. § 42.71(d).

With respect to both the challenges based on the '095 patent (Grounds 1, 3 and 4) and the challenges based on Singh (Grounds 2–4),¹ Petitioner contends our Decision was based on factual findings that are not supported by substantial evidence and that we made unreasonable judgments in weighing relevant factors. *See generally*, Req. Reh'g. With respect to the challenges based on Singh (Grounds 2–4), Petitioner argues our Decision was based on an erroneous claim interpretation. *Id.* at 12–14. Petitioner also argues our Decision declining to institute trial on the challenges based on Akinori (Grounds 3 and 4) was based on an erroneous determination that Petitioner was required to provide some rationale for modifying the '095 patent and Singh with Akinori. *Id.* at 9.

We address each of Petitioner's contentions in detail below.

A. Arguments Regarding the '095 Patent (Grounds 1, 3, and 4)

Petitioner contends our Decision declining to institute trial on Grounds 1, 3, and 4 was improperly based on potential concerns with the experiment ("Experiment 1") described in the Miura Declaration (Ex. 1005), and disregarded the fact that "the process of the '095 patent [(Ex. 1010)], and the teachings of the '507 patent alone demonstrate that DME is necessarily produced in the process of the '095 patent and thus ends up in the overhead stream as required by Claim 25." Req. Reh'g. 4. Petitioner argues further that we failed to give sufficient credit to the opinions expressed by Mr. Miura and Mr. Cooper in their declarations (Ex. 1003 and Ex. 1005, respectively). *See id.* at 2–9. Petitioner also contends we erred in

¹ See Dec. 8–9 (wherein the Grounds of Unpatentability are identified).

finding that Miura's Experiment 1 failed to adequately replicate the '095 patent examples ("Example" and "Example 1") so as to demonstrate that an amount of DME would necessarily be present in an overhead distillation stream of the '095 patent. *Id.* at 1.

Petitioner contends the '507 patent states the inventors' theory that DME is necessarily present in an overhead distillation stream where methyl acetate and methyl iodide are contacted with water prior to distillation. Req. Reh'g 3 (citing Ex. 1002, 11:49–52 ("[I]t is believed that this water reacts with methyl acetate and/or methyl iodide in [distillation] column 22 to form methanol, which is then dehydrated in the presence of an acid catalyst (such as HI) to form DME.")). Petitioner directs us to its Petition (Req. Reh'g 2–3), wherein it argued: "Much like the purported 'discovery' in the '507 Patent, the distillation in the '095 Patent is conducted in the presence of water. The presence of DME as a result of this water is not mentioned, but would be expected if the theory of the '507 Patent holds true, and, in fact, Mr. Cooper concludes it is conclusively shown by the Miura Decl," Pet. 27 (citing Ex. 1005 ¶ 63).

The problem with Petitioner's argument is that the quotation at column 11, lines 49–52 of the '507 patent is taken out of context. "[T]his water" (Ex. 1002, 11:49–50), i.e., the water that reacts with methyl acetate and/or methyl iodide to form DME, refers to a quantity of water added to distillation column 22, "for example to the feed 40 or reflux 50" for the purpose of forming DME for addition to extractor 27. *See id.* at 11:31–47. Petitioner has not identified persuasive evidence on this record which

evidences that either the quantity of water present in distillation column 22 as part of the reaction mixture, or any additional water added as an inhibitor, would be sufficient to produce DME in the overhead of distillation column 22. In other words, we are not persuaded that column 11, lines 49–52 of the '507 patent support Petitioner's contention that the presence of *any amount* of water during the distillation step(s) of a Monsanto-type process necessarily results in the presence of DME in a PRC-enriched overhead stream. *See* Ex. 1002, 11:38–41 (“By way of example, the applicants observed that the concentration of methyl iodide in stream 64 dropped from about 1.8% when no DME was present to about 0.5% when DME was present.”) We note that “the real issue is” not “whether at least some DME is formed,” as argued by Petitioner, Req. Reh'g 5, rather it is whether some DME is present in the overhead distillation stream as recited in claim 25, Ex. 1002, 13:38–41.

In our Decision we agreed “Akinori [(Ex. 1013)] provides evidence that DME is produced in an equilibrium reaction during production of acetic acid by the Monsanto process.” Dec. 25. Akinori states, however, that the intermediates formed in these equilibrium reactions, e.g., DME formed by dehydration of methanol and hydrolysis of methyl iodide to form hydroiodic acid (HI), ultimately change into acetic acid. *Id.* at 24 (citing Ex. 1013, 8). Thus, we are not convinced of error in our finding that the combined disclosures of the '095 patent and the '507 patent are insufficient to establish a reasonable likelihood that the mere presence of some water in the '095

Patent distillation process inherently results in a PRC-enriched overhead stream comprising DME. *Id.*

Petitioner contends we failed to give sufficient weight to Mr. Cooper's testimony, which corroborates that DME is necessarily present in an overhead distillation stream in the '095 patent process. Req. Reh'g 2–3. Mr. Cooper testified that

[b]ecause the distillation in the '095 Patent is conducted in the presence of water, DME must have been produced in the process described by the '095 Patent. Thus, with the only apparent difference between the '095 Patent and the '507 Patent – specific reference to the presence of DME – is actually no difference at all.

Ex. 1003 ¶ 63. Mr. Cooper acknowledged the fact that water is added to the '095 patent and the '507 patent processes for different purposes (*see* Ex. 1003 ¶¶ 60–61), but does not state that the quantities of water added for these differing purposes would be the same, or explain why any differences in the quantities would not effect the presence of DME in an overhead distillation stream. Without factual support or further explanation, Mr. Cooper's conclusory opinion that the different purposes for adding water are not relevant, *see* Ex. 1003 ¶ 63, simply is not persuasive.

With respect to Petitioner's obviousness challenges, we considered Mr. Cooper's testimony that “the equilibrium reactions occurring in the reactor are not controlling under distillation conditions, . . . [and] the amount of DME can be increased by feeding water to the distillation column. Pet. 46–47 (citing Ex. 1003, ¶¶ 87–91).” Dec. 24. We determined, however, Petitioner had not shown a reasonable likelihood it would prevail in showing

obviousness of the claims, because “Petitioner has not articulated clearly how one of ordinary skill in the art would have modified the ’095 patent and Singh processes in view of Akinori to achieve ‘a PRC enriched overhead stream comprising dimethyl ether’ as recited in claim 25.” *Id.* at 25.

Petitioner contends we erred by adopting Patent Owner’s unsupported argument that differences in experimental conditions between Miura Experiment 1 and the ’095 patent Example undermine Mr. Miura’s testimony that DME would be present in the distillation overhead in the ’095 patent process. Req. Reh’g 4. Petitioner argues we erred “in reaching a technical conclusion at this stage of the proceeding” that reaction rates and/or impurity levels would have a bearing on the formation of DME and that DME would not be present in the distillation overhead in the ’095 patent process. *Id.* at 5–7. According to Petitioner, we did not cite evidence to support this conclusion, and our conclusion is directly contrary to Mr. Miura’s uncontroverted testimony that at least some DME is inevitably present in the process of the ’095 patent. *Id.* at 6.

As an initial matter, we note that our rules permit, but do not require a patent owner to file a preliminary response. *See* 37 C.F.R. § 42.107(a). It is the petitioner who bears the burden of establishing a reasonable likelihood of unpatentability of one or more claims. 37 C.F.R. § 42.108(c). Thus, the Board’s decision on a petition for *inter partes* review is not confined to an evaluation of the merits of the arguments presented by a petitioner in its petition versus those made by a patent owner in its preliminary response.

The Board is free to identify and discuss deficiencies in a petitioner's arguments and supporting testimony beyond those raised by a patent owner.

Nevertheless, we did not disregard or discredit Mr. Miura's declaration testimony; rather, we assessed the persuasiveness of Mr. Miura's testimony in light of other factual evidence in the record. *See* Dec. 18–20; *Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) (“It is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate. . . . In giving more weight to prior publications than to subsequent conclusory statements by experts, the Board acted well within that discretion.”). We did not conclude DME is absent in the distillation overhead in the '095 patent Example. We found Mr. Miura's testimony and Experiment 1 were not persuasive evidence that DME would be present inherently in the overhead distillation of the '095 patent Example given the differences in the '095 patent Example and Experiment 1 reaction liquids, which differences were not addressed adequately by Mr. Miura. In this regard, we found Mr. Miura's dismissal of these differences as “slight,” without further discussion, was not persuasive in light of our actual comparison of the '095 patent Example and Experiment 1 that revealed “Miura's Experiment 1 contained more than twice the amount of rhodium and about 34% of the amount of water used in the '095 patent Example,” (Dec. 18), and our review of the '095 patent and Petitioner's own patent, U.S. Patent No. 7,683,212 B2 (Ex. 2014), that indicate these differences would affect the reaction product (Dec. 20).

Petitioner argues that in an opposition proceeding in the European Patent Office (“EPO”) involving EP 05723599.6,² the EPO Opposition Division found experimental results submitted by Daicel were convincing evidence that DME is formed in EP-A-0687662 (the European counterpart to the ’095 patent), and that we should give weight to this finding as “further support[ing] the Petition’s contention that DME will be inevitably present in the distillation overhead stream of the ’095 patent.” Req. Reh’g 9; see Pet. 29. As acknowledged by Petitioner, we are not bound by the findings of the EPO Opposition Division. Pet. 28. Moreover, that the EPO Opposition Division may have concluded DME is present in the EP-A-0687662 process does not convince us of error in our Decision. The EPO Opposition Division’s finding that DME is present in the overhead of EP-A-0687662 was based not only on D7 (Ex. 1026), a Certificate of Experiment which appears to correspond to Experiment 1 in the Miura Declaration (Ex. 1005), but also on D6 (Ex. 1025), a second Certificate of Experiment submitted by Ryuji Saito.³ See Ex. 1022, 6. In D6, Mr. Saito describes conducting experiments according to the “Example and Example 1” of EP-A-0687662, and repeating these experiments twice to prove the second overhead of EP-A-0687662 comprises DME. Ex. 1025. If a party intends to rely on a

² Petitioner identifies EP 05723599.6 as related to U.S. Patent No. 7,223,886 by virtue of common ownership by Celanese and subject matter directed to acetic acid production. Pet. 28–29. The ’507 patent is a continuation of U.S. Patent No. 7,223,886. Ex. 1002, at [63].

³ At a minimum, the reaction liquids described in Experiments 1 and 2 of D6 (Ex. 1025) differ from Experiment 1 in D7 (Ex. 1026).

technical test or data from such test, it must provide an affidavit as set forth in 37 C.F.R. § 42.65(b). Petitioner did not provide such affidavit with respect to the experiments in D6. Therefore, unlike the EPO Opposition Division, we did not have this additional experimental evidence before us in considering whether the evidence on the record before us was sufficient to support Petitioner's contention that the '095 patent process inevitably results in an overhead distillation stream comprising DME.

B. Arguments Regarding Singh (Grounds 2–4)

Petitioner argues our Decision is based on an overly narrow interpretation of the claim 25 distilling step⁴ as requiring the presence of sufficient DME to reduce the loss of methyl iodide (“MeI”) in the process. Req. Reh’g. 12. Petitioner contends that, as a result of our erroneous claim interpretation, we incorrectly found Petitioner had not provided adequate evidence to support its contention that Singh’s process includes a distillation step as recited in claim 25. *Id.* at 13. Petitioner argues, more specifically, that our Decision indicates Petitioner must show Singh adds enough water in the distillation step to produce DME in an amount sufficient to reduce the loss of methyl iodide. *Id.* Petitioner contends the claim 25 distilling step is met by a process in which any amount of DME is present in a PRC enriched overhead stream, noting “[c]laim 25 does not call for any specific amount of

⁴ Claim 25 recites, in relevant part: “distilling [a] mixture [comprising water, acetic acid, methyl iodide, methyl acetate, methanol, and at least one permanganate reducing compound (PRC)] to separate the mixture into a plurality of streams, at least one of said streams being a PRC enriched overhead stream comprising dimethyl ether.”

DME, and does not contain any limitations requiring the specific mechanism of action by which DME is theorized to operate.” *Id.* at 12. Petitioner maintains we failed to properly credit “Mr. Cooper’s informed testimony that, if the addition of water during distillation formed DME according [to] the ’507 patent, then DME must necessarily be present in Singh. Pet., 38 *citing* Ex. 1003, ¶70.” Req. Reh’g 11–12. Petitioner also contends we erred in failing to accept its interpretation of statements made by Patent Owner during prosecution of the ’507 patent as an admission that the presence of any amount of water during distillation results in the presence of DME in an overhead distillation stream. *Id.* at 14.

Turning first to Petitioner’s contention that we misinterpreted the claims, our Decision did not include an express construction of any claim terms. We agree with Petitioner that the claims do not recite a specific quantity of DME. The challenged claims, however, do explicitly require the presence of DME in a distillation overhead stream, not merely the presence of DME in the distillation column. *See* Ex. 1002, 13:38–41 (claim 25). As explained above in connection with the ’095 patent, there is evidence on this record that DME is produced in an equilibrium reaction during production of acetic acid by the Monsanto process, e.g., Akinori (Ex. 1013). Petitioner’s evidence, however, is insufficient to support its contention that the presence of any amount of water during distillation in a Monsanto-type process is sufficient to produce DME in an overhead distillation stream.

Petitioner contends that, with respect to the addition of water to distillation column 22, the disclosures of Singh and the ’507 patent are

identical: “‘Stream 50 is added to column 22 to inhibit formation of metaldehyde and paraldehyde impurities and higher molecular weight polymers’ and both [Singh and the ’507 patent] disclose water as the inhibitor making up stream 50.” Req. Reh’g 11 (quoting Ex. 1011, 11:27–30; Ex. 1002, 10:19–23). Petitioner thus argues “there is no basis or evidence on which to conclude that Singh does not result in the identical formation of DME, just as is claimed to occur in the ’507 patent.” *Id.*; see also *id.* at 12–13 (arguing column 11, lines 57–59 of the ’507 patent, which “report[] Applicants’ belief that ‘water reacts with methyl acetate and/or methyl iodide in [distillation] column 22 to form methanol, which is then dehydrated in the presence of an acid catalyst (such as HI) to form DME,’ . . . support[] the un rebutted fact that when these materials are present in the column, the reaction for DME proceeds”).

As indicated in our Decision, unlike Singh, the ’507 patent describes adding water to column 22 for the purpose of producing DME in the distillation overhead. See Dec. 6–7, 23–24 (quoting Ex. 1002, 11:45–47). This description is separate from the ’507 patent description of adding water for the purpose of inhibiting formation of metaldehyde and paraldehyde impurities, which description is similarly presented in Singh. Compare Ex. 1011, 11:35–37 with Ex. 1002, 10:27–29. Neither Petitioner nor Mr. Cooper explains why the quantity of water added by the ’507 patent for the purpose of forming DME in the distillation overhead (Ex. 1002, 11:44–47) is thought to be the same quantity added in Singh and the ’507 patent for the purpose of inhibiting formation of impurities. See Ex. 1003 ¶¶ 68–70. Further, to the

extent the Petition relies on Mr. Cooper's opinion that the presence of *any amount* of water in the distillation step(s) will result in formation of DME in a distillation overhead, Petitioner has not convinced us of error in our determination that Mr. Cooper's opinion on this issue is not persuasive. Mr. Cooper's opinion is based on Petitioner's interpretation of statements made by Patent Owner during prosecution of the '507 patent. *See* Dec. 23–24; *id.* at 23 citing Ex. 1003 ¶ 69 (“*I was also informed of an admission by Celanese when prosecuting the '455 Application, which led to the '507 Patent, that DME was formed when water was added to the distillation step. (Refer to Ex. 1009, p. 20). Based upon this, the addition of water in the '171 Patent would also lead to DME formation.*” (emphasis added)). In our Decision, we did not find adequate support for Petitioner's interpretation of these statements as an admission that the presence of any amount of water in the distillation step(s) of a Monsanto-type process is sufficient to form DME in the distillation overhead. *See* Dec. 23. Petitioner has not convinced us that, considering the Patent Owner's arguments in context together with the '507 patent in its entirety, we made an unreasonable judgment. *See* Req. Reh'g 14; *compare* Pet. 10, 39–40 (citing Ex. 1009, 20 in support of its contention that the addition of any amount of water to the distillation column in a Monsanto-type process inherently results in DME in an overhead distillation stream) *with* Ex. 1009, 22 (“[T]he water added to the distillation column [in the Singh process] was added to inhibit formation of a viscous and thixotropic polymer. . . . However, . . . Applicants . . . noticed that when a sufficient amount of water was added to the distillation column, the

amount of MeI in the aqueous phase was reduced . . . [and] that DME was present in the stream. . . . [A]s a result of this unexpected and non-obvious discovery that DME was formed in the distillation column when a sufficient amount of water was added to the column and that this DME so-formed reduced the solubility of MeI in water and yet, did not otherwise affect the presently claimed invention, a second extraction step became possible.”).

C. Arguments Regarding Akinori (Grounds 3 and 4)

Petitioner argues we erred in stating the Petition fails

to provide [a] rationale for modifying the '095 Patent and Singh with Akinori (Dec., 25) because the Petition relies on Akinori to demonstrate the understanding of a person of ordinary skill in the art regarding the reaction chemistry of the acetic acid production process disclosed in the '095 Patent and Singh.

Req. Reh'g 9.

The first sentence under the discussion of Ground 3 in the Petition reads: “Claims 25-28, 31-35, 37, 39, and 40 are invalid as obvious under pre-AIA 35 U.S.C. § 103(a) over the '171 Patent *in view of* the '095 Patent and *Akinori*, and as evidenced by the Miura Decl.” Pet. 44 (emphasis added). Heading “i” under Ground 3 reads “Reason to Combine the '095 Patent or the '171 Patent with *Akinori*.” *Id.* The first sentence under the discussion of Ground 4 in the Petition reads: “Claims 31-34, 37 and 39-41 are invalid as being obvious over the '171 Patent in view of the '095 Patent, and further *in view of Akinori* and Japanese Patent Application No. 2000-72712 (‘JP 2000-72712’), and as evidenced by the Miura Decl.” *Id.* at 49 (emphasis added). Heading “iii” under Ground 4 reads: “Reason to

Combine the '095 and '171 Patents with Akinori and JP 2000-72712.” *Id.* at 50.

Petitioner’s argument is not consistent with its challenges as presented in the Petition. Further, simply providing evidence that the ordinary artisan possessed the knowledge and ability to modify the '095 patent and/or the '171 patent is insufficient to establish obviousness within the meaning of 35 U.S.C. § 103(a). *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”). *Cf. In re Chaganti*, 554 F. App'x 917, 922 (Fed. Cir. 2014)(nonprecedential) (“It is not enough to say that . . . to do so would ‘have been obvious to one of ordinary skill.’ Such circular reasoning is not sufficient--more is needed to sustain an obviousness rejection.”); *In re Nouvel*, 493 Fed. Appx. 85. 92 (Fed. Cir. 2012) (nonprecedential) (“[C]ommon sense is not a hovering omnipresence. Instead, there must be an articulated rational reason why the common sense of an ordinary artisan would be awakened to modify prior art in such a way as to lead to an obviousness rejection.”).

In any event, our decision to deny institution as to Grounds 3 and 4 was not based solely on Petitioner’s failure to explain the motivation to modify the '095 patent and/or Singh. *See* Dec. 25 (noting Mr. Cooper’s testimony was not sufficiently persuasive to show a reasonable likelihood that DME is present inherently in the overhead distillation streams of the

'095 patent or Singh processes). Therefore, this argument fails to convince us of error in our Decision.

II. CONCLUSION

On this record, we are not persuaded that denying *inter partes* review of any challenged claim represents an abuse of discretion.

III. ORDER

Petitioner's request for rehearing is *denied*.

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