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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/900,622	12/22/2015	Orass Hamed	11POLY0024-US-PCT	3094
102091	7590	09/01/2020	EXAMINER	
Cantor Colburn LLP - SABIC Americas 20 Church Street Hartford, CT 06103			LU, C CAIXIA	
			ART UNIT	PAPER NUMBER
			1765	
			NOTIFICATION DATE	DELIVERY MODE
			09/01/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ORASS HAMED, VUGAR ALIYEV, IAN BLACKMORE,
and NAYEF AL-ENAZI

Appeal 2019-005552
Application 14/900,622
Technology Center 1700

Before LINDA M. GAUDETTE, DONNA M. PRAISS, and
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

SQUIRE, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner’s decision to finally reject claims 1–7 and 14–21, which are all of the claims pending in this application.³ We have jurisdiction under 35 U.S.C. § 6(b).

¹ This Decision refers to the Specification filed Dec. 22, 2015 (“Spec.”); Final Office Action dated Oct. 1, 2018 (“Final Act.”); Advisory Action dated Dec. 6, 2018 (“Advisory Act.”); Appeal Brief filed Mar. 4, 2019 (“Appeal Br.”); Examiner’s Answer dated May 13, 2019 (“Ans.”); and Reply Brief filed July 15, 2019 (“Reply Br.”).

² We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies SAUDI BASIC INDUSTRIES CORPORATION and SABIC GLOBAL TECHNOLOGIES B.V. as the real parties in interest. Appeal Br. 2.

³ Claims 8–13 are cancelled. Appeal Br. 16.

We AFFIRM.

CLAIMED SUBJECT MATTER

The invention relates to a process for the production of polyethylene by polymerization of ethylene in the presence of a chromium oxide based catalyst. Spec. 1, Abstract. Claim 1 illustrates the subject matter on appeal and is reproduced below from the Claims Appendix to the Appeal Brief:

1. A polymerization process for the production of polyethylene by gas phase polymerization of ethylene in the presence of a catalyst formed from a catalyst composition comprising a porous silicon oxide support material carrying a chromium compound and a transition metal containing compound or metal halide transition metal compound *wherein the silicon oxide support material has an average particle size between 20 μm and 40 μm , a pore volume between 1.8 and 2.2 ml/g and a surface area between 400 and 600 m^2/g* , and wherein the preparation of the catalyst composition comprises the step of adding the chromium salt to the silica support in methanol or ethanol, then mixing and drying the slurry.

Appeal Br. 15 (key disputed claim language italicized and bolded).

REFERENCES

The Examiner relies on the following prior art references as evidence in rejecting the claims on appeal:

Name	Reference	Date
Schneider et al. ("Schneider")	US 2004/0014914 A1	Jan. 22, 2004
Gauthier et al. ("Gauthier")	US 6,855,783 B2	Feb. 15, 2005

REJECTION

On appeal, the Examiner maintains the following rejection: claims 1–7 and 14–21 are rejected under 35 U.S.C. § 103 as being unpatentable over Schneider in view of Gauthier. Ans. 3.

OPINION

Having considered the respective positions the Examiner and Appellant advance in light of this appeal record, we affirm the Examiner’s rejection based essentially on the fact-finding and reasoning the Examiner provides in the Answer, Advisory Action, and Final Office Action, which we adopt as our own. We add the following primarily for emphasis.

Claims 1–7 and 14–21

The Examiner rejects claims 1–7 and 14–21 under 35 U.S.C. § 103 as obvious over Schneider and Gauthier. Ans. 3–6. In response to the Examiner’s rejection, Appellant presents argument for the patentability of claims 1–7 and 14–21 as a group. Appeal Br. 4–8. We select claim 1 as representative and claims 2–7 and 14–21 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner determines that the combination of Schneider and Gauthier suggests an ethylene polymerization process satisfying the limitations of claim 1 and concludes the combination would have rendered the claim obvious. Ans. 3–6. On the record before us, we determine a preponderance of the evidence and sound technical reasoning support the Examiner’s findings regarding the teachings of the cited art and the Examiner’ conclusion that the combination of Schneider and Gauthier would have rendered the process of claim 1 obvious. Schneider, Abstract, ¶¶ 1,

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10–14, 21–24, 76–81 (Examples 1–3); Gauthier, Abstract, 5:49–6:5, 9:37–41 (Table I), 14:54–64 (Table V), 18:17–33 (Table IX)).

Appellant argues the Examiner’s rejection of claim 1 should be reversed because the cited art does not teach or suggest “wherein the silicon oxide support material has an average particle size between 20 μm and 40 μm , a pore volume between 1.8 and 2.2 ml/g and a surface area between 400 and 600 m^2/g ,” as recited in the claim. Appeal Br. 6 (“Schneider, Gauthier, or a combination thereof fails to disclose, with specificity, the claimed average particle size, pore volume, and surface area of the claimed silicon oxide support material.”). Although Appellant acknowledges that the cited art discloses silicon oxide support materials having properties encompassing or overlapping the claimed ranges, Appellant argues “that an overlapping range does not equate to a prima facie case of obviousness.” *Id.* at 5, 6.

Appellant further argues that the Examiner’s conclusion of obviousness is improper because there is no motivation to combine Schneider and Gauthier to arrive at the claimed invention and no expectation of success. *Id.* at 5–6. Appellant argues that, because the “catalysts of Gauthier and Schneider are very different” and “catalysis is notoriously unpredictable,” there is no motivation to look to Gauthier in order to modify Schneider. *Id.* at 5 (arguing “there is no motivation to consider picking and choosing an element from Gauthier to modify Schneider” and “there is no expectation of success”).

We do not find Appellant’s arguments persuasive of reversible error in the Examiner’s rejection based principally on the fact-finding and reasoning the Examiner provides at pages 3–6 of the Answer and pages 2–3 of the Final Office Action, which a preponderance of the evidence in the record supports. As the Examiner finds (Ans. 3), Schneider discloses a gas

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phase ethylene polymerization process in the presence of a titanated chromium-based catalyst composition, which includes a silica support material having an average particle size of 20–120 μm , a pore volume of 1–2 ml/g, and a surface area of 50–600 m^2/g (Schneider ¶¶ 10–14, 22–24, 76–81 (Examples 1–3)), which overlap and/or encompass the claimed ranges.

As the Examiner further finds (Ans. 5–6), Gauthier discloses catalyst compositions for use in ethylene polymerization processes, which include a silica support having an “average particle size of 10–50 microns, a surface area of 200–800 m^2/g , and a pore volume of 0.9–2.1 ml/g (Gauthier, Abstract, 5:49–6:5), which overlap and/or encompass the claimed ranges. As the Examiner also finds and explains (Ans. 5–6), Gauthier teaches that the activity of the catalyst composition and morphology of the polymer product (i.e., bulk density of the final ethylene product) are affected and influenced by the physical properties of the silica support, including by the silica support’s average particle size, surface area, and pore volume. *See* Gauthier, 9:37–41 (Table I), 14:54–64 (Table V), 18:17–33 (Table IX). As the Examiner concludes (Ans. 6),

it would have been obvious to a skilled artisan at the time the invention was made to employ Schneider’s teaching with Gauthier’s teaching as further guidance for selecting silica support to provide ethylene polymer in a gas phase polymerization process in the presence of a titanated chromium-based catalyst supported on silica having surface area of 450–600 m^2/g , [average] particle size [of] about 20–50 μm , and pore volume of 0.9–2.1 cc/g to optimize morphology and the productivity of ethylene polymer in the absence of any showing criticality and unexpected results.

Appellant’s arguments do not reveal reversible error in the Examiner’s factual findings and analysis in this regard. Appellant’s

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argument that the cited art “fails to disclose, with specificity, the claimed average particle size, pore volume, and surface area of the claimed silicon oxide support material” (Appeal Br. 6) is not persuasive because it is well-settled that where claimed ranges “overlap or lie inside ranges disclosed by the prior art,” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 267 (CCPA 1976). Indeed, where, “the claimed ranges are completely encompassed by the prior art, the conclusion is even more compelling than in cases of mere overlap.” *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003).

Moreover, as we discuss further below, Appellant has not proffered or directed us to any objective evidence in the record to suggest the criticality of the claimed ranges or that a gas phase ethylene polymerization process, which includes a silica support material with properties falling within the claimed ranges, achieves unexpected results relative to the prior art. *Peterson*, 315 F.3d at 1330 (explaining that “the existence of overlapping or encompassing ranges shifts the burden to the applicant to show that his invention would not have been obvious”).

Appellant’s argument that there is no motivation to combine Schneider and Gauthier and no expectation of success (Appeal Br. 5–6) is equally unpersuasive. Rather, on the record before us, we determine the Examiner does provide a reasonable basis, which a preponderance of the evidence supports, to evince why one of ordinary skill in the art would have had a reason to combine the teachings of Schneider and Gauthier to arrive at the claimed invention and a reasonable expectation of success. Ans. 6; *see also In re Aller*, 220 F.2d 454, 456 (CCPA 1955) (“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”);

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KSR Int'l Co. v. Teleflex, Inc., 550 U.S. 398, 416 (2007) (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”).

Appellant’s assertions that the “catalysts of Gauthier and Schneider are very different” and “catalysis is notoriously unpredictable” (Appeal Br. 5) are not persuasive because they are conclusory and Appellant does not direct us to persuasive evidence in the record or provide an adequate technical explanation to support them. Attorney argument is not evidence. *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984). *See also In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) (explaining that mere lawyer’s arguments or conclusory statements, which are unsupported by concrete factual evidence, are entitled to little probative value).

Appellant’s disagreement as to the Examiner’s factual findings and reasons for combining the references, without more, is insufficient to establish reversible error. *SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1320 (Fed. Cir. 2006) (“[M]ere statements of disagreement . . . as to the existence of factual disputes do not amount to a developed argument.”).

Appellant argues further that the claimed invention yields unexpected results. Appeal Br. 6–8; Reply Br. 2–3. Based principally on inventive Example I of the Specification and the comparative test data at page 7 of the Appeal Brief and page 3 of the Reply Brief, Appellant argues that

the Examples of the present application demonstrate that the claimed average particle size, pore volume, and surface area are beneficial and have unexpected results.

Appeal Br. 7 (citing page 11 of the Specification). Appellant further argues that

the unexpected results associated with the claimed average particle size, pore volume, and surface area disclosed in the Specification include (1) production of a polyethylene resin of increased bulk density via ethylene gas phase polymerization, (2) increase in polyethylene resin production rate via ethylene gas phase polymerization, and (3) improvement in the strain hardening modulus of polyethylene resin produced via ethylene gas phase polymerization.

Reply Br. 3.

In attempting to overcome a prima facie case of obviousness by showing unexpected results, the burden rests with Appellant to establish (1) that the alleged unexpected results presented as being associated with the claimed invention are, in fact, unexpected, (2) that the comparisons are to the disclosure of the closest prior art, and (3) that the supplied evidentiary showing is commensurate in scope with the claimed subject matter. *See In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972).

Appellant's alleged showing of unexpected results does not satisfy the requisite burden. Appellant has not sufficiently established that the alleged unexpected results presented as being associated with the claimed invention are, in fact, unexpected. As the Examiner notes (Ans. 8), Appellant does not make clear what the unexpected results are and how that is reflected or shown in the data. Appellant also does not adequately show or explain why the alleged improvements Appellant contends are associated with the claimed average particle size, pore volume, and surface area (*see* Reply Br. 3) are considered to be unexpected results and not just typical results obtained by one of ordinary skill in the art. *Klosak*, 455 F.2d at 1080 (“[T]he burden of showing unexpected results rests on [the party] who asserts them.”).

Moreover, Appellant has not sufficiently established that the alleged showing of unexpected results is commensurate in scope with the claims. Appellant's claims are broader in scope than the examples tested and Appellant does not explain sufficiently why the examples tested are representative of the overall scope of the claims. For example, Example I of the Specification uses a specific type of dried silica support material ("M-203-F silica support") having an average particle size of 35 μm , a surface area of 519 m^2/g , and a pore volume of 1.9 ml/g . *See* Spec. 8. The claims, however, are not limited to the specific silica support material tested by Appellant or a particular silica support material having only those specific average particle size, surface area, and pore volume properties. Thus, absent more, we are not persuaded Appellant provides data sufficient to show that the alleged unexpected results occur over the entire claimed range for each of the properties of the silicon oxide support material recited in the claim. *See In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) ("Evidence of secondary considerations must be reasonably commensurate with the scope of the claims.").

In view of these deficiencies, Appellant's assertion that the examples in the Specification "demonstrate that the claimed average particle size, pore volume, and surface area are beneficial and have unexpected results" (Appeal Br. 7) and statement regarding alleged "unexpected results associated with the claimed average particle size, pore volume" (Reply Br. 3) are conclusory and, without more, insufficient to establish unexpected results. *De Blauwe*, 736 F.2d at 705 ("It is well settled that unexpected results must be established by factual evidence. Mere argument or conclusory statements in the specification does not suffice.").

Claims 2, 3, 14, 17–19, and 21

Although Appellant nominally presents separate arguments for the patentability of claims 2, 14, and 18 as a group, claims 3 and 21 as a group, and claims 17 and 19 as a group, enumerated under separate headings, respectively, at pages 8–9, 10–11, and 12–13 of the Appeal Brief, Appellant does not present any new or additional substantive argument, but instead repeats and relies principally on the same arguments previously presented above in response to the Examiner’s rejection of claim 1.

Thus, based on the fact-finding, conclusions, and analysis the Examiner provides in the record, and for principally the same reasons discussed above for sustaining the Examiner’s rejection of claim 1, we sustain the Examiner’s rejection of claims 2, 3, 14, 17–19, and 21.

Accordingly, we affirm the Examiner’s rejection of claims 1–7 and 14–21 under 35 U.S.C. § 103 as obvious over Schneider and Gauthier.

CONCLUSION

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–7, 14–21	103	Schneider, Gauthier	1–7, 14–21	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a) (1)(iv).

AFFIRMED