THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LEONID MODESTOVICH KUSTOV,
VIKTOR IGNATYEVICH BOGDAN
and
VLADIMIR BORISOVICH KAZANSKY

Appeal No. 2006-0753
Application 09/682,010

ON BRIEF

Before PAK, WALTZ, and TIMM, Administrative Patent Judges.

PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 1 through 5 and 14 through 16. Claims 6 through 13, the other claims pending in the above-identified application, stand withdrawn from consideration by the examiner

as being directed to a non-elected invention. We have jurisdiction pursuant to 35 U.S.C. § 134.

APPEALED SUBJECT MATTER

Claims 1, 3, 4 and 5 are representative of the subject matter on appeal[1] and read as follows:

1. A process for preparing a zeolite catalyst comprising:

(a) first, heating a zeolite at a first temperature in the range of 350 - 450°C in a first flowing gas for 4-6 h;

(b) second, calcining the zeolite at second temperature in the range of 450 - 1000°C for 1-3 hours in a continuous flow of a second gas, wherein said second temperature is at least 100°C greater than said first temperature; and

(c) third, cooling the zeolite catalyst to a temperature of from 225 - 500°C.

3. A process according to claim 1, wherein the zeolite is a high-silica pentasil zeolite.

4. A process according to claim 3, wherein the high-silica pentasil zeolite is an H-form of ZSM-5 zeolite with a Si/Al ratio greater than 20.

5. A process according to claim 4, wherein the Si/Al ratio ranges from 40 to 100.

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[1] We limit our consideration to claims 1, 3, 4 and 5 pursuant to 37 CFR § 41.37(c)(1)(vii)(2004). The appellants have not separately argued the remaining claims on appeal. See the Brief and the Reply Brief in their entirety.

PRIOR ART REFERENCE

The sole prior art reference relied upon by the examiner is:

Monque et al. (Monque)	5,576,256	Nov. 19, 1996 (Filed May 23, 1994)

REJECTION

Claims 1 through 5 and 14 through 16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the disclosure of Monque.

OPINION

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments and the evidence advanced by the examiner and the appellants in support of their respective positions. This review has led us to conclude the examiner's § 103 rejection is well founded. Accordingly, we affirm the examiner's § 103 rejection for essentially the findings of fact set forth in the Answer. We add the following for emphasis and completeness.

The examiner finds (Answer, pages 3 and 4) and the appellants do not dispute (Brief and Reply Brief in their entirety) that:

> Monque et al. (US 5,576,256) discloses a catalyst composition useful in hydrocarbon conversion processes. The catalyst composition comprises a high silica MFI zeolite, such as ZSM-5, in combination with a binder (column 2, lines 60-68 and column 3, lines 30-50). The examples detail the use of ZSM-5 in hydrogen form. The reference teaches that the formed catalyst is preferably calcined in two stages; in the first stage is carried out between about 120 degrees C to about 350 degrees C for about 1-6 hours, and the second stage is carried out between about 350 degrees C to about 700 degrees C for about 1-6 hours, which meet the ranges instantly claimed (column 5, lines 10-17). The reference teaches that the catalyst is employed at a temperature of 250-450 degrees C (column 5, lines 30-45), which is considered to meet cooling step (c).

Indeed, the appellants acknowledge (Brief, page 4) that:

> The teaching[s] of Monque, with the temperature for initial calcination stage at its upper extremity and careful selection of temperature for the second stage, permit a calcination process that is within the instantly claimed process.

However, the appellants argue that Monque provides no suggestion to select the claimed specific calcination temperatures from its calcination temperatures. See the Brief, page 4. We do not agree.

As indicated supra, Monque teaches calcining ZSM-5 in hydrogen form at calcination temperatures inclusive of the claimed calcination temperatures. In other words, Monque teaches or would have suggested employing, inter alia, the claimed

calcination temperatures for preparing its zeolite, ZSM-5 in hydrogen form. Thus, we concur with the examiner that it would have been prima facie obvious to one of ordinary skill in the art to determine workable or even optimum calcining temperatures, such as those claimed, from the calcination temperature ranges taught by Monque. In re Peterson, 315 F.3d 1325, 1329, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003)("In cases involving overlapping ranges, we and our predecessor court have consistently held that even a slight overlap in range establishes a prima facie case of obviousness (citation omitted)."); In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980)("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art."); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (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.").

The appellants argue that Monque does not teach that its calcination of a zeolite, e.g., ZSM-5 in hydrogen form, be carried out in the presence of a flowing gas, e.g., flowing air. See the Brief, page 4, together with the specification, page 5.

However, contrary to the appellants' argument, Monque at column 5, lines 10-12, teaches that the calcination of a zeolite can be conducted under a flow of air as urged by the examiner. Although Monque teaches that water vapor be present in the flowing air as argued by the appellants at page 3 of the Reply Brief, the claims on appeal, by virtue of using the term "comprising," do not preclude the introduction of water vapor via the flowing air during the claimed calcination process. In re Baxter, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981)("As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term 'comprises' permits the inclusion of other steps, elements, or materials.").

The appellants argue that Monque does not teach or suggest high silica pentasile zeolites (inclusive of ZSM-5), especially those having a Si/Al ratio greater than 20 or from 40 to 100 as recited in claims 3 through 5. See the Brief, page 5. We do not agree for the reasons well articulated by the examiner at page 8 of the Answer.

The appellants argue for the first time in the Reply Brief that the claimed calcination temperature range achieves

unexpected results relative to the closest prior art range, thereby rebutting any prima facie case established by the examiner. See the Reply Brief, page 2. In support of this argument, the appellants for the first time refer to Example 1, as shown by Table 1, at pages 8 and 9 of the specification. Id. This argument, however, is considered waived since the appellants fail to raise it in the opening Brief. Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc., 424 F.3d 1293, 1320-21 n.3, 76 USPQ2d 1662, 1683 n.3 (Fed. Cir. 2005)(Arguments not raised in the opening brief are considered waived.).

To the extent that it is not waived, the appellants have not demonstrated that the showing referred to is commensurate in scope with the degree of protection sought by the claims on appeal. In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983); In re Clemens, 622 F.2d 1029, 1035, 206 USPQ 289, 296 (CCPA 1980). While the showing is limited to calcining powder form of HZSM-5 having a Si/Al ratio equal to 21 dispersed in 400 mg of quartz grains of the same size at an initial temperature of 350°C for 5 hours under nitrogen or air flow (60 ml/min) and at a second higher temperature for an unknown period under nitrogen or air flow and then cooling the calcined HZSM-5

to 350°C in flowing nitrogen, the claims on appeal are not so limited. On this record, the appellants have not provided any objective evidence or scientific basis to conclude that the limited showing referred to is predictive of all of the zeolites, flowing gases, initial heating temperatures, cooling temperatures, and other catalytic materials, including binders, covered by the claims on appeal.

Moreover, it cannot be ascertained from Example 1 whether the alleged unexpected results are due to the claimed calcination temperatures as alleged or the period of calcination employed since Example 1 does not identify the period of calcination for the second calcination step. In re Heyna, 360 F.2d 222, 228, 149 USPQ 692, 697 (CCPA 1966).

Thus, having considered the totality of record, including due consideration of all of the evidence and arguments proffered by both the examiner and the appellants, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of § 103(a). Accordingly, we affirm the examiner's decision rejecting all of the claims on appeal under § 103(a).

CONCLUSION

In view of the foregoing, the decision of the examiner is affirmed.

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

AFFIRMED

CHUNG K. PAK Administrative Patent Judge	)	
THOMAS A. WALTZ Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
CATHERINE TIMM Administrative Patent Judge	)	

CKP:psb

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