

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(2) is not binding precedent of the Board.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 MEINOLF KERSTING,
JUERGEN KERTH, KLAUS-DIETER HUNGENBERG,
AND PETER KOELLE

Appeal No. 95-0996
Application 07/943,025¹

ON BRIEF

Before JOHN D. SMITH, GARRIS and WALTZ, **Administrative Patent Judges**.

WALTZ, **Administrative Patent Judge**.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the
examiner's final rejection of claims 1 and 2. Claims 3
through 5, the only

¹ Application for patent filed September 10, 1992.

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remaining claims in this application, stand withdrawn from consideration as being directed to a nonelected invention (main brief, page 1).

According to appellants, the invention is directed to the preparation of Ziegler-Natta catalysts, followed by treatment with carbon dioxide to completely inactivate the catalyst so that the catalyst can be stored for prolonged periods with subsequent reactivation by reaction with a cocatalyst (main brief, paragraph bridging pages 1 and 2). Claims 1 and 2 are reproduced below:

1. A process for the preparation of a deactivated Ziegler-Natta catalyst system with a long storage life, suitable upon reactivation, for the preparation of polymers of propylene and of polymers of propylene together with other "-olefins containing, as active components,

- a) a titanium-containing solid component which contains titanium, magnesium, halogen and a carboxylic ester and, as a cocatalyst,
- b) an aluminum compound and
- c) a further election [sic, electron] donor, which comprises reacting components a), b), and c), wherein, after the reaction, the reaction mixture is deactivated by reaction with carbon dioxide.

2. A Ziegler-Natta catalyst system prepared by a process as claimed in claim 1.

The examiner has relied upon the following reference as

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evidence of obviousness:

Tachikawa et al. (Tachikawa I) 0 201 647 Nov. 20, 1986
(European Patent Application)

This Board panel relies upon the following references of record:

Collomb-Ceccarini et al. (EP '410) 0 170 410 Feb. 5, 1986
(European Patent Application)

Tachikawa et al. (Tachikawa II) 0 188 914 Jul. 30, 1986
(European Patent Application)

Claims 1 and 2 stand rejected under 35 U.S.C. § 103 as unpatentable over Tachikawa I. We **reverse** this rejection. However, pursuant to the provisions of 37 CFR § 1.196(b), we enter the following new ground of rejection. Claims 1 and 2 are rejected under 35 U.S.C. § 103 as unpatentable over EP '410 or Tachikawa II for reasons which follow.

OPINION

A. The Rejection over Tachikawa I

The process of appealed claim 1 requires reacting the three components (a), (b) and (c) of the Ziegler-Natta catalyst system "wherein, after the reaction, the reaction mixture is deactivated by reaction with carbon dioxide." In proceedings before the PTO, claims in an application are to be given their broadest reason-able interpretation consistent

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with the specification and claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. **See *In re Sneed***, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983). The specification defines "deactivated" as "no longer active with regard to polymerization." (specification, page 8, lines 1-2).

Tachikawa I teaches that conventional Ziegler-Natta catalysts have such a high activity that disadvantageous results occur (page 1, lines 22-35). Tachikawa I further discloses that advantageous results occur if this catalyst system can be "temporarily inhibited" by contact with an activity inhibitor (page 2, lines 1-13). The activity inhibitor can be carbon monoxide or carbon dioxide and "temporarily inactivates a part of all the active sites on the polymerization catalyst." (page 7, lines 17-24). The "temporarily inactivated" catalyst can be immediately used in the standard polymerization reactions (see Examples 1-4). Accordingly, Tachikawa I fails to disclose or suggest the complete deactivation of the catalyst system required by the process of appealed claim 1.

The examiner argues that the quoted portion from page 7, lines 23-24, of Tachikawa I should read "[t]he activity

inhibitor temporarily inactivates a part of [sic; **or**] all of the active sites on the polymerization catalyst" (main answer, page 3, and supplemental answer, page 1, emphasis added). The examiner thus concludes that the reference contemplates deactivating the catalyst (main answer, page 3). The examiner does not present any reasoning or evidence² to support this interpretation of Tachikawa I other than to state that the phrase "of all" is redundant (supplemental answer, page 1). We find the phrase found at page 7, lines 23-24, of Tachikawa I is not redundant. From the disclosure and teachings of Tachikawa I regarding the disadvantageous high rate of reaction of conventional Ziegler-Natta catalysts, the role of the activity inhibitor is as set forth on page 7, i.e., to temporarily inactivate just part of all the catalyst's active sites. No other meaning can be adduced from the evidence of record. The examiner's conclusion that the reference contemplates complete deactivation of the catalyst is not based on facts. Accordingly, the rejection of claims 1 and 2 under 35 U.S.C. § 103 as unpatentable over Tachikawa I is reversed. **See In re Warner**, 379 F.2d 1011, 1017, 154 USPQ

² It is noted that appellants have cited Tachikawa et al., U.S. Patent No. 5,037,908, as corresponding to the priority document of Tachikawa I. Appellants further note that the disputed language of Tachikawa I occurs at column 5, lines 45-46, of the Tachikawa patent (reply brief, pages 2 and 3).

173, 178 (CCPA 1967), **cert. denied**, 389 U.S. 1057
(1968)("Where the legal conclusion of obviousness is not
supported by facts it cannot stand.").

B. The Rejection Pursuant to 37 CFR § 1.196(b)

The requirements of the process of claim 1 have been
discussed above. Tachikawa II discloses a process for
copolymerizing ethylene with an alpha-olefin in the presence
of a Ziegler-Natta catalyst system (abstract and page 1, lines
7-10). This reference teaches that these catalyst systems
have a high catalytic activity which produces copolymer
particles with poor properties (page 1, lines 25-30).
Tachikawa II obviates this problem by temporarily inhibiting
catalyst activity as a result of contacting the catalyst with
an activity inhibitor (page 1, lines 30-35, and page 2, lines
5-9). The catalyst system of the reference is formed by
reacting a component containing titanium, halogen, and an
organometallic compound such as magnesium, with an aluminum
compound and an electron donor (page 2, line 10-page 7, line
13). The activity inhibitor of the reference includes carbon
monoxide and carbon dioxide³ (page 7, lines 14-16).

³ All examples in the reference use carbon monoxide as the activity
inhibitor except Example 5, which uses allene as the inhibitor. See pages

Tachikawa II differs from Tachikawa I, as discussed above, by specifically teaching that "the active sites on the polymerization catalyst are partly or **entirely** modified by the activity inhibitor." (page 8, lines 6-8, emphasis added). Thus complete deactivation is contemplated by Tachikawa II, although not exemplified. This reference also teaches that this polymerization catalyst which has been contacted with the activity inhibitor can be stored for periods of time, with subsequent reactivation by reaction with a cocatalyst such as an organometallic compound (page 8, lines 9-11 and 13-16).

Accordingly, in view of the disclosure of carbon dioxide as an activity inhibitor and the teaching of complete deactivation of the catalyst system by Tachikawa II, the use of this activity inhibitor in amounts to completely deactivate a Ziegler-Natta catalyst system would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103.

EP '410 has a similar disclosure to that of Tachikawa II in that Ziegler-Natta type catalyst systems used in the polymerization of alpha-olefins have too much activity and must be treated with polymerization inhibiting agents

9-12 of Tachikawa II.

(abstract, page 1, lines 1-14, page 2, lines 5-21, and page 3, lines 29-32). EP '410 teaches that treating these catalysts and the co-catalyst organoaluminum compound with polymerization inhibitors such as carbon monoxide or carbon dioxide renders the catalyst system "totally inactive for the polymerisation of olefins" for a short period known as the induction period (page 3, line 32-page 4, line 8). EP '410 defines a polymerization inhibiting agent as "any compound . . . capable of slowing down or totally stopping the polymerisation of the alpha-olefins in the presence of a catalyst system of the Ziegler-Natta type" (page 12, lines 24-31). Thus one of ordinary skill in the art would have reasonably concluded from the teachings of EP '410 that complete inactivation of the catalyst system for a time period⁴ was contemplated. This conclusion is further reinforced by the teaching in EP '410 on page 13 regarding the amounts of polymerization inhibiting agent that may be used, including large amounts of the agent as long as the catalyst is not poisoned.

⁴ As discussed by the examiner on page 3 of the main answer, the process of claim 1 is not limited to any specific time period subsequent to the deactivation. The claimed term "with a long storage life" is not defined in the claim or the specification (see page 8, lines 2-4).

Carbon monoxide and carbon dioxide are the preferred polymerization inhibitors of EP '410 (page 12, lines 32-35). Carbon dioxide is specifically exemplified in Example 10 on page 28 of EP '410. The reactivation of the catalyst system by reaction with a co-catalyst is taught by EP '410 at page 14, lines 12 *et seq.* Some specific components of a Ziegler-Natta catalyst, as recited in appealed claim 1, are disclosed on pages 18-19 of EP '410. Electron donors as catalyst components are taught by EP '410 on page 6. The "carboxylic ester" component of the catalyst in appealed claim 1 is not specifically disclosed or taught by EP '410 but such compounds were well known components of Ziegler-Natta catalyst systems (compare EP '410, page 5, line 11-13, and page 6, lines 4-8, with Tachikawa II, page 2, lines 35-36).

For the foregoing reasons, the subject matter of appealed claim 1 would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 in view of the disclosure and teachings of EP '410.

Although not discussed by appellants, the product-by-process recited in claim 2 would have been obvious within the meaning of 35 U.S.C. § 103 to one of ordinary skill in the art given the disclosures and teachings of Tachikawa II or EP

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'410, for the reasons stated above. A lesser burden of proof is needed to make out a *prima facie* case of obviousness in product-by-process claims than in conventional product claims. **See In re Fessman**, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once it is shown that the claimed product reasonably appears to be the same or substantially similar to the product of the prior art, the burden shifts to appellants to establish, through objective evidence, an unobvious difference between the claimed and prior art product. **See In re Best**, 562 F.2d 1252, 1255-56, 195 USPQ 430, 433-34 (CCPA 1977); **Ex parte Phillips**, 28 USPQ2d 1302, 1303 (Bd. Pat. App. & Int. 1993).

The Kersting Declaration dated Dec. 6, 1993, has been considered. However, in view of the new ground of rejection, this comparison is not with the closest prior art. **See In re Baxter Travenol Labs.**, 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991). Accordingly, we find that appellants have not presented objective evidence, on this record, which would serve to rebut the *prima facie* case of obviousness established by Tachikawa II or EP '410.

C. Summary

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The rejection of claims 1 and 2 under 35 U.S.C. § 103 as unpatentable over Tachikawa I is reversed. Pursuant to the provisions of 37 CFR § 1.196(b), a new ground of rejection of claims 1 and 2 under 35 U.S.C. § 103 as unpatentable over Tachikawa II or EP '410 has been made.

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b)(amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63, 122 (Oct. 21, 1997)).

37 CFR

§ 1.196(b) provides that, "A new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellant, ***WITHIN TWO MONTHS FROM THE DATE OF THE DECISION***, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (§ 1.197(c)) as

to the rejected claims:

- (1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

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(2) Request that the application be reheard
under § 1.197(b) by the Board of Patent Appeals and
Interferences upon the same record. . . .

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

REVERSED - 37 CFR § 1.196(b)

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Administrative Patent Judge)	
)	
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BRADLEY R. GARRIS)	BOARD OF PATENT
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