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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 38

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HARALD SCHWAGER and JUERGEN KERTH

Appeal No. 1997-1750
Application No. 08/524,024

ON BRIEF

Before KIMLIN, OWENS and WALTZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 8-11, all the claims remaining in the present application.

Claim 8 is illustrative:

8. A process for preparing a propylene-ethylene copolymer which is conducted in three distinct polymerization steps in the gas phase in an agitated fixed bed by means of a

Ziegler-Natta catalyst system which, in addition to a titanium-containing solid component based on a finely divided carrier, selected from the group consisting of silica, alumina and aluminosilicate, also contains, as cocatalyst, an aluminum compound, which process comprises in a first polymerization step, polymerizing propylene at from 60 to 90EC and at from 20 to 40 bar and at a mean residence time of the reaction mixture of from 0.5 to 5 hours, then,

in a second polymerization step, polymerizing a mixture of propylene and ethylene onto the polymer obtained from the first polymerization step at from 40 to 110EC and from 5 to 30 bar, this pressure being at least 7 bar below the pressure in the first polymerization step, and at a mean residence time of the reaction mixture of from 0.2 to 4 hours, and then,

in a third polymerization step, polymerizing ethylene or a mixture of ethylene and propylene onto the polymer obtained from the second polymerization step at from 50 to 110EC and from 5 to 30 bar and at a mean residence time of the reaction mixture of from 0.1 to 5 hours, the weight ratio between the monomers reacted in the first and second polymerization steps being from 1:1 to 20:1 and the weight ratio between the monomers reacted in the first two polymerization steps and those reacted in the third polymerization step being from 1:2 to 20:1.

The examiner relies upon the following references as evidence of obviousness:

Toyota et al. (Toyota)	4,547,552	Oct. 15, 1985
Kerth et al. (Kerth)	5,162,465	Nov. 10, 1992

Appellants' claimed invention is directed to a three-stage process for preparing a propylene-ethylene copolymer which employs a Ziegler-Natta catalyst system comprising a

titanium-containing solid component on a finely divided carrier and an aluminum compound as a cocatalyst.

Appellants submit at page 4 of the principal brief that "it is affirmed that the rejected claims stand or fall together."

Appealed claims 8-11 stand rejected under 35 U.S.C. § 103 as being unpatentable over Toyota in view of Kerth.

We have thoroughly reviewed each of appellants' arguments for patentability, as well as the declaration evidence relied upon in support thereof. However, we are in full agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the examiner's rejection for the reasons set forth in the Answer, which we incorporate herein, and we add the following primarily for emphasis.

As explained by the examiner, Toyota discloses a process, like appellants', for preparing a propylene-ethylene copolymer with a Ziegler-Natta catalyst comprising a titanium-containing solid component and an aluminum compound. The examiner sets forth at page 4 of the Answer how the multi-stage process

disclosed by Toyota corresponds to appellants' first, second and third polymerization steps. While Toyota does not disclose the presently claimed catalyst on a finely divided carrier of silica, the examiner correctly points out that Kerth expressly teaches that appellants' catalyst composition provides numerous advantages over a catalyst composition which is similar to the titanium-containing catalyst disclosed by Toyota (see paragraph bridging pages 6 and 7 of Answer). Accordingly, we fully concur with the examiner that it would have been obvious for one of ordinary skill in the art to utilize the titanium-containing catalyst of Kerth in the process of Toyota "with the reasonable expectation of obtaining the numerous advantages taught by Kerth" (page 5 of Answer).

Appellants contend at page 4 of the principal brief that "Toyota also fails to disclose agitated bed, gas phase polymerization." However, as noted by the examiner, Toyota specifically discloses that the polymerization may be conducted in the gaseous phase (column 9, lines 21 and 22; column 10, lines 22-25).

Appellants also maintain that "Kerth fails to disclose that incorporation of the catalyst into a process for producing propylene-ethylene copolymers would aid in preparation of such copolymers" (sentence bridging pages 5 and 6 of principal brief). We must admit that we don't quite understand this argument inasmuch as Kerth expressly teaches specific advantages resulting from utilizing the disclosed catalyst in a process for producing copolymers of propene and lower alkyl monoolefins such as ethylene (column 1, lines 10-13).

Appellants rely upon a Declaration by Dr. Schwager, one of the present inventors, as evidence of nonobviousness. According to appellants, the Declaration clearly shows that the process of the present invention, compared to the process of Toyota, "yields propylene-ethylene copolymers having a reduced content of fine and big rough particles, meaning that the copolymers have a homogeneous size distribution" (page 7 of principal brief). In addition, the Declaration shows that the process of the present invention "may be carried out for a longer period before it must be stopped for a reactor shutdown" (page 7 of principal brief). Also, "[t]he polymers

of the instant process further show a lower chlorine content than those produced by Toyota" (page 7 of principal brief).

While the examiner concedes that the declaration data evidences certain superior results relative to the Toyota process, the examiner explains that the declaration results representative of the present invention, using Kerth's catalyst composition, would have been expected by one of ordinary skill in the art in light of the Kerth disclosure. In relevant part, Kerth discloses the following at column 1, lines 56-68:

> The catalyst system should be easy to prepare and give a high yield of polymer, which should have a very high isotactic fraction. The catalyst system should also produce polymers having specific morphological properties, for example uniform particle size and/or a smaller content of very fine particles and/or high bulk density. In addition to these parameters which are important for controlling polymerization systems, working up the polymers and/or processing the latter, a low halogen content of the polymer is important, especially with regard to corrosion problems; this can be achieved by increasing the polymer yield and/or by using a catalyst system which has a very low halogen content.

Based on this most relevant disclosure of Kerth, we must agree with the examiner that the Declaration of appellants does not establish unexpected results. It is not without significance

that the declarant, Dr. Schwager, fails to characterize the declaration results as unexpected especially in light of the Kerth disclosure. As for the Declaration's showing that the instant process "may be carried out for a longer period before it must be stopped for a reactor shutdown" (page 7 of principal brief), we find that the examiner has adequately addressed this point in the paragraph bridging pages 7 and 8 of the Answer. Furthermore, appellants have not addressed the examiner's reasonable criticism that the declaration data is not commensurate in scope with the degree of protection sought by the appealed claims.

In conclusion, based on the foregoing and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims 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

EDWARD C. KIMLIN)
Administrative Patent Judge)
)

TERRY J. OWENS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
THOMAS A. WALTZ Administrative Patent Judge	)	

ECK:clm

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