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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte CHIN-YUAN G. MA
and JAMES D. MCCULLOUGH, JR.

_____

Appeal No. 1997-2344
Application 08/273,550

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ON BRIEF

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Before JOHN D. SMITH, KRATZ, and ROBINSON, Administrative Patent Judges.

JOHN D. SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal pursuant to 35 U.S.C. § 134 from the final rejection of claims 1 through 4 and 6 through 10.

Claims 1, 7, 8, and 9 are representative and are reproduced below:

1. A method for promoting crystallization from the melt of a semi-crystalline polyolefin copolymer which comprises adding to said copolymer an effective amount of a nucleating package consisting essentially of a high melt flow polypropylene having a melt flow of $\geq$ 8 dg/min. and stearamide, wherein said effective amount of nucleating package ranges from about 0.1 to about 3 wt% of the total composition.

7. A method for promoting crystallization from the melt of butene-1-ethylene copolymer which comprises adding to said copolymer from about 0.25 to about 2 wt% of a nucleating package consisting essentially of high melt flow polypropylene having a melt flow of from 45 dg/min and stearamide.

8. A method as in claim 7 wherein from about 0.1 to 0.5 wt% of said[1] oxidized high density polyethylene is added in a slurry water bath.

9. An improved melt crystallizable composition comprising a semi-crystalline polyolefin copolymer and from about 0.1 to about 3 wt% of the total composition a nucleating package consisting essentially of high melt flow polypropylene having a melt flow of $\geq$ 8 dg/min. and stearamide.

The reference of record relied upon by the examiner is:

Hwo et al. (Hwo) 4,359,544 Nov. 16, 1982

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[1] Antecedent basis is not present in independent claim 7 for the claim language “said oxidized high density polyethylene” in claim 8. The examiner should insure correction of this matter in any subsequent prosecution of this application.

The appealed claims stand rejected under 35 U.S.C. § 103 as unpatentable over Hwo.

Because we agree with the examiner's conclusion that the subject matter defined by appealed claims 1 through 4, 7, and 9 would have been obvious to a person with ordinary skill in the art, we sustain the rejection as to these claims. We cannot sustain the rejection of claims 6, 8, and 10, however.

As evident from the representative claims reproduced above, the subject matter on appeal is generally directed to the use of a defined "nucleating package," composed of 1) a high melt flow polypropylene and 2) stearamide, to promote crystallization from the melt of a semi-crystalline polyolefin copolymer, such as a butene-1-ethylene copolymer.

At the outset, we observe that it is well known that certain additions of materials referred to as "foreign substances", added to a polymer melt in finely divided form, serve as "nucleating agents" for the subsequent crystallization of the polymers during cooling in a mold. These materials are also known to favorably influence the crystalline structure of the molded thermoplastic material.

As evidence of obviousness of the herein claimed invention, the examiner relies on the disclosures in the Hwo patent. Hwo is specifically related to a method for promoting the crystallization of thermoplastic butene-1 polymer compositions such as isotactic butene-1-ethylene copolymer. For this purpose, Hwo teaches in the "BACKGROUND OF THE INVENTION" section of the patent (column 1, line 5 through column 2, line 15) that typical nucleating agents for promoting the crystallization of butene-1-polymers utilized by prior art workers include, inter alia, polypropylene, stearamide, and high density polyethylene. See Hwo particularly at column 1, lines 46 and 57-58 and column 2, lines 6 through 10. As emphasized by appellants in their brief, Hwo's patented invention was based on his discovery that a combination of two specific additives, i.e., stearamide and high density polyethylene, cooperate in a synergistic fashion resulting in rapid processing speeds when a butene-1-ethylene copolymer containing these particular nucleating agents is fabricated into blow molded films.

Notwithstanding appellants' arguments in their brief, we find that the disclosures in Hwo establish a prima facie case

of obviousness for using a nucleating package composed of a high melt flow polypropylene and stearamide. As observed above, polypropylene and stearamide have been individually used by prior art workers as nucleating agents for butene-1 polymers. It is well settled that it is prima facie obvious to combine two components or two compositions each of which is taught by the prior art to be useful for the same purpose to form a third composition which is to be used for the very same purpose. In re Susi, 440 F.2d 442, 445, 169 USPQ 423, 426 (CCPA 1971). Applying this principle of law to the disclosures in Hwo, it would have been prima facie obvious to form a nucleating package composed of both polypropylene and stearamide because each material has been disclosed in the prior art as individually useful for the very same purpose of promoting the crystallization of thermoplastic butene-1 polymer compositions. The idea of combining them flows logically from their having been individually taught in the prior art.

We recognize, as stressed by appellants, that the herein claimed invention is directed to a nucleating package comprising a high melt flow polypropylene having a melt flow

of ≥ 8 dg/min. Melt flow or melt index is defined as the viscosity of a thermoplastic polymer at a specified temperature and pressure. Specifically, the melt index or melt flow of a thermoplastic polymer is the number of grams of such polymer that can be forced through a 0.0825-in. orifice in 10 minutes at 190EC by a pressure of 2160 grams. See The Condensed Chemical Dictionary, edited by Hawley, page 649, copyright 1981, copy attached. Consistent with the claim language defining the polypropylene nucleating agent as a high melt flow material, appellants' specification also defines high melt flow polypropylene as meaning polypropylene having a melt flow of from 8 dg/min. and above. See the specification at page 4, lines 3 and 4. Although the applied Hwo reference is silent with respect to the melt flow or melt index parameter for the prior art polypropylene nucleating agent (again, see Hwo at column 1, lines 44 through 46), Hwo teaches that for a high density polyethylene nucleating material, the melt index may range from about 0.1 to 20 with even higher melt indexes also suitable. See column 3, lines 18 through 21 of Hwo. Significantly, Hwo further teaches that the use of a high density polyethylene with a viscosity at mixing

temperatures approximating that of the butene-1 polymer facilitates intimate mixing in conventional extrusion compounding equipment. See Hwo at column 3, lines 28 through 31. Appellants indicate that conventional butene-1-ethylene copolymers have melt indices ranging from about 0.2 to 1000 dg/min. See the specification at page 5, lines 4 through 6. In light of these facts, one of ordinary skill in this art would have been led to employ a polypropylene nucleating agent having a viscosity (as defined by its melt index) approximating the viscosity of the butene-1 polymer to facilitate the intimate mixing of the polypropylene nucleating agent with the butene-1 polymer in conventional extrusion compounding equipment. Particularly, for butene-1-ethylene copolymers having relatively high melt indices, e.g., from about 8 to 1000 dg/min., one of ordinary skill in the art would have necessarily used a propylene nucleating agent having a viscosity as defined by a similar high melt index to facilitate the mixing of these components.

Appellants' fundamental argument on appeal in traversal of the rejection over Hwo is that Hwo's nucleating package requires high density polyethylene as a required key

nucleating agent ingredient, whereas the present invention "can improve crystallization" without high density polyethylene. See the brief at page 10. However, for the reasons set forth above, it is our view that the use of a nucleating package composed solely of a high melt flow polypropylene and stearamide would have been prima facie obvious based primarily on the legal proposition set forth in In re Susi. In any event, assuming the prima facie case of obviousness is based on the rationale that it would have been obvious to use a nucleating package consisting of polypropylene, stearamide, and high density polyethylene nucleating agents, we cannot subscribe to appellants' argument that the claim language "nucleating package consisting essentially of" necessarily excludes the use of the high density polyethylene nucleating agent component. In this regard, the use of the language "consisting essentially of", preceding a list of ingredients in a composition claim, typically means that the invention necessarily includes the listed ingredients and is open to the unlisted ingredients that do not materially affect the basic and novel properties of the invention. Here, appellants have provided no objective

evidence that the presence of a high density polyethylene nucleating agent component would materially affect the basic and novel properties of the herein claimed invention. See In re Herz, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976).

In view of the above, we agree with the examiner's ultimate legal conclusion that the subject matter defined by appealed claims 1 through 4, 7, and 9 would have been obvious within the meaning of 35 U.S.C. § 103 and we therefore sustain the rejection of these claims.

As correctly argued by appellants, Hwo contains no teaching or suggestion of adding oxidized high density polyethylene to a semi-crystalline polyolefin copolymer composition as required by appealed dependent claims 6, 8, and 10, and we find no reasonable specific rebuttal to appellants' arguments by the examiner in his answer. It follows that we cannot sustain the examiner's section 103 rejection of claims 6, 8, and 10 in view of the disclosures in Hwo.

In summary, we have sustained the examiner's rejection of claims 1 through 4, 7, and 9 but not of claims 6, 8, and 10.

The decision of the examiner is affirmed-in-part.

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

AFFIRMED-IN-PART

John D. Smith Administrative Patent Judge	)	
Peter F. Kratz Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
Douglas W. Robinson Administrative Patent Judge	)	

tdl

Appeal No. 1997-2344
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