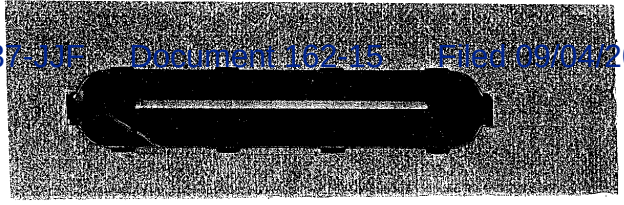
EXHIBIT G



Class	Subclass	ISSUE CLASSIFICATION
		08/378998

UTILITY SERIAL NUMBER	PATENT DATE	PATENT NUMBER
08/378998		ABANDONED

SERIAL NUMBER	FILING DATE	CLASS	SUBCLASS	GROUP ART UNIT	EXAMINER
08/378,998	01/27/95	526	348	1505	aw

APPLICANTS

PAK-WING STEVE CHUM, LAKE JACKSON, TX; GEORGE W. KNIGHT, LAKE JACKSON, TX; RONALD P. MARKOVICH, FRIENDSWOOD, TX; SHIH-YAW LAI, SUGAR LAND, TX.

CONTINUING DATA********
VERIFIED
Yes, SW

THIS APPLN IS A CON OF 08/054,379 04/28/93 now abn
WHICH IS A CON OF 07/776,130 10/15/91 PAT 5,272,236

FOREIGN/PCT APPLICATIONS********
VERIFIED
None, SW

Foreign priority claimed 35 USC 119 conditions met	AS FILED	STATE OR COUNTRY	SHEETS DRWGS.	TOTAL CLAIMS	INDEP. CLAIMS	FILING FEE RECEIVED	ATTORNEY'S DOCKET NO.
☐ yes ☒ no ☐ yes ☒ no							
Verified and Acknowledged SW Examiner's initials	→	TX	2	15	2	$730.00	C-40,121-AB

ADDRESS

THE DOW CHEMICAL COMPANY
PATENT DEPARTMENT B 1211
2301 NORTH BRAZOSPORT BLVD
FREEPORT TX 77541

TITLE

FABRICATED ARTICLES MADE FROM ETHYLENE POLYMER BLENDS

U.S. DEPT. of COMM.-Pat. & TM Office-PTO-436L (rev. 10-78)

PARTS OF APPLICATION FILED SEPARATELY		Applications Examiner
NOTICE OF ALLOWANCE MAILED	Assistant Examiner	CLAIMS ALLOWED: Total Claims / Print Claim
ISSUE FEE: Amount Due / Date Paid	Primary Examiner	DRAWING: Sheets Drwg. / Figs. Drwg. / Print Fig.
Label Area	PREPARED FOR ISSUE	ISSUE BATCH NUMBER

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Form PTO-436A
(Rev. 8/92)

PATENT APPLICATION

08378998

APPROVED FOR LICENSE ☐

INITIALS _____

Date Entered or Counted

ABANDONED

CONTENTS

Date Received or Mailed

RECEIVED
MAR U 9 1995
GROUP 1500

			Date Received or Mailed
	1.	Application papers.	
10		Pre Draft B	Jan 27, 1995
11		F. Rej 3 mos.	4/18/95 4/17
12		Ext of time (3 mos)	Sept 21 1995
13		Draft C (NC) w/Decl	Sept 21, 1995
14		Advisory Action	9-29-95 9/28
15		Summary of Interview	10-5-95
16		Draft D (NE) w/Decl	Oct 18 1995
17		Draft E (NC)	Oct 23, 1995 10/25
18		Advisory Action	10-26
19		Supplemental Amt	Oct 23 1995
20		Abandoned	DEC 14 1995 12/11
21		Request for access	June 18, 1998
22		Request for Access	10-2-98
23		Request for Access	12-7-98
24	16.	Request for access	1-22-04
25	17.		
24	18.		
27	19.		
28	20.		
	21.		
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(FRONT)

RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 1505
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Pak-Wing Steve Chum, et al.		
Serial No.:	08/378,998	Art Unit:	1505
Filed:	January 27, 1995	Examiner:	David Wu
Attorney Docket No:	C-40,121-AB		

For: FABRICATED ARTICLES MADE FROM ETHYLENE POLYMER BLENDS

RECEIVED
SEP 21 1995
GROUP 1500

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231

Sir:

RESPONSE AFTER FINAL REJECTION

The following is responsive to Examiner's Action (Paper No. 11) dated April 18, 1995. Attached herewith is a petition for a three-month extension of time to extend the period for response to October 18, 1995. Also attached herewith is an Declaration under 37 CFR 1.132 by Ronald P. Markovich, a co-inventor of the above-identified application.

IN THE SPECIFICATION

On page 9, before the heading "Determination of Slope of Strain Hardening", please insert the following:

-- Determination of Critical Shear Stress

Gas extrusion rheometry (GER) is described by M. Shida, R.N. Shroff and L.V. Cancio in Polymer Engineering Science, Vol. 17, no. 11, p. 770 (1977), and in "Rheometers for Molten Plastics" by John Dealy, published by Van Nostrand Reinhold Co. (1982) on page 97, both publications of which are incorporated by reference herein in their entirety. All GER experiments are performed at a temperature of 190°C, at nitrogen pressures between 5250 to 500 psig using a 0.0296 inch diameter, 20:1 L/D die. An apparent shear stress vs. apparent shear rate plot is used to identify the melt fracture phenomena. According to Ramamurthy in Journal of Rheology, 30(2), 337-357 1986, above a certain critical flow rate, the observed extrudate irregularities may be broadly classified into two main types: surface melt fracture and gross melt fracture.

Surface melt fracture occurs under apparently steady flow conditions and ranges in detail from loss of specular gloss to the more severe form of "sharkskin." Gross melt fracture occurs at unsteady flow conditions and ranges in detail from regular (alternating rough and smooth, helical, etc.) to random distortions. For commercial acceptability, (e.g., in blown film products), surface defects should be minimal, if not absent. The critical shear rate at onset of surface melt fracture (OSMF) and onset of gross melt fracture (OGMF) will be used herein based on the changes of surface roughness and configurations of the extrudates extruded by a GER. Preferably, the critical shear stress at the OGMF and the critical shear stress at the OSMF for the substantially linear ethylene polymers [described] used herein is greater than about 4 x 10^6 dyne/cm^2 and greater than about 2.8 x 10^6 dyne/cm^2, respectively. --

Don't enter, dw 9/29/95

IN THE CLAIMS

Please amend the following claims:

1. (Twice Amended) A film made from an ethylene polymer composition, wherein the composition comprises

(A) from about 10 percent (by weight of the total composition) to about 95 percent (by weight of the total composition) of

at least one homogeneously branched substantially linear ethylene/α-olefin interpolymer having:

(i) a density from about 0.89 grams/cubic centimeter (g/cm^3) to about 0.92 g/cm^3,

(ii) a molecular weight distribution (M_w/M_n) from about 1.8 to about 2.8,

(iii) a melt index (I_2) from about 0.001 grams/10 minutes (g/10 min.) to about 10 g/min.,

(iv) no linear fraction, [and]

(v) a single melting peak as measured using differential scanning calorimetry[;], and

(vi) a critical shear stress at onset of gross melt fracture of greater than about 4 x 10^6 dyne/cm^2; and

(B) from about 5 percent (by weight of the total composition) to about 90 percent (by weight of the total composition) of at least one heterogeneously branched ethylene polymer having a density from about 0.93 g/cm^3 to about 0.965 g/cm^3 and wherein the heterogeneously branched ethylene polymer has no more than about 10 percent (by weight of the polymer) of a polymer fraction having a slope of strain hardening coefficient (SCH) greater than or equal to about 1.3.

17. (Twice Amended) In a composition comprising at least one homogeneously branched ethylene/α-olefin interpolymer and at least one heterogeneously branched ethylene/α-olefin interpolymer, the improvement comprising incorporating into the composition from about 10 percent (by weight of the total composition) to about 95 percent (by weight of the total composition) of at least

one homogeneously branched substantially linear ethylene/α-olefin interpolymer having:

(i) a density from about 0.89 grams/cubic centimeter (g/cm^3) to about 0.92 g/cm^3,

(ii) a molecular weight distribution (M_W/M_n) from about 1.8 to about 2.8,

(iii) a melt index (I_2) from about 0.001 grams/10 minutes (g/10 min.) to about 10 g/10 min.,

(iv) no linear polymer fraction, [and]

(v) a single melting peak as measured using differential scanning calorimetry, and

(vi) a critical shear stress at onset of gross melt fracture of greater than about 4 x 10^6 dyne/cm^2; and

from about 5 percent (by weight of the total composition) to about 90 percent (by weight of the total composition) of at least one heterogeneously branched ethylene polymer having a density from about 0.93 g/cm^3 to about 0.965 g/cm^3, wherein the heterogeneously branched ethylene polymer has no more than about 10 percent (by weight of the polymer) of a polymer fraction having a slope of strain hardening coefficient greater than or equal to about 1.3.

Please add the following new claims:

-- 31. A film made from an ethylene polymer composition, wherein the composition comprises

(A) from about 10 percent (by weight of the total composition) to about 95 percent (by weight of the total composition) of

at least one homogeneously branched substantially linear ethylene/α-olefin interpolymer having:

(i) a density from about 0.89 grams/cubic centimeter (g/cm^3) to about 0.92 g/cm^3,

(ii) a molecular weight distribution (M_w/M_n) from about 1.8 to about 2.8,

(iii) a melt index (I_2) from about 0.001 grams/10 minutes (g/10 min.) to about 10 g/min.,

(iv) no linear fraction,

(v) a single melting peak as measured using differential scanning calorimetry,

(vi) a critical shear stress at onset of gross melt fracture of greater than about 4×10^6 dyne/cm^2, and

(vii) a slope of strain hardening coefficient greater than or equal to about 1.3 and up to about 2.3; and

(B) from about 5 percent (by weight of the total composition) to about 90 percent (by weight of the total composition) of at least one heterogeneously branched ethylene polymer.

32. An ethylene polymer composition comprising

(A) from about 10 percent (by weight of the total composition) to about 95 percent (by weight of the total composition) of

at least one homogeneously branched substantially linear ethylene/α-olefin interpolymer having:

(i) a density from about 0.89 grams/cubic centimeter (g/cm^3) to about 0.92 g/cm^3,

(ii) a molecular weight distribution (M_w/M_n) from about 1.8 to about 2.8,

(iii) a melt index (I_2) from about 0.001 grams/10 minutes (g/10 min.) to about 10 g/min.,

(iv) no linear fraction,

(v) a single melting peak as measured using differential scanning calorimetry,

(vi) a critical shear stress at onset of gross melt fracture of greater than about 4×10^6 dyne/cm^2, and

(vii) a slope of strain hardening coefficient greater than or equal to about 1.3 and up to about 2.3; and

(B) from about 5 percent (by weight of the total composition) to about 90 percent (by weight of the total composition) of at least one heterogeneously branched ethylene polymer. --

REMARKS

Support for the amendment to the specification can be found in the parent application USSN 07/776,130 (now USP 5,272,236) at page 7, lines 27-34 bridging to page 8, lines 1-27. The parent application was explicitly incorporated in to the present application by reference at page 1, lines 2-8. The amendment to the otherwise verbatim text of the parent application directs the incorporated description to the use of substantially linear ethylene polymers rather than a description of the novelty of such polymers.

Support for the amendments to Claims 1 and 17 respecting the critical shear stress limitation can be found in the parent application specifically at page 8, lines 23-27. Claim 17 was amended to incorporate the weight percent and density requirements for the at least one heterogeneously branched ethylene polymer component of the inventive composition. This amendment provides conformity with Claim 1 and corrects an inadvertent transcription error.

New Claim 31 is based on the description at page 13, lines 3-6 in the specification, original Claim 1, current Claim 2 and parent application 07/776,130 at page 8, lines 23-27. New Claim 32 is based on the description at page 13, lines 3-6 in the specification, original Claim 17, current Claim 18 and parent application 07/776,130 at page 8, lines 23-27.

Applicants do not believe that the amendments to the specification or claims add any new matter. Applicants respectfully request entry of the amendments and reconsideration of Claims 1-8 and 17-23 in view of the following remarks.

Examiner's Rejections

Claims 1-8 and 17-23 remain rejected under 35 USC § 102(b) as anticipated by WO '414 or, in the alternative, under 35 USC § 103 as obvious in view of WO '414. In particular, the PTO alleges a slope of chain hardening (SCH) of greater than 1.3 is an inherent property of the '013 component polymer of WO '414 and if the distinction of the present invention rests on long chain branching, then a long chain branching

limitation must be set forth in the claims. Further, the PTO alleges that Applicants' position respecting inventive compositions having significantly higher dart impact resistance is not supported by truly representative comparative experiments and the declaration by Chum is conclusory and, as such, does not cure cited deficiencies respecting comparative experiments and demonstration of unexpected results.

Applicants' Response

The § 102(b) Rejection

Applicants believe, standing alone, the term "substantially linear ethylene interpolymer" sufficiently and completely distinguishes the present invention over the WO '414 reference. The term clearly means a homogeneously branched ethylene interpolymer having long chain branches. *See*, the description at page 4, lines 27-31 and at page 6, lines 12-30. As such, Applicants believe a long chain branching limitation is already incorporated into the base claims of the present invention.

Moreover, to the extent the term was sufficient to justify a restriction requirement imposed by the PTO as between claims directed to homogeneously branched substantially linear ethylene interpolymers and those directed to homogeneously branched linear ethylene interpolymers (*see*, paper 4 mailed November 15, 1993), the term easily provides sufficient distinction over the WO '414 reference whether or not the PTO is persuaded a long chain branching limitation is intrinsic to the term.

Further, to the extent that Table 1 of the original specification clearly indicates that a slope of strain hardening of greater than 1.3 is not an inherent property of substantially linear ethylene interpolymers whatever they are (that is, the SCH limitation is met by particularly selected substantially linear ethylene interpolymers and not others), it is a fortiori that the characteristic is not inherent as to homogeneously branched polymers in general and homogeneously branched linear ethylene polymers in particular. Certainly substantially linear ethylene polymers are a species of and/or representative of homogeneously branched ethylene polymers.

For each of these three reasons, Applicants believe the 102(b) rejection is traversed and should be withdrawn.

Although the Applicants believe the above reasoning sufficiently traverses the PTO's rejection under 35 USC § 102(b), to make clearer that the term "substantially linear ethylene interpolymer" necessarily includes a long chain branching limitation, the base claims have been amended to incorporate a critical shear stress melt fracture requirement. Improved resistance to melt fracture is believed to be a manifestation of long chain branching and is characteristic of substantially linear ethylene polymers.

Comparative data provided by affidavit by Ronald P. Markovich specifically indicates that homogeneously branched linear ethylene interpolymer compositions representative of the '013 component polymer in WO '414 have significantly lower critical shear stresses at the onset of melt fracture relative to comparable substantially linear ethylene interpolymers. *See*, Table 1 of Markovich Affidavit. Applicants believe these data clearly show a high critical shear stress characteristic is not at all an inherent property of homogeneously branched linear ethylene polymers and easily distinguishes the substantially linear ethylene interpolymers used in the present invention from WO '414 component polymers. However, like the existing term "homogeneously branched," Applicants believe incorporation of the critical shear stress melt fracture limitation merely constitutes amplification of the term "substantially linear ethylene interpolymer."

The § 103 Rejection

Applicants believe that since the PTO predicated its § 103 rejection entirely on alleged similarities between the present inventive composition and the WO '414 composition, the § 103 rejection is traversed by the same reasoning applicable to the § 102(b) rejection and, likewise, the § 103 rejection should be withdrawn.

Moreover, Applicants believe the § 103 rejection should be withdrawn because there is no nexus between the WO '414 reference and the present invention. Applicants originally disclosed that their compositions have significantly higher impact and toughness properties relative to heterogeneously branched single polymer compositions as well as relative to blend compositions consisting entirely of heterogeneously branched component polymers. The WO '414 reference relied on by the PTO pertains to homogeneous blend components wherein each component polymer also has a narrow molecular weight distribution. *See*, WO '414 at page 3, lines 29-37 bridging to page 4, line 1. In addition to requiring the exclusive use of homogeneous component polymers, as another essential requirement, the WO '414 reference specifically teaches that the blend must be free of component polymers having both a relative high density and a relatively high average molecular weight, otherwise poor properties would result. *See*, WO '414 at page 4, lines 2-8 and page 11, lines 14-25.

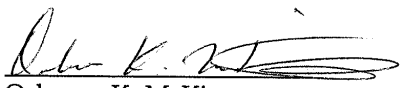
Unlike the WO '414 composition, no density/molecular weight restriction exists for the present inventive compositions. In particular, the WO '414 teachings in no way render obvious higher performing compositions comprising at least one lower density substantially linear ethylene interpolymer and at least one higher density heterogeneously branched ethylene polymer, wherein there is no average molecular weight (melt index) limitation as to the higher density heterogeneously branched ethylene polymer. As such, the WO '414 reference does not provide a nexus that

would lead one skilled in the art to expect a blend composition of a homogeneous component polymer with a particularly selected heterogeneous component polymer would perform equivalent to or better than a blend of two homogeneous component polymers with density/average molecular weight restrictions. A nexus would be only provided (but it is not) if a person skilled in the art assumed and understood that SCH in some way related to polymer homogeneity, wherein the SCH limitation as to the heterogeneously branched ethylene polymer taught by Applicants renders the heterogeneous polymer essentially homogeneous. Such an assumption is not likely and provides an absurd result as it defies all known polymer science. If anything, the recited SCH limitation insures the B component is heterogeneously rather than homogeneously. Moreover, such an assumption still does not address or account for the density/average molecular weight restriction taught by WO '414. In sum, Applicants believe the WO '414 compositions and its restrictions (even in hindsight) are so completely different from the present composition that there could not be any suggestion of the latter. Hence, although such is well short of and is not the standard for § 103 obviousness, the WO '414 reference with its divergent teachings does not even rise to the level of "obvious to try."

Furthermore, specific comparative experiments by Ronald P. Markovich indicate that blend compositions representative of those of the WO '414 reference are in fact inferior to the present composition at least respecting impact performance. *See*, Table 2 Markovich Affidavit.

For all of the above reasons, Applicants believe the rejections under 35 USC § 102(b) and 35 USC § 103 have been traversed and should be withdrawn. Applicants also believe all of the PTO rejections and objections have been traversed and Claims 1-8, 17-23, 31 and 32 are all in a condition of allowance. Applicants respectfully request reconsideration of the pending claims and a notice of allowance of the same.

Respectfully submitted,



Osborne K. McKinney
Registration No. P-40,084
Phone: (409) 238-7889

Freeport, Texas 77541
OKM/okm

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Pak-Wing Steve Chum, et al.		
Serial No.:	08/378,998	Art Unit:	1505
Filed:	January 27, 1995	Examiner:	David Wu
Attorney Docket No:	C-40,121-AB		

For: FABRICATED ARTICLES MADE FROM ETHYLENE POLYMER BLENDS

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231

Sir:

DECLARATION UNDER 37 CFR § 1.132

Ronald P. Markovich declares and states:

THAT, he obtained a Bachelor of Science degree in Chemistry from Wayne State University (Detroit, Michigan) in 1983;

THAT, he joined The Dow Chemical Company (Midland, Michigan) in 1983 as a Chemist in the Research Assignments Program (RAP), and was promoted to Senior Research Chemist in 1989 and to his present position as Project Leader in 1993;

THAT, his first two RAP assignments pertained to analytical test method development, his RAP third assignment was in the Polyolefins Research and Development department and his fourth (and last) RAP assignment in the Polyolefins Technical Service and Development department;

THAT, after his last RAP assignment, he joined the Polyolefins Research and Development department full time and for the last ten and half years, he has focused his research and development efforts in the area of polyolefin product properties and analytical test method procedures and development;

THAT, his current responsibilities pertain to polyolefin product development as related to the interrelationships between fundamental polymer structure, process requirements and product performance properties;

THAT, he is an inventor as to the above-identified patent application and is therefore familiar with the patent application, the Examiner's Action thereto and the WO '414 reference on which the Examiner relies;

THAT, he performed comparative testing to determine whether compositions representative of the '013 component polymer in WO '414 have any significant long chain branching characteristics as indicated by relatively high critical shear stresses at onset of gross melt fracture;

THAT, he had to blend together (at 75.9%/24.1% by weight and 74.4%/25.6% by weight) two commercially available homogeneously branched linear ethylene interpolymers (supplied by Exxon Chemical Company under the designation Exact 3027 and 3022, respectively) in order to approximate the melt index and density disclosed in WO '414 for the '013 component polymer and the resulting experimental compositions are designated Comparative Examples AB1 and AB2, respectively, in the attached Table 1;

THAT, he had three different substantially linear ethylene interpolymers made at the Polyolefins Research Miniplant in order to represent the '013 component polymer with long chain branching and that these interpolymers are designated Component Examples A, B, and C in the attached Table 1;

THAT, he had Component Examples A, B and C and Comparative Examples AB1 and AB2 tested by gas extrusion rheometry according to the procedure and requirements described in USSN 07/776,130 at page 7, lines 27-34 bridging to page 8, lines 1-4 to determine the critical shear stress at onset of gross melt fracture for each;

THAT, he performed comparative experiments to determine the performance attributes of his inventive blend compositions relative to blend compositions representative of those disclosed in WO '414;

THAT, to approximate the Banbury and roll mill melt blending procedure described in WO '414 at page 20, lines 4-12, he employed a Haake torque mixer and melt blended various component polymers together with 1000 ppm Irganox 1076 antioxidant and 1000 ppm Irgafos 168 thermal stabilizer at 183°C and 50 rpms for 10 minutes to prepare 200-400 grams each of Inventive Blend Example AD1, BD1, CD1, AD2, BD2 and CD2, and Comparative Blend Example X1 and X2 as listed in the attached Table 2;

THAT, for bulk property comparisons, he compression molded Blend Examples according procedures described in WO '414 at page 20, lines 13-18;

THAT, the preferred test method for compression molded samples having a target thickness of 0.005 inch is ASTM D-882 rather than ASTM D-638 as reported in WO '414 at page 21, Note f of Table 2, in that ASTM D-638 is preferred for target thicknesses greater than 0.04 inch;

THAT, for the Inventive Blend Examples and the two Comparative Blend Examples, he performed tensile break strength determinations according ASTM D-882, intrinsic tear determinations according to ASTM D-1922 and Dynatup total energy impact determinations according to ASTM D-3763-86;

THAT, relative to substantially linear ethylene interpolymers, experimental compositions representative of the '013 component polymer of WO '414 have comparatively low critical shear stresses at onset of gross melt fracture which is indicative of low or, more probably, no long chain branching;

THAT, relative to inventive compositions, experimental blend compositions representative of the blend compositions of WO '414 have equivalent to inferior tensile break strength and intrinsic tear properties, as well as dramatically inferior impact properties;

THAT, specific comparative test results (which also included rheological property comparisons) indicate that the component polymers of WO '414 are completely different from substantially linear ethylene interpolymers in regards to molecular structure and the blend compositions of WO '414 are completely different from the Inventive Blend compositions in regards to at least impact resistance properties; and

THAT, the impact properties of our inventive compositions of the above-identified application are unexpected and surprising in that they show substantially higher impact resistance even at slightly higher densities relative to blend compositions representative of WO '414, whereas one skilled in the art would ordinarily expect compositions having higher densities to show inferior impact properties relative to comparative compositions having lower densities.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date 9/18/95

Ronald P. Markovich

Ronald P. Markovich

Table 1

Sample Designation	A Component Example A	B Component Example B	C Component Example C	AB1 Comparative Component AB1	AB2 Comparative Component AB2	Exact 3027 Comparative Resin	Exact 3022 Comparative Resin
Polymer Type	Substantially Linear Ethylene/ Octene Copolymer	Substantially Linear Ethylene/ Butene Copolymer	Substantially Linear Ethylene/ Octene Copolymer	Homogeneously Branched Linear Ethylene/ Butene Copolymer	Homogeneously Branched Linear Ethylene/ Butene Copolymer	Homogeneously Branched Linear Ethylene/ Butene Copolymer	Homogeneously Branched Linear Ethylene/ Butene Copolymer
Density (g/cc)	0.906	0.9052	0.90575	0.9031	0.9033	0.9015	0.9065
I2 (g/10 min @ 190°C)	4.01	4.23	3.99	3.83	3.93	3.26	8.48
I10 / I2	8.22	7.88	5.82	5.90	5.69	5.65	5.49
I10 (g/10 min @ 190°C)	32.96	33.32	23.21	22.6	22.38	18.42	46.57
Mw by GPC	68200	67100	77400	79100	80700	85800	65100
Mw/Mn by GPC	2.23	2.12	1.89	2.15	2.17	2.00	2.00
Shear Stress @ OSGMF (dyn/cm^2)	> 3.88 x 106	> 4.31 x 106	> 4.31 x 106	> 3.45 x 106	> 3.45 x 106	ND	ND
Shear Stress @ OSGMF (dyn/cm^2)	< 4.09 x 106	< 4.48 x 106	< 4.48 x 106	< 3.66 x 106	< 3.66 x 106	ND	ND

Note 1: Comparative Resin AB1 is a blend containing of 75.87% Exact 3027 and 24.13% Exact 3022.
Note 2: Comparative Resin AB2 is a blend containing of 74.44% Exact 3027 and 25.56% Exact 3022.
ND = not determined

Case 1:05-cv-00737-JJF Document 162-15 Filed 09/04/2008 Page 16 of 36

Table 2

Sample Designation	AD1 Inventive Blend Example	BD1 Inventive Blend Example	CD1 Inventive Blend Example	X1 Comparative Blend Example	AD2 Inventive Blend Example	BD2 Inventive Blend Example	CD2 Inventive Blend Example	X2 Comparative Blend Example
Blend Component								
A	38.46%				72.35%			
B		38.14%				71.75%		
C			38.46%				72.35%	
EXACT 3027				28.95%				53.90%
EXACT 3022				9.21%				18.50%
HDPE 04352N	61.54%	61.86%	61.54%	61.84%	27.65%	28.25%	27.65%	27.60%
I2 (g/10 min @ 190°C)	4.11	4.25	4.18	4.13	4.08	4.10	4.04	4.09
I10 / I2	7.31	6.96	6.29	6.19	7.67	7.64	5.98	5.84
I10 (g/10 min @ 190°C)	30.06	29.59	26.29	25.57	31.29	31.34	24.15	23.87
Mw by GPC	74900	74800	77200	83400	71700	73800	77200	80500
Mw/Mn by GPC	2.56	2.53	2.58	2.52	2.47	2.33	2.20	2.27
Strain @ Yield	15.0	15.0	14.9	15.0	14.9	15.0	14.8	15.0
Break Strength	1835	2070	1921	1801	3187	2253	3268	2729
Break Energy	385	57	509	108	1130	781	991	990
Intrinsic Tear	160	102	221	110	279	107	377	142
Dynatup (30 Mil Plaque)								
Total Energy	4.03	3.14	4.31	1.35	4.41	3.08	5.59	1.84

Case 1:05-cv-00737-JJF Document 162-15 Filed 09/04/2008 Page 17 of 36

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Pak-Wing Steve Chum et al.
Serial No.: 08/378,998 Group Art Unit: 1505
Filed: January 27, 1995 Examiner: David Wu
For: FABRICATED ARTICLES MADE FROM ETHYLENE POLYMER BLENDS

RECEIVED
SEP 21 1995
GROUP 1500

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231

Sir:

Transmitted herewith is an amendment requiring an additional fee in the above-identified application.

The fee has been estimated as shown below.

CLAIMS AS AMENDED

(1)	(2) Claims remaining after amendment	(3)	(4) Highest number previously paid for	(5) Present Extra	(6) Rate	(7) Add'l Fee
Total Claims	* 17	Minus	** 20	0	$22	$0
Independent Claims	* 4	Minus	*** 3	1	$76	$76
First Presentation of Multiple Dependent Claims					$240	$0
			Total additional fee for this amendment:			$76

*If the entry in Column 2 is less than the entry in Column 4, write "0" in Column 5.
**If the "Highest Number Previously Paid For" in this space is less than 20, write "20" in this space.
***If the "Highest Number Previously Paid For" in this space is less than 3, write "3" in this space.

Please charge the above fee to our Account No. 04-1512. If this estimate is incorrect, please charge or credit our account accordingly. Three copies of this sheet are enclosed.

Respectfully submitted,

Osborne K. McKinney
Registration No. P-40,084
Phone: (409) 238-7889

Dated: September 20, 1995

OKM/mfg

EXHIBIT H

Manual of PATENT EXAMINING PROCEDURE



U.S. PATENT AND TRADEMARK OFFICE

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Patent and Trademark Office
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MANUAL OF PATENT EXAMINING PROCEDURE
Seventh Edition

The enclosed is the Seventh Edition to the Manual of Patent Examining Procedure. The Manual has been revised extensively to incorporate the changes necessitated by the final rules, "Changes to Patent Practice and Procedure," which became effective as of December 1, 1997. Changes are highlighted on the following pages.

This Edition of the Manual was prepared with the assistance of the Senior Legal Advisors of the Special Program Law Office. Their efforts are greatly appreciated.

Magdalen Y. C. Greenlief, Editor
Manual of Patent Examining Procedure

July 1998

Chapter 2100 Patentability

2105 Patentable Subject Matter — Living Subject Matter

2106 Patentable Subject Matter — Computer-Related Inventions

2106.01 Computer Programming and 35 U.S.C. 112, First Paragraph

2106.02 Disclosure in Computer Programming Cases

2107 General Principles Governing Utility Rejections

2107.01 Procedural Considerations Related to Rejections for Lack of Utility

2107.02 Special Considerations for Asserted Therapeutic or Pharmacological Utilities

2111 Claim Interpretation; Broadest Reasonable Interpretation

2111.01 Plain Meaning

2111.02 Weight of Preamble

2111.03 Transitional Phrases

2112 Requirements of Rejection Based on Inherency; Burden of Proof

2112.01 Composition, Product, and Apparatus Claims

2112.02 Process Claims

2113 Product-by-Process Claims

2114 Apparatus and Article Claims – Functional Language

2115 Material or Article Worked Upon by Apparatus

2116 Material Manipulated in Process

2116.01 Novel, Unobvious Starting Material or End Product

2121 Prior Art; General Level of Operability Required to Make a *Prima Facie* Case

2121.01 Use of Prior Art in Rejections Where Operability Is in Question

2121.02 Compounds and Compositions – What Constitutes Enabling Prior Art

2121.03 Plant Genetics – What Constitutes Enabling Prior Art

2121.04 Apparatus and Articles – What Constitutes Enabling Prior Art

2122 Discussion of Utility in the Prior Art

2123 Rejection Over Prior Art's Broad Disclosure Instead of Preferred Embodiments

2124 Exception to the Rule That the Critical Reference Date Must Precede the Filing Date

2125 Drawings as Prior Art

2126 Availability of a Document as a "Patent" for Purposes of Rejection Under 35 U.S.C. 102(a), (b), and (d)

2126.01 Date of Availability of a Patent as a Reference

2126.02 Scope of Reference's Disclosure Which Can Be Used to Reject Claims When the Reference Is a "Patent" but Not a "Publication"

2127 Domestic and Foreign Patent Applications as Prior Art

2128 "Printed Publications" as Prior Art

2128.01 Level of Public Accessibility Required

2128.02 Date Publication Is Available as a Reference

2129 Admissions as Prior Art

2131 Anticipation – Application of 35 U.S.C. 102(a), (b), and (e)

2131.01 Multiple Reference 35 U.S.C. 102 Rejections

2131.02 Genus-Species Situations

2131.03 Anticipation of Ranges

2131.04 Secondary Considerations

2131.05 Nonanalogous Art

2132 35 U.S.C. 102(a)

2132.01 Publications as 35 U.S.C. 102(a) Prior Art

2133 35 U.S.C. 102(b)

2133.01 Rejections of Continuation-In-Part (CIP) Applications

2133.02 Rejections Based on Publications and Patents

2133.03 Rejections Based on "Public Use" or "On Sale"

2133.03(a) "Public Use"

2133.03(b) "On Sale"

2133.03(c) The "Invention"

2133.03(d) "In This Country"

2133.03(e) Permitted Activity; Experimental Use

2133.03(e)(1) Commercial Exploitation

2133.03(e)(2) Intent

2133.03(e)(3) "Completeness" of the Invention

2133.03(e)(4) Factors Indicative of an Experimental Purpose

2133.03(e)(5) Experimentation and Degree of Supervision and Control

2133.03(e)(6) Permitted Experimental Activity and Testing

2133.03(e)(7) Activity of an Independent Third Party Inventor

2134 35 U.S.C. 102(c)

2135 35 U.S.C. 102(d)

2135.01 The Four Requirements of 35 U.S.C. 102(d)

2136 35 U.S.C. 102(e)

2136.01 Status of U.S. Patent as a Reference Before and After Issuance

2136.02 Content of the Prior Art Available Against the Claims

2136.03 Critical Reference Date

2136.04 Different Inventive Entity; Meaning of "By Another"

2136.05 Overcoming a Rejection Under 35 U.S.C. 102(e)

2137 35 U.S.C. 102(f)

2137.01 Inventorship

2137.02 Applicability of 35 U.S.C. 103 (c)

2138 35 U.S.C. 102(g)

2138.01 Interference Practice

2138.02 "The Invention Was Made in This Country"

2138.03 "By Another Who Has Not Abandoned, Suppressed, or Concealed It"

2138.04 "Conception"

2138.05 "Reduction to Practice"

2138.06 "Reasonable Diligence"

2141 35 U.S.C. 103; The Graham Factual Inquiries

2141.01 Scope and Content of the Prior Art

2141.01(a) Analogous and Nonanalogous Art

2141.02 Differences Between Prior Art and Claimed Invention

open for the inclusion of unspecified ingredients even in major amounts").

The transitional phrase "consisting of" excludes any element, step, or ingredient not specified in the claim. *In re Gray*, 53 F.2d 520, 11 USPQ 255 (CCPA 1931); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948)("consisting of" defined as "closing the claim to the inclusion of materials other than those recited except for impurities ordinarily associated therewith."). Transitional phrases such as "composed of," "having," or "being" must be interpreted in light of the specification to determine whether open or closed claim language is intended. A claim which depends from a claim which "consists of" the recited elements or steps cannot add an element or step. When the phrase "consists of" appears in a clause of the body of a claim, rather than immediately following the preamble, it limits only the element set forth in that clause; other elements are not excluded from the claim as a whole. *Mannesmann Demag Corp. v. Engineered Metal Products Co.*, 793 F.2d 1279, 230 USPQ 45 (Fed. Cir. 1986).

The transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. *In re Herz*, 537 F.2d 549, 551–52, 190 USPQ 461, 463 (CCPA 1976) (emphasis in original)(Prior art hydraulic fluid required a dispersant which appellants argued was excluded from claims limited to a functional fluid "consisting essentially of" certain components. In finding the claims did not exclude the prior art dispersant, the court noted that appellants' specification indicated the claimed composition can contain any well–known additive such as a dispersant, and there was no evidence that the presence of a dispersant would materially affect the basic and novel characteristic of the claimed invention. The prior art composition had the same basic and novel characteristic (increased oxidation resistance) as well as additional enhanced detergent and dispersant characteristics.). See also *Atlas Powder Co. v. E.I. duPont de Nemours & Co.*, 750 F.2d 1569, 224 USPQ 409 (Fed. Cir. 1984); *In re Janakirama–Rao*, 317 F.2d 951, 137 USPQ 893 (CCPA 1963); *Water Technologies Corp. v. Calco, Ltd.*, 850 F.2d 660, 7 USPQ2d 1097 (Fed. Cir. 1988). When an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention. *In re De Lajarte*, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also *Ex parte Hoffman*, 12 USPQ2d 1061, 1063–64 (Bd. Pat. App. & Inter. 1989)("Although 'consisting essentially of' is typically used and defined in the context of compositions of matter, we find nothing intrinsically wrong with the use of such language as a modifier of method steps. . . [rendering] the claim open only for the inclusion of steps which do not materially affect the basic and novel characteristics of the claimed method. To determine the steps included versus excluded the claim must be read in light of the specification. . . . [I]t is an applicant's burden to establish that a step practiced in a prior art method is excluded from his claims by 'consisting essentially of' language.").

2112 Requirements of Rejection Based on Inherency; Burden of Proof

The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness." *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995)(affirmed a 35 U.S.C. 103 rejection based in part on inherent disclosure in one of the references). See also *In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983).

SOMETHING WHICH IS OLD DOES NOT BECOME PATENTABLE UPON THE DISCOVERY OF A NEW PROPERTY

The claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). See also MPEP § 2112.01 with regard to inherency and product–by–process claims and MPEP § 2141.02 with regard to inherency and rejections under 35 U.S.C. 103.

A REJECTION UNDER 35 U.S.C. 102/103 CAN BE MADE WHEN THE PRIOR ART PRODUCT SEEMS TO BE IDENTICAL EXCEPT THAT THE PRIOR ART IS SILENT AS TO AN INHERENT CHARACTERISTIC

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the

examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. "There is nothing inconsistent in concurrent rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C. 102." *In re Best,* 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977). This same rationale should also apply to product, apparatus, and process claims claimed in terms of function, property or characteristic. Therefore, 35 U.S.C. 102/103 rejection is appropriate for these types of claims as well as for composition claims.

EXAMINER MUST PROVIDE RATIONALE OR EVIDENCE TENDING TO SHOW INHERENCY

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert,* 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993)(reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich,* 666 F.2d 578, 581–82, 212 USPQ 323, 326 (CCPA 1981).

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original) (Applicant's invention was directed to a biaxially oriented, flexible dilation catheter balloon (a tube which expands upon inflation) used, for example, in clearing the blood vessels of heart patients). The examiner applied a U.S. patent to Schjeldahl which disclosed injection molding a tubular preform and then injecting air into the preform to expand it against a mold (blow molding). The reference did not directly state that the end product balloon was biaxially oriented. It did disclose that the balloon was "formed from a thin flexible inelastic, high tensile strength, biaxially oriented synthetic plastic material." *Id.* at 1462 (emphasis in original). The examiner argued that Schjeldahl's balloon was inherently biaxially oriented. The Board reversed on the basis that the examiner did not provide objective evidence or cogent technical reasoning to support the conclusion of inherency.).

In *In re Schreiber,* 128 F.3d 1473, 44 USPQ2d 1429 (Fed. Cir. 1997), the court affirmed a finding that a prior patent to a conical spout used primarily to dispense oil from an oil can inherently performed the functions recited in applicant's claim to a conical container top for dispensing popped popcorn. The examiner had asserted inherency based on the structural similarity between the patented spout and applicant's disclosed top, i.e., both structures had the same general shape. The court stated:

> [N]othing in Schreiber's [applicant's] claim suggests that Schreiber's container is of a 'different shape' than Harz's [patent]. In fact, [ ] an embodiment according to Harz (Fig. 5) and the embodiment depicted in Fig. 1 of Schreiber's application have the same general shape. For that reason, the examiner was justified in concluding that the opening of a conically shaped top as disclosed by Harz is inherently of a size sufficient to 'allow [ ] several kernels of popped popcorn to pass through at the same time' and that the taper of Harz's conically shaped top is inherently of such a shape 'as to by itself jam up the popped popcorn before the end of the cone and permit the dispensing of only a few kernels at a shake of a package when the top is mounted to the container.' The examiner therefore correctly found that Harz established a prima facie case of anticipation.

In re Schreiber, 128 F.3d at 1478, 44 USPQ2d at 1432.

ONCE A REFERENCE TEACHING PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS MADE THE BASIS OF A REJECTION AND THE EXAMINER PRESENTS EVIDENCE OR REASONING TENDING TO SHOW INHERENCY, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBVIOUS DIFFERENCE

"[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. 102, on *'prima facie* obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product–by–process claims. *In re Fitzgerald,* 619 F. 2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best,* 562 F.2d 1252, 1255, 195 USPQ 430, 433–34 (CCPA 1977)).

In *In re Fitzgerald*, the claims were directed to a self–locking screw–threaded fastener comprising a metallic threaded fastener having patches of crystallizable thermoplastic bonded thereto. The claim further specified that the thermoplastic had a reduced degree of crystallization shrinkage. The specification disclosed that the locking fastener was made by heating the metal fastener to melt a thermoplastic blank which is pressed against the metal. After the thermoplastic adheres to the metal fastener, the end product is cooled by quenching in water. The examiner made a rejection based on a U.S. patent to Barnes. Barnes taught a self–locking fastener in which the patch of thermoplastic was made by depositing thermoplastic powder on a metallic fastener which was then heated. The end product was cooled in ambient air, by cooling air or by contacting the fastener with a water trough. The court first noted that the two fasteners were identical or only slightly different from each other. "Both fasteners possess the same utility, employ the same crystallizable polymer (nylon 11), and have an adherent plastic patch formed by melting and then cooling the polymer." *Id.* at 596 n.1, 619 F.2d at 70 n,l. The court then noted that the Board had found that Barnes' cooling rate could reasonably be expected to result in a polymer possessing the claimed crystallization shrinkage rate. Applicant had not rebutted this finding with evidence that the shrinkage rate was indeed different. They had only argued that the crystallization shrinkage rate was dependent on the cool down rate and that the cool down rate of Barnes was much slower than theirs. Because a difference in the cool down rate does not necessarily result in a difference in shrinkage, objective evidence was required to rebut the 35 U.S.C. 102/103 *prima facie* case.

In *In re Schreiber*, 128 F.3d 1473, 1478, 44 USPQ2d 1429, 1432 (Fed.Cir.1997), the court held that applicant's declaration failed to overcome a *prima facie* case of anticipation because the declaration did not specify the dimensions of either the dispensing top that was tested or the popcorn that was used. Applicant's declaration merely asserted that a conical dispensing top built according to a figure in the prior art patent was too small to jam and dispense popcorn and thus could not inherently perform the functions recited in applicant's claims. The court pointed out the disclosure of the prior art patent was not limited to use as an oil can dispenser, but rather was broader than the precise configuration shown in the patent's figure. The court also noted that the Board of Patent Appeals and Interferences found as a factual matter that a scaled–up version of the top disclosed in the patent would be capable of performing the functions recited in applicant's claim.

See MPEP § 2113 for more information on the analogous burden of proof applied to product–by–process claims.

2112.01 Composition, Product, and Apparatus Claims

PRODUCT AND APPARATUS CLAIMS — WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF the CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED TO BE INHERENT

Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best,* 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada,* 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best,* 562 F.2d at 1255, 195 USPQ at 433. See also *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Claims were directed to a titanium alloy containing 0.2–0.4% Mo and 0.6–0.9% Ni having corrosion resistance. A Russian article disclosed a titanium alloy containing 0.25% Mo and 0.75% Ni but was silent as to corrosion resistance. The Federal Circuit held that the claim was anticipated because the percentages of Mo and Ni were squarely within the claimed ranges. The court went on to say that it was immaterial what properties the alloys had or who discovered the properties because the composition is the same and thus must necessarily exhibit the properties.).

See also *In re Ludtke*, 441 F.2d 660, 169 USPQ 563 (CCPA 1971) (Claim 1 was directed to a parachute canopy having concentric circumferential panels radially separated from each other by radially extending tie lines. The panels were separated "such that the critical velocity of each successively larger panel will be less than the criti-

cal velocity of the previous panel, whereby said parachute will sequentially open and thus gradually decelerate." The court found that the claim was anticipated by Menget. Menget taught a parachute having three circumferential panels separated by tie lines. The court upheld the rejection finding that applicant had failed to show that Menget did not possess the functional characteristics of the claims.); *Northam Warren Corp. v. D. F. Newfield Co.,* 7 F. Supp. 773, 22 USPQ 313 (E.D.N.Y. 1934) (A patent to a pencil for cleaning fingernails was held invalid because a pencil of the same structure for writing was found in the prior art.).

COMPOSITION CLAIMS – IF THE COMPOSITION IS PHYSICALLY THE SAME, IT MUST HAVE THE SAME PROPERTIES

"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990) (Applicant argued that the claimed composition was a pressure sensitive adhesive containing a tacky polymer while the product of the reference was hard and abrasion resistant. "The Board correctly found that the virtual identity of monomers and procedures sufficed to support a *prima facie* case of unpatentability of Spada's polymer latexes for lack of novelty.").

2112.02 Process Claims

PROCESS CLAIMS – PRIOR ART DEVICE ANTICIPATES A CLAIMED PROCESS IF THE DEVICE CARRIES OUT THE PROCESS DURING NORMAL OPERATION

Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. *In re King,* 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986) (The claims were directed to a method of enhancing color effects produced by ambient light through a process of absorption and reflection of the light off a coated substrate. A prior art reference to *Donley* disclosed a glass substrate coated with silver and metal oxide 200–800 angstroms thick. While Donley disclosed using the coated substrate to produce architectural colors, the absorption and reflection mechanisms of the claimed process were not disclosed. However, King's specification disclosed using a coated substrate of Donley's structure for use in his process. The Federal Circuit upheld the Board's finding that "Donley inherently performs the function disclosed in the method claims on appeal when that device is used in 'normal and usual operation' " and found that a *prima facie* case of anticipation was made out. *Id.* at 138, 801 F.2d at 1326. It was up to applicant to prove that Donley's structure would not perform the claimed method when placed in ambient light.). See also *In re Best,* 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977) (Applicant claimed a process for preparing a hydrolytically–stable zeolitic aluminosilicate which included a step of "cooling the steam zeolite ... at a rate sufficiently rapid that the cooled zeolite exhibits a X–ray diffraction pattern ...." All the process limitations were expressly disclosed by a U.S. patent to Hansford except the cooling step. The court stated that any sample of Hansford's zeolite would necessarily be cooled to facilitate subsequent handling. Therefore, a *prima facie* case under 35 U.S.C. 102/103 was made. Applicant had failed to introduce any evidence comparing X–ray diffraction patterns showing a difference in cooling rate between the claimed process and that of Hansford or any data showing that the process of Hansford would result in a product with a different X–ray diffraction. Either type of evidence would have rebutted the *prima facie* case under 35 U.S.C. 102. A further analysis would be necessary to determine if the process was unobvious under 35 U.S.C. 103.); *Ex parte Novitski,* 26 USPQ2d 1389 (Bd. Pat. App. & Inter. 1993) (The Board rejected a claim directed to a method for protecting a plant from plant pathogenic nematodes by inoculating the plant with a nematode inhibiting strain of *P. cepacia.* A U.S. patent to *Dart* disclosed inoculation using *P. cepacia* type Wisconsin 526 bacteria for protecting the plant from fungal disease. Dart was silent as to nematode inhibition but the Board concluded that nematode inhibition was an inherent property of the bacteria. The Board noted that applicant had stated in the specification that Wisconsin 526 possesses an 18% nematode inhibition rating.).

PROCESS OF USE CLAIMS – NEW AND UNOBVIOUS USES OF OLD STRUCTURES AND COMPOSITIONS MAY BE PATENTABLE

The discovery of a new use for an old structure based on unknown properties of the structure might be patentable to the discoverer as a process of using. *In re Hack*, 245 F.2d 246, 248, 114 USPQ 161, 163 (CCPA 1957). However, when the claim recites using an old composition or structure and the "use" is directed to a result or property of that composition or structure, then the claim is anticipated. *In re May,* 574 F.2d 1082, 1090, 197 USPQ 601, 607 (CCPA 1978) (Claims 1 and 6, directed to a method of effecting nonaddictive analgesia (pain reduction) in animals, were found to be anticipated by the applied prior art which disclosed the same compounds for effecting analgesia but which was silent as to addiction. The court upheld the rejection and stated that the applicants had merely found a new property of the compound and such a discovery did not constitute a new use. The court went on to reverse the rejection of claims 2–5 and 7–10 which recited a process of using a new compound. The court relied on evidence showing that the nonaddictive property of the new compound was unexpected.).

See also *In re Tomlinson,* 363 F.2d 928, 150 USPQ 623 (CCPA 1966) (The claim was directed to a process of inhibiting light degradation of polypropylene by mixing it with one of a genus of compounds, including nickel dithiocarbamate. A reference taught mixing polypropylene with nickel dithiocarbamate to lower heat degradation. The court held that the claims read on the obvious process of mixing polypropylene with the nickel dithiocarbamate and that the preamble of the claim was merely directed to the result of mixing the two materials. "While the references do not show a specific recognition of that result, its discovery by appellants is tantamount only to finding a property in the old composition." 363 F.2d at 934, 150 USPQ at 628 (emphasis in original).).

2113 Product–by–Process Claims

PRODUCT–BY–PROCESS CLAIMS ARE NOT LIMITED TO THE MANIPULATIONS OF THE RECITED STEPS, ONLY THE STRUCTURE IMPLIED BY THE STEPS

"[E]ven though product–by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product–by–process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre–reacted metal carboxylate. The product–by–process claim was rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in–situ does not change the end product.).

ONCE A PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS FOUND AND A 35 U.S.C. 102/103 REJECTION MADE, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBVIOUS DIFFERENCE

"The Patent Office bears a lesser burden of proof in making out a case of *prima facie* obviousness for product–by–process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. *In re Fessmann,* 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi,* 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) (The claims were directed to a zeolite manufactured by mixing together various inorganic materials in solution and heating the resultant gel to form a crystalline metal silicate essentially free of alkali metal. The prior art described a process of making a zeolite which, after ion exchange to remove alkali metal, appeared to be "essentially free of alkali metal." The court upheld the rejection because the applicant had not come forward with any evidence that the prior art was not "essentially free of alkali metal" and therefore a different and unobvious product.).

Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989) (The prior art disclosed human nerve growth

EXHIBIT I

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PAT. & TRADEMARK OFF.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Pak-Wing Steve Chum, et al.

Serial No.: 08/544,497
Filed: October 18, 1995
Attorney Docket No.: C-40,121-AU

Art Unit: 1505
Previous Examiner: D. Wu

For: FABRICATED ARTICLES MADE FROM ETHYLENE POLYMER BLENDS

HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL WITH SUFFICIENT POSTAGE IN AN ENVELOPE ADDRESSED TO: COMMISSIONER OF PATENTS AND TRADEMARKS, WASHINGTON, D.C. 20231, on February 2, 1996
DATE OF DEPOSIT

Jan Alverson
PRINT OR TYPE NAME OF PERSON SIGNING CERTIFICATE

Jan Alverson
SIGNATURE OF PERSON SIGNING CERTIFICATE

2-2-96
DATE OF SIGNATURE

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231

Sir:

THIRD MARKOVICH DECLARATION UNDER 37 CFR § 1.132

Ronald P. Markovich declares and states:

THAT, he obtained a Bachelor of Science degree in Chemistry from Wayne State University (Detroit, Michigan) in 1983;

THAT, he joined The Dow Chemical Company (Midland, Michigan) in 1983 as a Chemist in the Research Assignments Program (RAP), and was promoted to Senior Research Chemist in 1989 and to his present position as Project Leader in 1993;

THAT, his first two RAP assignments pertained to analytical test method development, his RAP third assignment was in the Polyolefins Research and Development department and his fourth (and last) RAP assignment in the Polyolefins Technical Service and Development department;

THAT, after his last RAP assignment, he joined the Polyolefins Research and Development department full time and for the last ten and half years, he has focused his research and development efforts in the area of polyolefin product properties and analytical test method procedures and development;

THAT, his current responsibilities pertain to polyolefin product development as related to the interrelationships between fundamental polymer structure, process requirements and product performance properties;

THAT, he is an inventor as to the above-identified patent application and is therefore familiar with the patent application, the Examiner's rejections of the claims and the WO '414 reference on which the Examiner relies;

THAT, as a follow up to the incomplete impact performance results reported in the Second Markovich Declaration, he had the Dynatup impact properties for Inventive Examples and Comparative Examples re-measured and also had the slope of strain hardening coefficient measured for the component polymers used to prepare the various Inventive and Comparative Examples;

THAT, a full report of important component properties, including slope of strain hardening coefficients, is provided in the attached Table 1 and a report of the performance results for Inventive Examples and Comparative Example are provided in Table 2, and that Tables 3, 4 and 5 provide the specific performance results (Dynatup impact strength, Intrinsic tear and Tensile break strength, respectively) for the various Examples at an equivalent Molecular Weight of 71,6000;

THAT, in addition to having very different component polymers, performance results and data conclusively show that Inventive (Blend) Examples as defined by specific component properties, including a slope of strain hardening coefficient greater than or equal to about 1.3 and up to about 2.3, exhibit superior to dramatically superior impact resistance and intrinsic tear resistance relative to WO '414 compositions when directly compared at equivalent weight percentages through the range of 38%/62%, 50%/50% and 72%/28% Component A/Component B;

THAT, the impact properties of the Inventive Examples are particularly unexpected and surprising in that they show substantially higher impact resistance even at slightly higher densities relative to blend compositions representative of WO '414, whereas one skilled in the art would ordinarily expect compositions having higher densities to show inferior impact properties relative to comparative compositions having lower densities; and

THAT, with respect to tensile break strength, although superior or dramatically superior results are easily obtained with Inventive compositions, this property appears to be more sensitive to component polymer concentrations than impact resistance and/or tear resistance, and as such, compositions containing more than 40 weight percent of a substantially linear ethylene interpolymer are considered to be preferred compositions.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date 2/2/96

Ronald P. Markovich

Ronald P. Markovich

Table 1

Sample Designation	A Component Example A	B Component Example B	C Component Example C	D Component Example D	AB1 Comparative Component AB1	AB2 Comparative Component AB2	AB3 Comparative Component AB3	Exact 3027 Comparative Resin	Exact 3022 Comparative Resin
Polymer Type	Substantially Linear Ethylene/ Octene Copolymer	Substantially Linear Ethylene/ Butene Copolymer	Substantially Linear Ethylene/ Octene Copolymer	Substantially Linear Ethylene/ Octene Copolymer	Homogeneously Branched Linear Ethylene/Butene Copolymer	Homogeneously Branched Linear Ethylene/Butene Copolymer	Homogeneously Branched Linear Ethylene/Butene Copolymer	Homogeneously Branched Linear Ethylene/Butene Copolymer	Homogeneously Branched Linear Ethylene/Butene Copolymer
Density (g/cc)	0.906	0.9052	0.90575	0.9032	0.9031	0.9033	0.9034	0.9015	0.9065
I2	4.01	4.23	3.99	2.7	3.83	3.93	4.19	3.26	8.48
I10 / I2	8.22	7.88	5.82	7.80	5.90	5.69	5.64	5.65	5.49
I10	32.96	33.32	23.21	21.05	22.6	22.38	23.64	18.42	46.57
Mw by GPC	68200	67100	77400	72300	79100	80700	77500	85800	65100
Mw/Mn by GPC	2.23	2.12	1.89	2.15	2.15	2.17	2.06	2.00	2.00
Slope of Strain Hardening Coefficient	1.5	1.0	1.7	1.3	1.2	1.0	1.1	1.2	1.0
>Shear Stress @ OSGMF (dyn/cm^2)	> 3.88 x 10^6	> 4.31 x 10^6	> 4.31 x 10^6	gross melt fracture not observed up to 4.41 x 10^6	> 3.45 x 10^6	> 3.45 x 10^6	> 3.45 x 10^6	> 3.45 x 10^6	> 3.23 x 10^6
<Shear Stress @ OSGMF (dyn/cm^2)	< 4.09 x 10^6	< 4.48 x 10^6	< 4.48 x 10^6	gross melt fracture not observed	< 3.66 x 10^6	< 3.66 x 10^6	< 3.66 x 10^6	< 3.66 x 10^6	< 3.45 x 10^6

Note 1: Comparative Resin AB1 is a blend containing of 75.87% Exact 3027 and 24.13% Exact 3022.
Note 2: Comparative Resin AB2 is a blend containing of 74.44% Exact 3027 and 25.56% Exact 3022.
Note 3: Comparative Resin AB3 is a blend containing of 73.75% Exact 3027 and 26.25% Exact 3022.

Case 1:05-cv-00737-JJF Document 162-15 Filed 09/04/2008 Page 32 of 36

Table 2

Sample Designation	AD1 Inventive Blend Example	BD1 Comparative Example	CD1 Inventive Blend Example	X1 Comparative Example	AD2 Inventive Blend Example	BD2 Comparative Example	CD2 Inventive Blend Example	X2 Comparative Example	AD3 Inventive Blend Example	BD3 Comparative Example	CD3 Inventive Blend Example	X3 Comparative Example	ED3 Inventive Blend Example	X4 Comparative Example
Blend Component														
A	38.46%				72.35%				50.00%					
B		38.14%				71.75%				50.00%				
C			38.46%				72.35%				50.00%			
PL 1850													50.00%	
EXACT 3027				28.95%				53.90%				36.88%		50.00%
EXACT 3022				9.21%				18.50%				13.13%		
HDPE 04352N	61.54%	61.86%	61.54%	61.84%	27.65%	28.25%	27.65%	27.60%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%
I2	4.11	4.25	4.18	4.13	4.08	4.10	4.04	4.09	4.04	5.02	4.07	4.17	3.43	3.74
I10 / I2	7.31	6.96	6.29	6.19	7.67	7.64	5.98	5.84	7.42	8.22	6.20	5.58	7.33	6.09
I10	30.06	29.59	26.29	25.57	31.29	31.34	24.15	23.87	29.96	41.24	25.23	23.27	25.13	22.76
Mw by GPC	74900	74800	77200	83400	71700	73800	77200	80500	71600	75000	78700	80600	76100	79700
Mw/Mn by GPC	2.56	2.53	2.58	2.52	2.47	2.33	2.20	2.27	2.46	ND	2.44	2.54	2.46	2.42
Strain @ Yield	15.0	15.0	14.9	15.0	14.9	15.0	14.8	15.0	15.0	15.0	15.1	14.9	15.0	15.0
Break Strength	1835	2070	1921	1801	3187	2253	3268	2729	2188	1646	3655	1652	3050	1539
Break Energy	385	57	509	108	1130	781	991	990	981	144	1329	249	1168	214
Intrinsic Tear	160	102	221	110	279	107	377	142	224	112	264	116	269	34
Dynatup (30 Mil Plaque) Total Energy	2.84	2.08	2.84	2.59	3.66	2.39	5.67	2.78	3.44	2.63	4.23	2.63	3.81	2.91

ND = not determined

Case 1:05-cv-00737-JJF Document 162-15 Filed 09/04/2008 Page 33 of 36

Dynatup Total Energy Impact Strength (Corrected)*

Table 3

Weight Percent of Polymer Representative of '013	38%	50%	72%
Inventive Examples			
A	**2.71** (AD1)	**3.44** (AD3)	**3.65** (AD2)
C	**2.63** (CD1)	**3.85** (CD3)	**5.26** (CD2)
E	**NA**	**3.58** (ED3)	**NA**
Comparative Examples			
B	**1.99** (BD1)	**2.51** (BD3)	**2.32** (BD2)
1	**2.22** (X1)	**2.34** (X3)	**2.47** (X2)
2	**NA**	**2.61** (X4)	**NA**
Calculations	Percent Relative Performance of Inventive Examples (Relative to Comp Ex 1) **18-22% higher** (Relative to Comp Ex B) **32-36% higher**	Percent Relative Performance of Inventive Examples (Relative to Comp Ex. B) **37-53% higher** (Relative to Comp Ex 1) **47-65% higher** (Relative to Comp Ex 2) **32-48% higher**	Percent Relative Performance of Inventive Examples (Relative to Comp Ex 1) **48-113% higher** (Relative to Comp Ex B) **57-127% higher**
Performance Conclusions - *Inventive Examples are:*	superior	superior	dramatically superior

NA = not available.
( ) provides the Example designation as set forth in Table 2.
* Impact strength values were corrected to 71,600 equivalent Molecular Weight for each Example.

Intrinsic Tear (Corrected)*

Table 4

Weight Percent of Polymer Representative of '013	38%	50%	72%
Inventive Examples			
A	**153** (AD1)	**224** (AD3)	**279** (AD2)
C	**205** (CD1)	**240** (CD3)	**350** (CD2)
E	**NA**	**253** (ED3)	**NA**
Comparative Examples			
B	**98** (BD1)	**107** (BD3)	**104** (BD2)
1	**94** (X1)	**103** (X3)	**126** (X2)
2	**NA**	**31** (X4)	**NA**
Calculations	Percent Relative Performance of Inventive Examples (Relative to Comp Ex B) **56-109% higher** (Relative to Comp Ex 1) **63-118% higher**	Percent Relative Performance of Inventive Examples (Relative to Comp Ex B) **109-136 % higher** (Relative to Comp Ex 1) **117-147 % higher** (Relative to Comp Ex 2) **623-716% higher**	Percent Relative Performance of Inventive Examples (Relative to Comp Ex B) **168-237% higher** (Relative to Comp Ex 1) **121-178% higher**
Performance Conclusions - *Inventive Examples are:*	dramatically superior	dramatically superior	dramatically superior

NA = not available.
( ) provides the Example designation as set forth in Table 2.
* Intrinsic tear values were corrected to 71,600 equivalent Molecular Weight for each Example.

Tensile Break Strength (Corrected)*

Table 5

Weight Percent of Polymer Representative of '013	38%	50%	72%
Inventive Examples			
A	**1754** (AD1)	**2188** (AD3)	**3183** (AD2)
C	**1781** (CD1)	**3325** (CD3)	**3031** (CD2)
E	**NA**	**2870** (ED3)	**NA**
Comparative Examples			
B	**1981** (BD1)	**1571** (BD3)	**2186** (BD2)
1	**1546** (X1)	**1468** (X3)	**2427** (X2)
2	**NA**	**1383** (X4)	**NA**
Calculations	Percent Relative Performance of Inventive Examples (Relative to Comp Ex B) **10-11% lower** (Relative to Comp Ex 1) **13-15% higher**	Percent Relative Performance of Inventive Examples (Relative to Comp Ex B) **39-112% higher** (Relative to Comp Ex 1) **49-126% higher** (Relative to Comp Ex 2) **58-140% higher**	Percent Relative Performance of Inventive Examples (Relative to Comp Ex B) **39-46% higher** (Relative to Comp Ex 1) **25-31% higher**
Performance Conclusions - *Inventive Examples are*:	similar	dramatically superior	superior

NA = not available.
( ) provides the Example designation as set forth in Table 2.
* Tensile break strength values were corrected to 71,600 equivalent Molecular Weight for each Example.