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**Datasheet for the decision  
of 19 May 2010**

**Case Number:** T 0672/07 - 3.3.09  
**Application Number:** 96111162.2  
**Publication Number:** 0787582  
**IPC:** B32B 31/30  
**Language of the proceedings:** EN

**Title of invention:**

Process for printing and/or laminating a metallized polypropylene film and film obtained thereby

**Patentee:**

Bimo Italia S.p.A.

**Opponent:**

Borealis Technology OY  
Treofan Germany GmbH & Co. KG

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 123, 83, 54, 56

**Relevant legal provisions (EPC 1973):**

-

**Keyword:**

"Sufficiency of disclosure - yes"  
"Novelty - yes"  
"Inventive step - yes"

**Decisions cited:**

T 0453/87, T 0653/93

**Catchword:**

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Case Number: T 0672/07 - 3.3.09

**DECISION**  
of the Technical Board of Appeal 3.3.09  
of 19 May 2010

**Appellant:** Treofan Germany GmbH & Co. KG  
(Opponent 02) Am Prime Parc 17  
D-65479 Raunheim (DE)

**Representative:** -

**Respondent:** Bimo Italia S.p.A.  
(Patent Proprietor) Zona Industriale Val di Sangro  
Atessa (Chieti) (IT)

**Representative:** Sama, Daniele  
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**Party as of right:** Borealis Technology OY  
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**Representative:** Kador & Partner  
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**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office  
announced orally on 24 January 2007 and posted  
1 March 2007 concerning maintenance of European  
patent No. 0787582 in amended form.

**Composition of the Board:**

**Chairman:** W. Sieber  
**Members:** J. Jardón Álvarez  
K. Garnett

## Summary of Facts and Submissions

I. The grant of European patent No. 0 787 582 in respect of European patent application No. 96111162.2 in the name of Bimo Italia S.p.A., which had been filed on 11 July 1996, was announced on 4 June 2003 (Bulletin 2003/23) on the basis of five claims. Independent Claims 1 and 5 read as follows:

"1. Process for the preparation of a printed and/or laminated metallized plastic film comprising the following consecutive steps:

- a) coextrusion of a plastic film comprising as surface layers a copolymer based on propylene, containing linear or branched comonomers from 4 to 8 carbon atoms and, optionally, ethylene, said copolymer containing a concentration of extractibles [*sic*] in n-hexane at 50°C for 2 hours lower than 5.5% by weight and, as a core layer of the film, a homopolymer of propylene having a content of extractibles [*sic*] in hexane at 50°C for 2 hours lower than 10% by weight
- b) surface treatment followed by a vacuum metallization process
- c) printing and/or lamination of the metal layer of the film after storage of the metallized film for at least one month.

5. A metallised plastic film comprising as a core layer a polymer of propylene having a content of extractibles [*sic*] in hexane at 50°C for 2 hours lower than 10% by weight and on each side of said core layer a layer of a copolymer based on propylene, containing linear or

branched comonomers from 4 to 8 carbon atoms, said copolymer containing a concentration of extractibles [sic] in n-hexane at 50% [sic] for 2 hours lower than 5.5% by weight, **characterised in that** the core layer is a homopolymer of propylene, and the film comprises a print layer or laminated layer onto the metal layer, whereby the edge [sic] of the metal layer exceeds the age of the print or laminated layer by at least one month."

Claims 2 to 4 were dependent claims.

II. Notices of opposition were filed by:

Borealis Technology OY (opponent 01) on 3 March 2004,  
and

Trespaphan GmbH & Co. KG (now Treofan Germany GmbH & Co. KG) on 4 March 2004 (opponent 02).

Both opponents requested revocation of the patent in its entirety on the grounds that the claimed subject-matter lacked novelty and did not involve an inventive step (Article 100(a) EPC). Opponent 01 additionally opposed the patent on the grounds that the patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC), and that its subject-matter extended beyond the content of the application as filed (Article 100(c) EPC).

During the opposition proceedings *inter alia* the following documents were cited:

D1: EP 0 633 133 A2;

D2: WO 95/14738 A1;

D3: EP 0 524 725 A2;

D4: EP 0 611 647 A2;

D6: EP 0 282 917 A2;

D8: EP 0 021 672 A1;

D9: Regulations of the U.S. Food and Drug  
Administration, US 21CFR177.1520;

D10: WO 97/11846 A1;

D11: US 4 888 237 A;

D12: US 4 487 871 A; and

D13: "CEFOR™ Propylene-Butene random copolymers for  
cast and oriented film applications" by R.N.  
Campbell *et al.*, Shell Development Company,  
Plastics Department, Westhollow Technology Center,  
Houston, TX77251-1380, with the following  
handwritten addendum on the cover page: SPE  
Polyolefins IX international conference, 227  
(February 1995), pages 227-41.

III. By its interlocutory decision announced orally on  
24 January 2007 and issued in writing on 1 March 2007,  
the opposition division held that the grounds for

opposition raised by the opponents did not prejudice the maintenance of the patent in amended form.

The opposition division denied novelty of granted Claim 5 having regard to the disclosure of D10, a document to be considered as state of the art in accordance with Articles 54(3) and (4) EPC 1973, but maintained the patent in amended form on the basis of the first auxiliary request.

Claims 1 to 4 of the first auxiliary request were identical to Claims 1 to 4 as granted with the replacement of the word "extractibles" by "extractables". Claim 5 read as follows:

"5. A coextruded, surface treated, vacuum metallised plastic film comprising as a core layer a polymer of propylene having a content of extractables in n-hexane at 50°C for 2 hours lower than 10% by weight and on each side of said core layer a layer of a copolymer based on propylene, containing linear or branched comonomers from 4 to 8 carbon atoms, said copolymer containing a concentration of extractables in n-hexane at 50% for 2 hours lower than 5.5% by weight, **characterised in that** the core layer is a homopolymer of propylene, and the film comprises a printed layer, optionally laminated layer onto the metal layer, whereby the age of the metal layer exceeds the age of the printed layer, optionally laminated by at least one month."

The opposition division in its decision was of the opinion that the trade names Moplen<sup>(R)</sup> S28F, Exxon<sup>(R)</sup> 4352 E1, Excellen<sup>(R)</sup> SP68E1, Noblen<sup>(R)</sup> WF 825 were well known

and that the description, by specifying these materials as examples of the polymers to be used, enabled the skilled person to carry out the invention as claimed.

The opposition division acknowledged novelty because none of the documents D1, D3, D9 or D10 disclosed all the features of Claim 1 and (amended) Claim 5 of the first auxiliary request.

Concerning inventive step, the opposition division stated that a combination of D11 and D2 still would lack the feature of printing and/or laminating the metal layer of the film after storage of the metallized film for at least one month. The objective of providing clients with films having maintained and improved laminating and/or printing layers as exemplified in the patent in suit was not suggested by the teaching of the cited documents.

IV. On 18 April 2007 opponent 02 (appellant) lodged an appeal against the decision of the opposition division and paid the appeal fee on the same day.

In the statement of grounds of appeal filed on 9 July 2007, the appellant requested the revocation of the patent in its entirety, on the grounds that the claimed subject-matter lacked sufficiency of disclosure, novelty and inventive step. It also filed the following document:

D14: J. Nentwig "Kunststoff-Folien Herstellung, Eigenschaften, Anwendung" Carl Hanser Verlag, München, Wien, 1994, pages 156 - 165.

- V. With its letter dated 11 January 2008 the patent proprietor (respondent) requested that the appeal be dismissed and the patent be maintained with the claims allowed by the opposition division.
- VI. On 16 February 2010 the board dispatched a summons to attend oral proceedings scheduled for 19 May 2010. In a communication dated 5 March 2010 the board drew the attention of the parties to the points to be discussed during the oral proceedings, *inter alia* the publication date of document D13.
- VII. By letter dated 16 April 2010, the respondent filed further arguments in support of its request and by letter dated 26 April 2010 it informed the board that it would not attend the oral proceedings.
- VIII. By letter dated 19 April 2010 the appellant filed the following further documents in order to indirectly demonstrate the publication date of D13:
- D15: Internet page <http://www.encyclopedia.com/doc/1G1-17792226.html> concerning the acquisition of Shell's polypropylene business by Union Carbide;
- D16: List of patents in ESPACENET with Randolph Neil Campbell as inventor; and
- D17: List of patents in ESPACENET with Chatterjee Aanda Mohan as inventor.
- IX. Opponent 01 (party as of right) did not file any substantive submissions during the appeal proceedings.



It informed the board by letter 7 April 2010 that it would not be present at the oral proceedings.

X. The arguments presented by the appellant in its written submissions and at the oral proceedings held on 19 May 2010, insofar as they are relevant for the present decision, may be summarized as follows:

- At the oral proceedings the appellant argued that there was no support in the application as filed for the subject-matter of amended Claim 5. In particular, there was no basis for the printing on the metallized side of the plastic film. Moreover there was also no support for the amendment of the "print layer" to "printed layer".
- The appellant argued that it was not possible to reproduce the invention because the polypropylene layers used in the working examples were indentified by trade names only. Taking into account that the composition of a polymer grade sold under a trade name often changed over the years, the skilled person trying to put into practice the invention could not be sure that he would obtain the same materials as used in the examples of the patent. Moreover, the claims were very broad and there was no evidence that the skilled person would be able to obtain substantially all embodiments falling within the ambit of the claims.
- Concerning novelty, the appellant argued that the disclosure of documents D10 and D13 anticipated the claimed subject-matter. The appellant noted that the feature "after storage of the metallized film for at

least one month" was a feature that, insofar as the claims related to the film *per se*, was not a distinguishing technical feature. As regards the process claims, this feature was an implicit feature of the prior art films, because for all practical purposes the time between the preparation of a film and its printing was at least one month. The appellant then maintained that all the other features of the claim were explicitly or implicitly disclosed in D10 and D13. However it admitted during the oral proceedings that D13 did not explicitly disclose a film having the layer structure of the claimed films.

- Concerning inventive step, the appellant regarded the teaching of document D2 as representing the closest prior art. This document disclosed the copolymers of propylene and butene used in the patent for the surface layers and its advantageous properties due to the low content of hexane extractables resulting in good optical properties. Starting from the teaching of D2, it would be obvious for the skilled person to use these films for the preparation of printed metallized plastic films because the skilled person would know that the presence of volatile components was the cause of the problems associated with printing of metallized films. The appellant pointed out to document D12 which in its introduction already indicated such drawback of known films.
  
- Furthermore, the appellant argued that the claimed subject-matter lacked inventive step having regard

to any one of D3, D4, D6, D8 or D11 together with D13.

XI. The written arguments presented by the respondent may be summarized as follows:

- The respondent pointed out that the patent specification identified the polymers which could be used for the surface and core layers. The examples in the patent specification demonstrated that the requirements of sufficiency of disclosure were satisfied. In its opinion the objections raised by the appellant related to the clarity of the claims and the interpretation of the claims, such objections not being grounds of opposition.
- The respondent maintained that the disclosure of D10 did not anticipate the claimed subject-matter as this document was silent about the feature "after storage of the metallized films for at least one month..." and the printing of the metallized film.
- The disclosure of D13 was also not novelty-destroying because D13 did not mention the storage time of the films and that the films were metallized. Moreover it pointed out that D13 was not state of the art as its publication date was not known.
- Concerning inventive step, the respondent argued that the technical problem of the patent in suit was to provide metallized plastic films with improved printability and resistance to delamination after a storage period of at least one month before printing and/or laminating the film. The prior art cited by

the appellant was mostly aimed at solving a different problem and the skilled person would not find any indication therein to solve the above mentioned problem.

The respondent saw the disclosure of D12 as representing the closest prior art document as it related to a polyolefin resin composition having good printability. The now-claimed films were structurally quite different from those of D12, which required as an essential component a high density polyethylene and were therefore a non-obvious alternative to those known films.

XII. The appellant requested that the decision under appeal be set aside and the European patent No. 0 787 582 be revoked.

The respondent requested that the appeal be dismissed and the patent be maintained with the claims as allowed by the opposition division and further that documents D13 and D14 be not admitted into the proceedings.

The party as of right did not file any request.

## **Reasons for the Decision**

1. The appeal is admissible.

2. *Procedural matters*

2.1 The respondent requested that document D13 be not admitted into the proceedings as it had not been proven

that it was publically available before the priority date of the patent in suit.

However, D13 had been already filed by opponent 02 (now the appellant) with its notice of opposition. Although the proprietor had noted that D13 did not have any date, this issue was not dealt with in the decision under appeal. In fact, there is merely a passing reference to D13 in paragraph 2.3 of the opposition division's decision when dealing with novelty of the claimed subject-matter. Thus, it appears that D13 is in the proceedings and its admissibility cannot be questioned. Rather the relevant question is whether D13 has to be considered as state of the art in accordance with Article 54 EPC.

- 2.2 Document D13 is the publication of the work presented by R.N. Campbell and A.M. Chatterjee at a conference held in Houston, Texas, between 26 February and 1 March 1995. The copy filed by the appellant carries on the front page (page 227) a handwritten amendment with the words "(February 1995)". Furthermore, the bibliographic data provided on a separate sheet, *inter alia* contains the line "Accession Number- 576289 -Update- 199604", which appears to indicate that the copy filed by the appellant relates to an updated version dated April (04) 1996. This date is after the priority date of the patent in suit (26 January 1996).

In view of this situation, the board had asked the appellant to provide evidence for the actual publication date of D13. In its reply the appellant had stated that no original copy of D13 was available to it, but filed documents D15 to D17 as indirect evidence

that D13 had been published before 1996. As is apparent from the cover page of D13 itself, the authors of D13 presented their work at the conference in Houston for the Shell Company. Since the propylene business of Shell was sold to Union Carbide in November 1995 (as demonstrated by D15), and thereafter the authors of D13 filed patent applications in the name of Union Carbide (D16, D17), the appellant concluded that D13 must have been published before the priority date of the patent in suit.

However, the board does not find this line of argument conclusive. The fact that the authors of D13 had been working for Shell at the time they presented their work to the conference is no proof of the actual publication date of document D13 itself. For example, D13 might have been published after the acquisition of Shell's polypropylene business by Union Carbide. Perhaps even April 1996 (appearing in bibliographic data provided with D13) is the correct publication date of D13, which is after the priority date of the patent in suit. Thus, D15 - D17 cannot demonstrate the actual publication date of D13.

The board can also not accept the argument of the appellant advanced during the oral proceedings that the content of D13 was orally presented in the conference. There is simply no evidence on file for the appellant's assertion that the content of oral presentation at the conference was identical with the content of D13.

It follows from the above that the publication date of D13 is not known and, consequently, D13 cannot be

considered as state of the art in accordance with Article 54(2) EPC.

- 2.3 As regards D14, the appellant contended that this document was late filed and requested that its admission to the proceedings be refused, because the appellant had not presented any argument why it had not presented before.

D14 was filed with the appellant's statement of grounds of appeal to demonstrate the general common knowledge of the skilled person. Taking into account that this general common knowledge was not disputed by the respondent and that the appellant did not further rely on this document during the oral proceedings, it is not necessary to decide on the admittance of D14 into the proceedings.

3. *Amendments (Article 123 EPC)*

- 3.1 Claims 1 to 4 of the claim set found allowable by the opposition division are identical to Claims 1 to 4 as granted apart from the replacement of the term "extractibles" by "extractables".
- 3.2 Claim 5 (point III above) was amended during the opposition proceedings from "... the film comprises a print layer or laminated layer onto the metal layer" to read "... the film comprises a printed layer, optionally laminated layer onto the metal layer".

This amendment is supported by Claim 5 as filed in combination with Claim 1 as filed. Claim 1 as filed is directed to a process for the preparation of a printed

and/or laminated metallized plastic film including as last step the step of "printing and/or lamination of the film". The use of the term "and/or" implies that the process as originally claimed included three alternatives, namely:

- (a) printing the film,
- (b) lamination of the film; and
- (c) printing and lamination of the film.

Amended Claim 5 is directed to alternatives (a) and (c) of the original disclosure and is therefore fully supported by the original disclosure.

3.3 The board cannot follow the argument of the appellant that the disclosure as filed was not directed to the printing or laminating onto the metal layer. The introductory part of Claim 1 as filed clearly indicates that the "metallized plastic film" was to be printed and/or laminated (see also step (d) which follows after metallization of the film). No violation of Article 123(2) EPC can be seen either in the replacement of the wording "print layer" by "printed layer", the meaning of both expressions being the same in the context of the claim.

3.4 It is furthermore undisputed that the above amendment restricts the scope of the claims.

3.5 Consequently, the board finds that the subject-matter of the claims fulfils the requirements of Articles 123(2) and (3) EPC.



4. *Sufficiency of disclosure (Article 100(b) EPC)*

4.1 The appellant disagreed with the finding in the decision under appeal that the patent discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

4.2 In particular, it argued that the polymeric materials used in the examples were identified by trade names only. Since the composition of a polymer grade sold under a particular trade name often changed over the years, a skilled person could not purchase the materials used in the patent in suit when trying to put into practice the invention.

However, this objection is not well-founded. Claims 1 and 5 clearly specify the nature of the polymer materials to be used for the different layers, namely "a copolymer based on propylene, containing linear or branched comonomers from 4 to 8 carbon atoms and, optionally, ethylene, said copolymer containing a concentration of extractables in n-hexane at 50°C for 2 hours lower than 5.5% by weight" for the surface layers and "a homopolymer of propylene having a content of extractables in hexane at 50°C for 2 hours lower than 10% by weight" for the core layer. As both types of polymers were already known at the priority date of the patent, as shown, for instance, by several of the documents cited in the appeal proceedings, there would be no undue burden for the skilled person to find polymers fulfilling the above conditions. Moreover, the patent in suit clearly indicates in paragraph [0021] that the copolymers "are prepared according to USP 4,254,169 or USP 3,549,389" and further gives

examples of commercially known products which can be used (see paragraphs [0022] - [0023]). Therefore, the appellant's objection that the polymers used in the examples were identified by trade names only appears to be totally unrelated to the requirements of sufficiency of disclosure. In fact, the patent in suit provides the necessary information to carry out the invention for the skilled person without undue burden.

- 4.3 The appellant further argued in its written submissions that the claims were broad and/or not clear and might embrace embodiments which did not solve the problem underlying the patent.

However, the board notes that the objection concerning the question whether the claims clearly define the subject-matter for which protection is sought and/or are too broad, relate to Article 84 EPC and not to sufficiency of disclosure.

Insofar as the appellant argued that the claimed subject-matter would embrace embodiments that did not work, it is noted by the board that there is no experimental evidence on file showing that an embodiment covered by the claims cannot be carried out by the skilled person. Of course, the burden of proof in this respect is on the appellant/opponent.

In this connection the appellant argued that the claim wording encompassed surface layers comprising only 1% of the required copolymer based on propylene and 99% of any other polymer. It was *per se* not plausible that an embodiment comprising such a surface layer would solve the problem of the patent in suit. It appears, however,

that this line of argument, which was not pursued at the oral proceedings, is based on a misinterpretation of the wording of Claim 1. Claim 1 requires "... a plastic film comprising as surface layer a copolymer based on propylene ...". The word "comprising" in this connection refers to the layers of the film (surface layer, core layer) but not to the composition of the surface layer itself. Thus, it is clear from Claim 1 that "a copolymer based on propylene, containing linear or branched comonomers from 4 to 8 carbon atoms and, optionally, ethylene" forms the surface layer. The wording of Claim 1 does not allow the use of 99% of any other polymer for the surface layer.

4.4 For these reasons, and in the absence of any contrary experimental evidence, the board agrees with the opposition division that the requirements of sufficiency of disclosure are fulfilled.

5. *Novelty (Article 54 EPC)*

5.1 The novelty of Claims 1 and 5 was contested by the appellant having regard to the disclosure of D10, a document to be considered as state of the art in accordance with Articles 54(3), (4) EPC 1973, and D13.

5.2 Concerning D13 it has been shown in point 2.2 above that the publication date of this document is missing. Consequently, D13 cannot be seen as representing state of the art in accordance with Article 54(2) EPC.

5.3 Document D10 discloses a biaxially oriented, heat set, multilayer film including a polyolefin core layer having at least one bonding layer with a surface

adhered to said core layer and a flame-treated surface opposite the surface adhered to said core layer, a metal coating deposited on said flame-treated surface and a protective plastic film adhered to said metal coating, wherein the bonding layer comprises a mixture including 40 to 100% by weight of propylene/butene-1 copolymer containing up to 14% by weight of butene-1, 0 to 60% of an isotactic polypropylene and 0 to 50% of a copolymer of ethylene and propylene wherein propylene is the predominant component by weight (see Claim 1). The polyolefin of the core layer is preferably polypropylene (Claim 2) and the bonding layer may be on one or both sides of the core layer surface (page 9, lines 3 - 5).

Although there is no disclosure in D10 of a printing of the films, the appellant argued that this was an implicit feature having regard to the affirmation in the paragraph bridging pages 8 and 9 of D2 which indicated that the protective plastic film adhered to the metal coating "preferably is a thin polypropylene film layer that can be clear and/or provided with printed indicia thereon. The appellant contended that, if the protective plastic film was "clear", the metallized film had to be printed, because for commercial packaging applications, such as snack foods, the nature of its content had always to be indicated.

5.4 However, in the board's judgement the disclosure of D10 does not anticipate the claimed subject-matter for the following reasons:

5.4.1 It is not disputed that there is no explicit disclosure in D10 of an embodiment according to Claims 1 or 5 of

the patent in suit. In particular, there is no disclosure in D10 of step (c) of Claim 1, which requires that "printing and/or lamination of the metal layer takes place after storage of the metallized film for at least one month". The subject-matter of Claim 1 is therefore novel.

5.4.2 It remains to be examined whether D10 implicitly discloses a film according to Claim 5.

The above detailed analysis of D10 shows that D10 in various passages describes the elements of a film according to Claim 5 (not considering the amount of extractables, which are, according to the appellant, inherent to the polymers used in this field). However, in order to arrive at something falling within the scope of Claim 5, a multiple selection within the teaching of D10 has to be made. In particular, it is necessary to make at least the following selections:

- firstly, select the claimed structure comprising a core layer and two surface layers,
- then select as core layer a homopolymer of propylene,
- further select as surface layer a copolymer as defined in the claim, and
- finally, select to print the film.

As set out in, for example, T 453/87 of 18 May 1989 (not published in the OJ EPO; point 7.2 of the reasons) and T 653/93 of 21 October 1996 (not published in the OJ EPO, point 3.2 of the reasons), in case of a "multiple selection", one would have to show that the "combined selection" emerges from the prior art. In the present case, a person skilled in the art would have

had no reason, when applying the teaching of D10, to concentrate on the combination of features set out in Claim 5. Such a combined selection is neither explicitly disclosed in, nor clearly and unambiguously derivable from, D10. In fact, for each of these selections there are several alternatives mentioned in D10.

5.5 As novelty of Claim 5 is already given for the above reasons, there is no need for the board to investigate whether or not the feature "the age of the metal layer exceeds the age of the printed layer, optionally laminated by at least one month" is a technical feature and/or a (further) distinguishing feature of the claimed film over the prior art.

5.6 For these reasons the board concludes that the subject-matter of the claims is novel.

6. *Inventive step (Article 56 EPC)*

6.1 The claims are directed to a process for the preparation of a printed and/or laminated plastic film and to the printed plastic films and are essentially characterized by the use of specific (co)polymers for the core and surface layers of the film.

6.2 Closest prior art

6.2.1 As stated in paragraphs [0001]-[0008] of the patent specification, printed and/or laminated plastic films for food packages are well known. They must show good barrier characteristics to gas and water to guarantee a good conservation of packed food as well as good

opacity characteristics to U.V. rays to avoid the onset of food rancidity. These known films are essentially based on metallized polyolefin resin compositions which are usually treated with high frequency discharges (corona discharge) in order to improve adhesion of inks and adhesives. Plastic films on the basis of polyolefins are representative of the prior art, for instance including polypropylene homopolymer as core layer and ethylene-propylene copolymer as surface layer. Such polymers are used in the patent in suit in the comparative examples.

The board regards the films according to this general teaching as representing the closest prior art for the claimed subject-matter.

6.2.2 The appellant relied essentially on D2 as representing the closest prior art document. Document D2 discloses polymer compositions comprising random copolymers of propylene and butene-1 having improved optical properties suitable for the preparation of films having low hexane extractable contents (page 1, lines 4 - 7). D2 also provides a metallized random copolymer film (page 3, lines 26 - 27) and, according to a preferred embodiment the random copolymer is used as a base substrate layer with a polymeric heat sealable layer on at least one outer surface of the substrate layer in the production of a film laminate (page 15, lines 6 - 10). The propylene-butene-1 copolymers of D2 show a very low content of hexane extractables (page 16, lines 12 - 14).

D2 aims to provide improved random copolymers, and films thereof including a process for producing the

improved copolymers, having an improved balance of good optical properties such as low haze, low blooming, good colour, low yellowing, and low hexane extractables, low xylene soluble level, improved tensile strength and high stiffness (page 2, lines 24 - 30). D2 is however silent about the printing or laminating of the films therein prepared.

Thus the technical problem of D2 is not related to the problem of the present invention, which aims to improve the printability and resistance to delamination of the metallized films. In fact, D2 discloses the preparation of the polymers of the surface layer of the patent in suit but is completely silent about printing/laminating of the film or about any improvement in adhesion properties which are the surface properties necessary to achieve said improvement.

For these reasons D2 cannot qualify as the closest prior art document.

### 6.3 Problem to be solved and its solution

6.3.1 The main distinguishing feature of the claimed method/films with respect to the prior art discussed above under point 6.2.1 lies in the use of a specific polymer as surface layer, namely a copolymer based on propylene containing linear branched comonomers from 4 to 8 carbon atoms containing a concentration of extractables in n-hexane at 50°C for 2 hours lower than 5.5% by weight.



6.3.2 By using such copolymers as surface layers improved printability and resistance to delamination are said to be obtained.

The technical problem to be solved by the claimed subject-matter can thus be formulated as being to provide printed and/or laminated films having improved adhesion between the metal layer and the printed layer and/or laminated layer.

6.3.3 This problem is solved by the claimed films and the solution is essentially based on the finding that by using the above mentioned copolymers of propylene and comonomers from 4 to 8 carbon atoms as surface layers, films are obtained having improved adhesion properties. The films thus prepared when printed and/or laminated after a storage period of at least one month still show very good adhesion.

The results of the examples and comparative examples in the specification clearly demonstrate that the above mentioned problem has been credibly solved. The films having said surface layers according to the claims show increased surface tension which is maintained after ageing (Example 1), increased bond strength when laminated (Example 2) and increased adhesion of ink (Example 3) in comparison to a similar film according to the prior art but using a ethylene-propylene copolymer as surface layer (Comparative Examples 1A, 2B and 3A).

6.3.4 The board is thus satisfied that the technical problem defined above is solved by the claimed method/film. This finding was not contested by the appellant.

6.4 Obviousness

6.4.1 It remains to be decided whether, in view of the available prior art documents, it would have been obvious for the skilled person to solve this technical problem by the means claimed, namely by using a copolymer based on propylene containing comonomers from 4 to 8 carbon atoms and low extractable amounts.

6.4.2 There is no hint to this solution in any of the pre-published documents cited by the appellant. Document D2, mainly relied upon by the appellant, in fact discloses the copolymers now used for the surface layers, but D2 is completely silent about any possible advantage of these polymers with regard to their adhesive properties. Consequently, there is no suggestion in D2 that by using such random copolymers as surface layers, the printability and resistance to delamination of the films would be improved.

6.4.3 The board can also not accept the argument of the appellant that the low content of hexane extractables would imply that the films of D2 would be useful to solve the problem of the invention. Although it is correct that there is an indication in D12 (column 1, lines 41 - 55) that certain additives impair the printability and adhesive properties of polypropylene films, the solution proposed in D12 for solving this problem is the use of a composition obtained by blending a specified polyethylene in a specified amount with a specified propylene- $\alpha$ -olefin copolymer and not the use of a copolymer having lower amount of extractables. Thus, the combination of the teaching of

D2 with this part of D12 can only be made with the knowledge of the invention (ex-post facto) and cannot bring into question the inventive step of the claimed subject-matter.

6.4.4 Similar considerations apply to the other documents cited by the appellant which in fact disclose in some case the copolymers now used for the preparation of films. However, the board cannot find a hint in any of these documents relating to an improvement of the adhesive properties of the film or its printability and resistance to delamination.

6.4.5 In the board's judgement the approach of the appellant in relation to inventive step does not take proper account of the established jurisprudence of the boards of appeal according to which, when assessing inventive step, the decisive question is not whether the skilled person could arrive at the invention (in the present case the use of said copolymer based on propylene containing comonomers from 4 to 8 carbon atoms), but whether he would have done so with a reasonable expectation of obtaining improved adhesion. Thus, the skilled person would get no incentive from D2 or from the other cited documents to use copolymers based on propylene containing comonomers from 4 to 8 carbon atoms to find a solution to the existing technical problem.

6.5 As regards the appellant's alternative attack on inventive step, namely that the claimed subject-matter was obvious in view of any one of D3, D4, D6, D8 or D11 together with D13, there is no need to discuss this attack in further detail as D13 is not considered to be

state of the art according to Article 54(2) EPC  
(point 2.2 above).

6.6 It follows from the above that the subject-matter of  
Claims 1 and 5, and by the same token the subject-  
matter of dependent Claims 2 to 4, involves an  
inventive step within the meaning of Article 56 EPC.

## **Order**

### **For these reasons it is decided that:**

The appeal is dismissed.

The Registrar

The Chairman

G. Röhn

W. Sieber