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Datasheet for the decision of 4 March 2010

Case Number: T 1408/05 - 3.3.07

Application Number: 99301655.9

Publication Number: 0943728

IPC: D06N 7/00

Language of the proceedings: EN

Title of invention:
A process of recycling waste polymeric material and an article utilizing the same

Patent Proprietor:
Collins & Aikman Floorcoverings, Inc.

Opponents:
IDEAL Automotive GmbH

Headword:
-

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 54, 56
RPBA Art. 10b(3)

Keyword:
"Novelty (no) - Main Request"
"Inventive step (no) -problem and solution - First Auxiliary Request"
"Fresh claims admissible under the RPBA (no) - amended Second Auxiliary Request"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1408/05 - 3.3.07

D E C I S I O N
of the Technical Board of Appeal 3.3.07
of 4 March 2010

Appellants 01: (Opponents)
IDEAL Automotive GmbH
Jäckstraße 3
D-96052 Bamberg (DE)

Representative:
Oberdorfer, Jürgen
nospat Patentanwälte
Isartorplatz 5
D-80331 München (DE)

Appellants 02: (Patent Proprietors)
Collins & Aikman Floorcoverings, Inc.
311 Smith Industrial Boulevard
P.O. Box 1447
Dalton
Georgia 30722 (US)

Representative:
Bankes, Stephen Charles Digby
Baron Warren Redfern
19 South End
Kensington
London W8 5BU (GB)

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 7 September 2005 concerning maintenance of European patent No. 0943728 in amended form.

Composition of the Board:

Chairman: S. Perryman
Members: G. Santavicca
F. Rousseau

Summary of Facts and Submissions

I. The appeal lies from the interlocutory decision of the Opposition Division maintaining European patent No. 0 943 728 (application No. 99 301 655.9) in the amended form of Claims 1 to 10 according to the 1st Auxiliary Request (amended) submitted during the oral proceedings held on 13 June 2005 together with a description adapted thereto and the drawings of the patent specification. The decision also gave the reasons for refusing the then Main Request (Claims as granted).

II. The patent as granted comprised 13 claims, independent Claims 1, 6 and 8 reading as follows:

"1. A method of making an article of.*[sic]* manufacture having cushioning properties from waste polymeric material, comprising the steps of:
a) granulating a chopped mixture of waste polymeric material (15), comprising 0 to 40% of aliphatic polyamide material, into fragments (40a) at least an order of magnitude smaller than the original size of the waste polymeric material;
b) densifying the granulated mixture into fragments having a more uniform and solid consistency and/or cryogenically grinding said mixture with liquid nitrogen;
c) adding a chemical blowing agent to the mixture; and
d) extruding the mixture,
wherein the blowing agent has a predetermined activation temperature, wherein prior to or during extrusion the blowing agent is thoroughly mixed in the recycled material to obtain a uniform dispersion,

wherein the extrusion is carried out at a temperature below said activation temperature, and wherein the extruded product is heated to a temperature above said activation temperature to give an extruded product having individual closed, non-connecting and gas-tight cells (256) uniformly dispersed in a flexible polymer matrix."

"6. An article of manufacture (255) having cushioning properties and comprising a flexible polymeric matrix made from granulated, densified and extruded waste polymeric material having an aliphatic polyamide material content of 0 to 40% and having uniformly dispersed therein individual closed, non-connecting and gas-tight cells (256) imparting said cushioning properties, said article having a density in the range from 288 to 449 kg/m^3."

"8. A floor covering (170, 190, 220, 245) having a sheet according to claim 7 as a secondary backing layer."

III. The patent was opposed in its entirety on the grounds that its subject-matter lacked an inventive step (Article 100(a) EPC), *inter alia* having regard to the following documents:

E2: Stephan Schnell, "Recycling von Kunststoffteppich-abfall durch Umschmelzen", DDD Druck und Verlag, 1996, Pages 4-39 and 172-175;

E3: L. Wolters, Kunststoff Recycling: Grundlagen - Verfahren - Praxisbeispiele, Hanser, 1997, München, Wien

E4: EP-A2-0 259 531;

E14: EP-A-0 891 848.

By letter of 3 August 2004, the opponents also invoked lack of novelty for the article of Claim 6 over E4.

IV. The 1st Auxiliary Request (amended), on which the decision under appeal is based, contained 10 claims, all concerning a method, Claim 1 corresponding to Claim 1 as granted (point II, *supra*), all the other claims being method claims dependent thereon.

V. In the decision under appeal, the Opposition Division came to the following conclusions:

(a) The article defined in Claim 6 as granted (Main Request) lacked novelty over the carpet backing disclosed by E4 (Article 54 EPC). In particular, the term "waste polymeric material" did not impart any distinctive physical feature to the material of the claimed article over that of E4.

(b) As to the 1st Auxiliary Request, the novelty of the method of Claim 1 was not contested.

(c) E4 described the closest prior art. The problem was to provide alternative materials for its article. The solution was the use of waste polymeric material. The arguments of the opponents that steps such as granulating and densifying factory scrap and offcuts were known as disclosed in any of E1 to E3 and could be used in E4 were not convincing. E4 did not contain any pointer to use waste polymeric material, indeed it dealt with a careful selection of high quality materials, so that the skilled person would not have contemplated the use of waste polymeric material in the article of E4.

(d) E2 dealt with recycling of waste polymeric materials from carpet scraps and disclosed the

granulation and densifying steps as defined in the first part of Claim 1 of the 1st Auxiliary Request, so that it too could be regarded as the closest prior art. The problem was to provide alternative uses for the recycled materials disclosed in E2. Although E2 and E4 concerned carpet manufacture, E2 suggested the use of recycled materials in rather simple processes whilst E4 required selection of high quality materials. Hence, the skilled person would not have considered combining E2 with E4.

(e) Hence, the claimed subject-matter was not rendered obvious by the cited documents.

(f) The patent amended in the form of the 1st Auxiliary Request thus fulfilled the requirements of the EPC.

VI. In their statement setting out the grounds of appeal, Appellants 01 (opponents) maintained the grounds of opposition raised in the opposition proceedings.

VII. In their statement setting out the grounds of appeal, Appellants 02 (proprietors) enclosed two auxiliary requests, both containing independent product claims, carrying the amendment that the polymeric waste material included carpet remnants containing glass fibre reinforcement material, to distinguish from E4.

In response to the statement setting out the grounds of appeal of the opponents, the proprietors enclosed a further auxiliary request concerning only method claims, identified as M1, to distinguish it from the previous requests which were identified as P1 and P2.

In response to a communication in preparation for the oral proceedings, in which the Board indicated the

points to be discussed, *inter alia* the amendments and the question of priority, the proprietors submitted five sets of amended claims as the Main and First to Fourth Auxiliary Requests, replacing the previous requests on file (letter dated 29 January 2010).

VIII. Oral proceedings were held on 4 March 2010. The proprietors withdrew the Second to Fourth Auxiliary Requests filed with letter dated 29 January 2010 and submitted an amended Second Auxiliary Request. At the end of the oral proceedings the decision was announced.

IX. The independent claims on which the present decision is based read as follows (compared to the claims as granted, where applicable, additions of features in bold, deletions in strike-trough):

Main Request

Independent Claims 1 and 5 of the Main Request correspond respectively to Claims 1 and 6 as granted (point II, *supra*).

First Auxiliary Request

Claim 1 of the 1st Auxiliary request corresponds to Claim 1 as granted, hence also to Claim 1 of the 1st Auxiliary Request (amended) underlying the decision under appeal (point IV, *supra*).

Second Auxiliary Request (amended)

"1. A method of making ~~an article of. manufacture~~ **a carpet with a secondary backing layer** having cushioning

properties from ~~waste~~ polymeric material~~,~~ comprising the steps of:

a) granulating a chopped mixture of waste polymeric material (15) **including carpet and/or carpet tile remnants containing glass fibre reinforcement material**, comprising 0 to 40% of aliphatic polyamide material, into fragments (40a) at least an order of magnitude smaller than the original size of the waste polymeric material;

b) densifying the granulated mixture into fragments having a more uniform and solid consistency and/or cryogenically grinding said mixture with liquid nitrogen;

c) adding a chemical blowing agent to the mixture; ~~and~~

d) extruding the mixture **and forming it into a sheet**, wherein the blowing agent has a predetermined activation temperature,

wherein prior to or during extrusion the blowing agent is thoroughly mixed in the recycled material to obtain a uniform dispersion, wherein the extrusion is carried out at a temperature below said activation temperature, and wherein the extruded product is heated to a temperature above said activation temperature to give an extruded **sheet of uniform thickness** having individual closed, non-connecting and gas-tight cells (256) uniformly dispersed in a flexible polymer matrix~~.~~**;**

e) laminating said sheet to form a floor covering (170, 190, 220, 245) with said sheet as a secondary backing layer, said floor covering comprising:

(i) a carpet having textile fibers (180) defining a fibrous upper outer face and a primary backing (182) to which the textile fibers are secured, with the secondary backing layer (184) adhered to the lower surface of the primary backing~~.~~, or

(ii) a carpet having textile fibers (225) defining a fibrous upper outer face wherein the textile fibers are woven and secured into the secondary backing layer (235),

f) positioning an oleophobic adhesive layer (197, 265) to overlie and adhere to the secondary backing layer (194, 235), and a releasable cover (198, 237) is removably attached to the oleophobic adhesive layer,

wherein the secondary backing layer (194, 235) has glass fibers on the surface immediately adjacent to the oleophobic adhesive layer (197, 265), the oleophobic adhesive layer encapsulating the glass fibers."

"6. A~~n article of manufacture~~ **carpet** (255) **having a secondary backing in the form of a sheet having uniform thickness,** having cushioning properties and comprising a flexible polymeric matrix made from granulated, densified and extruded waste polymeric material, **including carpet or carpet tile remnants containing glass fibre reinforcement material,** having an aliphatic polyamide material content of 0 to 40% ~~and~~ having uniformly dispersed therein individual closed, non-connecting and gas-tight cells (256) imparting said

cushioning properties, ~~said article~~ **and** having a density in the range **of** 288 to 449 kg/m^3~~.~~**,**

said carpet having textile fibers (180) defining a fibrous upper outer face and a primary backing (182) to which the textile fibers are secured, with the secondary backing layer (184) adhered to the lower surface of the primary backing,

or having textile fibers (225) defining a fibrous upper outer face wherein the textile fibers are woven and secured into the secondary backing layer (235).(sic) **wherein an oleophobic adhesive layer (197, 265) is positioned to overlie and adhere to the secondary backing layer (194, 235), with a releasable cover (198, 237) removably attached to the oleophobic adhesive layer,**

and wherein the secondary backing layer (194, 235) has glass fibers on the surface immediately adjacent to the oleophobic adhesive layer (197, 265), the oleophobic adhesive layer encapsulating the glass fibers.".

X. The opponents (appellants 01) essentially argued as follows:

Main Request

Novelty

The limitation "waste" being of mere declarative nature, the feature "waste polymeric material" of Claim 5 defined nothing more than the polymeric material, i.e. was not suitable to impart any distinguishing physical

feature to the material. The definition encompassed production scraps and off-cuts. The feature "0 to 40% of aliphatic polyamide" was not limiting, as polyamide need not be present. E4 did not exclusively require virgin polymeric material and mentioned polyamide as a possible other polymeric material. Hence, the article of Claim 5 was not novel over that of E4.

1st Auxiliary Request

Method of Claim 1

Priority

The priority document generally mentioned that the addition of a blowing agent was in relation to a reduction in density but specifically disclosed its application only in the preparation of a sheet, which was expanded after it had been calendared. Instead, Claim 1 encompassed the activation of the blowing agent before calendaring, not disclosed in the priority document, which if carried out would result in the cells on the surfaces of the sheet being more compressed than those in its interior, so that no uniform cell distribution as claimed could be achieved. Hence, the method defined in Claim 1 did not enjoy the priority right claimed.

Novelty

Independently from the conclusion on whether E14 was a document under Article 54(2) or 54(3) EPC, it disclosed a method for making articles with cushioning properties as defined in Claim 1. In particular, in the method of

Claim 1 of the First Auxiliary Request, the feature that the blowing agent was added prior to or during extrusion was self evident, as no other possibility could be envisaged, and could not constitute any distinction. The feature that the extrusion was carried out at a temperature below the activation temperature of the blowing agent was disclosed in E14 by the mention of a specific range of extrusion temperatures, which was below the activation temperature of the usual blowing agents. And the feature that the extruded product would be heated to a temperature above the activation temperature of the blowing agent, the use of which was contemplated by E14, would also be inevitably attained in the method of E14. Therefore, the claimed method lacked novelty over that disclosed by E14.

Inventive step

Starting from E4 as the closest prior art document, which described a method similar to that as claimed in which a number of polymers could be used, the only distinction between the claimed method and that of E4 was the feature "waste polymeric material". However, waste polymeric material had no distinguishing physical feature from a virgin polymeric material, so that "waste" was merely a non limiting declaration.

E4 was a document of 1986, a period in which recycling was not as actual as at the priority date of the patent in suit. The need and the possibilities of recycling waste polymeric materials in the carpet industry were however addressed and described some years after in E2.

E2 not only was persuasive about the possibility of recycling waste polymeric materials in the carpet industry but disclosed that this possibility was applicable to the usual extrusion processes, hence also to that of E4, provided that the waste material be reduced in size, agglomerated and compounded to be compatible with the blends used in the usual processes. Since E2 was a university document, which could be considered as a handbook describing the common general knowledge of the skilled person at the priority date of the patent in suit on the recycling polymeric material of carpets, it would have been considered by the skilled person starting from E4, and would have led him to the method of Claim 1, which thus was obvious.

If E14 were acknowledged as a document pursuant to Article 54(2) EPC, the claimed method would be obvious over the combination of E14 and E4, which disclosed the temperature activated blowing agent.

Amended Second Auxiliary Request

Procedural questions

The amended Second Auxiliary Request was filed too late and included substantial amendments to the claims of both the method and the product. It was not possible during the oral proceedings to check whether or not the fresh claims had a fair basis in the application as filed nor whether they fulfilled the other requirements of the EPC, so that the proceedings should be continued in writing or the case remitted to the first instance, as that situation had never been dealt with before.

XI. The proprietors (appellants 02) essentially argued as follows:

Main Request

Novelty

The definition of Claim 5 made it clear that the claimed article was not made of virgin material but of a mixture of polymers. In particular, production off cuts were materials that had already been extruded, hence a mixture of recycled polymeric materials. Since E4 required specific virgin materials, the article of Claim 5 was novel over that of E4.

First Auxiliary request

Method of Claim 1

Priority

The validity of the priority right invoked should be assessed in compliance with decision G 2/88 (OJ 1990, 93), which made clear that the claimed subject-matter should be derived from the priority document by the skilled person using common general knowledge. The priority document disclosed the addition of a chemical blowing agent to reduce the density of the article and specifically illustrated how it was done. Of course, the illustrated method was not only applicable to the production of a sheet but also to the production of other articles. In fact, E4 showed that it was possible to extrude a sheet and expand it before calendaring, thus contradicting the arguments of the opponents. In

summary, the priority right was valid. If this were not acknowledged, the article would be limited to a sheet.

Novelty

E14 did not disclose any specific thermally activated blowing agent, let alone its activation temperature, nor its addition prior to the extrusion which was carried out at a temperature below the activation temperature. Hence, the method of Claim 1 of the First Auxiliary Request was novel.

Inventive step

The claimed method brought together two technologies which were quite separate: the technology of the production of cushioning articles in which specific formulations were used, such as the polychlorinated ethylene required in E4, which does not suggest the use of something else than virgin material; and, the technology of recycling waste polymeric material.

Starting from E4 the problem to be solved was the broadening of the range of polymeric material which could be used in its method.

E2 described the recycling of carpet materials but warned that in view of the possible incompatibilities among the many polymers used in the carpet construction only the recycling possibilities should be considered which would not place too high a demand on the process-ability and the properties of the material, such as the extrusion of simple thick-walled articles. Hence, E2 did not suggest that it was worth trying to use the

recycled material in a method in which a blowing agent was used, such as that of E4 which required a specific blend including chlorinated polyethylene and possibly polyamide to obtain a sheet having cushioning properties and a closed cell distribution.

Consequently, the method of Claim 1 was not rendered obvious by the combination of E4 and E2.

Since E4 did not mention any recycling of material, required by the method of Claim 1, the skilled person would not combine E14, having no example of a cushioning article, with E4, so that also this alleged combination would not render obvious the claimed method.

2nd Auxiliary Request

Procedural questions

The amended Second Auxiliary Request was submitted in reaction to the provisional opinion of the Board during the oral proceedings that the Main and the First to Fourth Auxiliary Requests then on file did not comply with the EPC. Those requests had been filed in response to a communication of the Board without knowing what prior art would be used during the oral proceedings. As regards the fair basis, Claim 1 consisted of a combination of Claims 1 and 5 to 9 of the Fourth Auxiliary Request, with further features relating to the recycling of carpet remnants including glass fibres taken from the description, and was directed to the production of a carpet comprising a secondary backing layer. The filing of that request aimed at overcoming the grounds of opposition lack of novelty and of an

inventive step, and for this purpose to define claims having a fair basis in the priority document. In particular, the claimed subject-matter aimed at solving a new problem, disclosed in the application as filed, namely the migration and plating out of the glass fibres present in the carpet remnants to be recycled, also mentioned in the patent in suit, the problem being solved by the use of an oleophobic layer. The proprietors had no objection against continuing in writing or remitting the case to the first instance, if the debate could not be continued at the oral proceedings before the Board.

XII. The opponents (appellants 01) requested that the decision under appeal be set aside and the patent be revoked. They also requested that the amended Second Auxiliary Request filed at oral proceedings on 4 March 2010 be rejected as belated, or if admitted into the proceedings that the matter be dealt with in written proceedings or remitted to the first instance for further prosecution.

XIII. The patent proprietors (appellants 02) requested that the decision under appeal be set aside and the patent be maintained on the basis of the Main Request or First Auxiliary Request submitted on 29 January 2010 or of the amended Second Auxiliary Request submitted at oral proceedings on 4 March 2010.

Reasons for the Decision

1. The appeal is admissible.

Main Request

2. *Novelty*

2.1 E4 is the only document cited against the novelty of the subject-matter of Claim 5.

2.2 It discloses an extruded chemically post-blown resilient embossable closed cell thermoplastic foam comprising a blend of chlorinated polyethylene and at least one other thermoplastic polymer selected from the group consisting of polyurethane, polyamide, styrenic and olefin resins, the amount of chlorinated polyethylene, by weight, being from 0.025 to 0.5 parts per part of said at least one thermoplastic polymer, and said foam having a substantially uniform size closed cell structure (Claim 8; page 2, lines 20-23).

E4 also discloses a foam backed carpet article comprising a carpet layer including a backing and pile yarns secured to said backing and extending from one side thereof to form a pile surface, and a resilient foam underlay secured to the opposite side of said backing, said foam underlay comprising an extruded chemically post-blown resilient embossable closed cell thermoplastic foam as described above (Claim 15).

The method for making the foam according to E4 comprises forming an extrudable blend comprising a heat activatable chemical blowing agent and a polymer

component as defined above; extruding the blend from a die without significant activation of the blowing agent by maintaining the extrusion temperature of the foam below the activation temperature of the blowing agent to form an unfoamed thermoplastic sheet, and thereafter foaming the extruded unfoamed sheet by heating the sheet to a temperature sufficient to decompose the blowing agent and expand the sheet (Paragraph bridging pages 2 and 3 of E4).

The extrudable blend of the thermoplastic polymer and chlorinated polyethylene in the proportions indicated is readily extrudable at temperatures below that at which any significant activation of the blowing agent occurs, and produces a thermoplastic sheet with excellent properties which can be post-blown by heating to produce a non-crosslinked closed cell thermoplastic foam of uniform size cell structure, not requiring crosslinking, remaining thermoplastic and being embossable or thermally formable into various shapes (page 3, lines 5-11).

According to E4 (page 4, lines 39-44), a proper blend of chlorinated polyethylene (CPE) and thermoplastic polymer is important in achieving acceptable physical properties, the optimum blend being about 0.20 to 0.25 parts CPE per part of thermoplastic polymer by weight. The various thermoplastic polymers which may be used with the CPE include polyamides (page 4, line 46).

In order to foam the extruded thermoplastic composition, the thermoplastic resins are blended with any heat activatable blowing agent conventionally used in the production of thermoplastic foams. Any blowing agent

which activates above the extrusion temperature of the resin blend may be used, such as azodicarbonamides, modified azodicarbonamides, aliphatic sulfonyl semicarbazides, and hydrazides (page 5, lines 8-14).

Figure 1 of E4 shows a schematic illustration arrangement of an apparatus used for producing an extruded closed cell thermoplastic foam, in which a thermoplastic polymeric composition is fed to a hopper and processed through an extruder (11), where it is heated to an extrudable fluid state and extruded from an elongate slot die (12) to form an unfoamed sheet (S) of the thermoplastic composition. The sheet can be rolled up and foamed at a later time or, as illustrated, it may be directly advanced on a continuous releasable carrier through a heat source such as an oven operating at a temperature sufficiently high to activate or decompose the thermally activatable blowing agent contained in the polymer composition. Upon heating to a temperature sufficient to activate the blowing agent, the thermoplastic sheet foams and expands in thickness. The expanded thermoplastic foam is removed from the carrier and taken up on suitable take-up means such as a roll. Optionally, after leaving the oven, the expanded foam sheet may be passed between a pair of cooperating rolls which are mounted in a predetermined spaced apart relation to one another. In this manner, the overall thickness of the foam sheet is controlled to within fairly close limits (page 3, lines 38-53).

According to page 3, lines 54-57, Figures 2 and 3 of E4 illustrate the sheet of the extruded closed cell thermoplastic foam, which has a multiplicity of relatively fine uniform closed cells, with the opposing

surfaces of the foam having an integrally formed substantially impermeable skin. The foams may have a density of from 32 to 960 kg/m^3 (2 to 60 pounds per cubic foot). In Example 1 of E4, Sample 2 gave a uniform blow of about 250% to produce a foam which was tough, flexible, resilient and had a density of approximately 289 kg/m^3 (18 lbs. per cubic foot) and a fine uniform cell size similar to vinyl foam (page 5, lines 25-34).

2.3 Hence, E4 discloses an article of manufacture having cushioning properties and comprising a flexible polymeric matrix, a sheet made from extruded polymeric material, the density of which fulfils the requirement defined in Claim 5. Since the extruder shown in Figure 1 of E4 includes a hopper, the polymeric blend fed to the extruder must be in particulate form, which within the extruder is mixed and densified. The definition of Claim 5 encompasses a polymer blend as described in E4. It follows from the above that E4 discloses all but the feature of Claim 5 that the polymeric blend is made from waste polymeric material.

2.4 Hence, the question arises whether or not the origin of the polymeric blend as claimed can provide any distinguishing feature over the disclosure of E4.

2.5 According to the patent in suit (paragraphs [0005] and [0010]), the term "waste polymeric material" embraces thermoplastic scrap materials from the manufacture of floor covering as well as materials from used, old floor coverings removed after use or installation.

2.6 Scrap and off cuts produced during the manufacture of floor coverings are made of the same polymer blend used to produce the floor coverings. It has not been demonstrated that the term "waste" necessarily imparts any measurable, distinguishing, compositional, physical or structural feature to the polymer blend obtained from said scraps and off cuts, compared to the polymeric blend fed to the extruder illustrated in E4. Even if the polymer of the off cuts has already been submitted to extrusion, no quantification of its alleged aging, oxidation or thermal degradation, if any, has ever been defined nor demonstrated. Thus, at least in case of polymeric waste materials produced during the manufacture of the floor coverings, it cannot be assumed that an article as claimed is necessarily different from an article made from virgin material.

2.7 It follows from the above that the limitation "waste" merely concerns a classification of polymeric material based on the intended function thereof, i.e. something which, if not recycled, has to be discarded, rather than a measurable difference in the composition or structure of the relevant polymer.

2.8 The process features defined in product Claim 5, such as "made from granulated, densified and extruded waste polymeric material", are not described in E4 but cannot render the claimed product novel. Although the patent proprietors have invoked that the process features, in particular the (re)extrusion of the waste polymeric material would change the product (e.g. its aging or degradation), compared to a product only extruded from virgin material as in E4, the patent proprietors failed to demonstrate any difference arising from the

reprocessing of a waste polymeric material by granulation, densification and extrusion (case law of the Boards of Appeal of the EPO, I.C.3.2.7).

2.9 Therefore, for lack of any proven distinction, the novelty of the article defined in Claim 5 over that described by E4 cannot be acknowledged.

First Auxiliary Request

Method of Claim 1

Priority

3. Since the patent should be revoked for lack of an inventive step of the subject-matter of Claim 1 having regard to E4 and E2 (*infra*), dealt with in the decision under appeal, and since the answer to the question of whether or not the priority claimed is valid and E14 is a document belonging to the state of the art within the meaning of Article 54(2) EPC does not affect that decision, the Board need not address the validity of the priority claim, contested by the opponents.

Novelty

4. For the reasons given above, the Board need not detail either the reasons why the method of Claim 1 is considered to be novel over the method of E14. It suffices to say that E14 (column 5, lines 27-30) does not directly and unambiguously disclose a thermally activated blowing agent, let alone the further features relating to its thermal behaviour.

Closest prior art

5. The appellants have considered E4 (*supra*) as the document describing the closest prior art. The Board has no reason for taking a different position.

Problem and Solution

6. E4 discloses a method of making an article of manufacture having cushioning properties from polymeric material, the article having a density and a uniform closed cell distribution as defined in Claim 1 of the First Auxiliary Request. However, E4 does not mention "waste" polymeric material (see points 2 *supra*).

No particular effect whatsoever over the method of E4, let alone any improvement, resulting from the use of "waste" polymeric material has ever been demonstrated by the patent proprietors.

Hence, having regard to E4, the problem stated in the patent in suit ([0010]) (namely to provide an improved process of recycling, reclaiming and reutilizing thermoplastic scrap material from the manufacture of floor covering or the subsequent removal of the floor covering after installation, in order to overcome the economic infeasibility and expand the types of article which can be made), has to be reformulated less ambitiously as to provide a further method of making an article of manufacture having cushioning properties from polymeric material with a uniform cell distribution and density as defined.

Character of the solution

7. In the method of producing an article having cushioning properties of E4 it is essential to use an extrudable blend of thermoplastic polymers including CPE and at least one other thermoplastic polymer such as polyamide (Claims of E4, *supra*). Such a blend is encompassed by Claim 1 of the First Auxiliary Request.

The source of the starting polymeric material to be extruded is not specifically described in E4, so that the use of virgin material can be envisaged but other sources cannot fundamentally be excluded, albeit not mentioned expressly.

8. E2, a university dissertation of 1995 published as volume 2 of a technical series containing a review of known processes concerning the recycling of waste polymeric material from floor coverings, and so can be considered as a document summarizing the common general knowledge of the skilled person in this field at the priority date of the patent in suit.

It discloses that the nature of the waste polymeric material, either produced during the manufacture of the floor coverings or obtained from old carpets, is determined by the construction of the carpets, their production, their composition as well as their external shape (page 4, point 2.1.1, first paragraph).

As regards the waste polymeric material produced during the manufacture of the floor coverings, E2 discloses that it encompasses off cuts and fault batches/charges, the polymer of which, in contrast to other waste

materials, corresponds to the particular thermoplastic material used, so that it is rather clean (page 9, point 2.1.3.1, first paragraph), not contaminated as it is constituted from the production material itself, not or only slightly damaged by thermal, UV or oxidative processes, so that the waste material is comparable in its potential to the corresponding virgin material (paragraph bridging pages 9 and 10).

Concerning the exploitation of the waste polymeric material used in the carpet production, E2 (point 2.3.4) in particular deals with reshaping and remelting the waste polymeric material without damaging their structure, such that it can be reprocessed.

Any such reprocessing starts with a size reduction of the waste in e.g. a guillotine chopper, to a final dimension, which may as small as a coin, being a function of the intended exploitation (point 2.3.4, second full paragraph).

The chopped material may be used as a filler (point 2.3.4, third full paragraph), or may be agglomerated to loose, out pourable sintered granules (point 2.3.4, fourth full paragraph), which however, because the multiplicity of the polymer materials used in the carpet construction and present in the granules might lead to incompatibilities, can only be reprocessed in applications which do not place too high a demand on their workability or material properties (point 2.3.4, paragraph bridging pages 16, 17 and 18).

In order to ameliorate both the processability and the mechanical properties, the agglomerated granules can be

further reduced in size, then compounded (homogenized, degassed, cleaned from foreign materials, provided with additives to improve the compatibility) and finally densified, so that they can be reused in the usual methods of production such as extrusion and calendaring, to form e.g. thermoformable carpet covering sheets (point 2.3.4, last full paragraph on page 18). As regards the additives mentioned in that paragraph, the list is not exhaustive, so that the addition of blowing agents is not mentioned but it is not excluded either.

It follows from the above that E2 discloses all of the features which distinguish the claimed method from that of E4.

In particular, E2 stresses that the waste polymeric material produced in the carpet manufacture may well be treated to be reprocessed in the usual facilities for producing the carpet coverings, hence also in the method described in E4.

The application of the teaching of E2 to reprocessing the scraps and off-cuts evidently produced also in the method of E4 was obvious for the skilled person, as it amounted to the application of common general knowledge on the reuse of waste polymeric material in the carpet production, for modifying along the trends of the technological development in that field a known method. That application is encompassed by Claim 1.

Consequently, the method of Claim 1 of the First Auxiliary Request was obvious having regard to the combination of E4 with the common general knowledge described in E2 (Article 56 EPC).

Amended Second Auxiliary Requests

Procedural Questions

9. The amended Second Auxiliary Request was submitted at the oral proceedings before the Board, i.e. belatedly.

9.1 According to the patent proprietors, the late filing of that claim request was in reaction to the provisional opinion of the Board given during the oral proceedings after the debate on inventive step, namely that the patent amended in the form of the requests then on file did not appear to fulfil the requirements of the EPC.

9.2 However, that these requests did not fulfil the requirements of the EPC had already been argued by the opponents, and it was apparent that, as one possible outcome of oral proceedings before the Board of Appeal, they could be refused. Patent proprietors should be prepared for such an unfavourable outcome and should not wait for the opinion of the Board during the oral proceedings before submitting more limited requests, which requests would not be open to the objections already raised by the opponents. These more limited requests should be submitted as early as possible to give the other parties and the Board the opportunity to acquaint themselves thoroughly with this fall back position and to guarantee the contradictory nature of the debate during the oral proceedings. In the present case, prior to the submission of this new amended and auxiliary request at the oral proceedings the Board had simply reviewed the decision under appeal, on the basis of only two of the documents dealt with in that

decision, i.e. E4 and E2, the disclosures of which have been debated. The belated filing of the claim request amounts to an attempt at overcoming objections that had long been made and is thus not justifiable.

9.3 Furthermore, the nature and amount of amendments carried out in Claims 1 and 6 of the amended Second Auxiliary Request are such that:

(a) the claimed subject-matter has been drastically changed, from an article of manufacture to a carpet with a secondary backing layer, so that substantial amendments to the claims have been carried out;

(b) the substantial amendments are based on a new definition which *inter alia* includes an indirect generalization, feature (e) of Claim 1 (*supra*), to a floor covering comprising the carpet making the subject of Claim 1, so that it is not clear whether Claim 1 concerns a carpet or a floor covering (Article 84 EPC). Also, the basis of the new claims is not immediately apparent, so that the claim request is not clearly formally allowable;

(c) the newly claimed subject-matter not only results from the combination of claims of the Fourth Auxiliary Request but also includes features taken from the description;

(d) that inclusion changes the problem to be solved, and although that new problem was mentioned in the application as filed, its significance has never been debated before, so that the frame of the discussion as determined by the decision under appeal and the statement setting out the grounds of appeal is changed as well;

(e) moreover, the description dealing with the new features and the new problem acknowledges a

document not considered before, and the need for an additional search cannot be excluded either, so that new documents need to be considered;

(f) it follows from the above that the amended Second Auxiliary Request raises fresh issues that the Board could not thoroughly address during the oral proceedings, so that no conclusion could have been reached on the late claim request if admitted. Instead, the proceedings would have had to be continued in writing or the case remitted to the first instance for further prosecution, in either case involving an unjustified procedural delay before a final decision could be reached.

9.4 Therefore, in the exercise of its discretion, the Board decides not to admit the amended Second Auxiliary Request into the proceedings (Article 10b(3) of the Rules of Procedure of the Boards of Appeal of the EPO, in the version applicable at the filing date of statement setting out the grounds of appeal) (case law, *supra*, VII.D.14.1 and 14.2).

10. *Conclusion*

The invoked grounds of opposition under Article 100(a) EPC prejudice the maintenance of the patent in suit in all of the amended forms proposed by the patent proprietors.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

S. Fabiani S. Perryman