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**Datasheet for the decision
of 25 April 2012**

Case Number: T 1514/09 - 3.4.02
Application Number: 02753124.3
Publication Number: 1410075
IPC: G02B1/10, G02F1/1335,
B29D11/00, H01J29/89, B41J2/01
Language of the proceedings: EN

Title of invention:

METHOD OF PRODUCING A TRANSPARENT ARTICLE

Patent Proprietors:

Heys, James Brian
Heys, Jeremy
Morgan Lloyd Trustees Ltd.

Opponent:

Nolato AB

Headword:

Relevant legal provisions:

EPC Art. 100(b)

Keyword:

Sufficiency of disclosure ((no)

Decisions cited:

Catchword:



Case Number: T1514/09 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 25 April 2012

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted 11 May 2009
revoking European patent No. 1410075 pursuant to
Article 101(3)(b) EPC.**

Composition of the Board:

Chairman: A. Klein
Members: F. Maaswinkel
B. Müller

Summary of Facts and Submissions

- I. The appeal lies from the decision of the opposition division dated 11 May 2009 revoking European patent 1 410 075, according to which 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 and did not comply with the requirements of Articles 100(b) and 83 EPC. Against this decision the patent proprietors lodged an appeal and requested that the decision under appeal be set aside and that the patent be maintained in the form as originally granted. Furthermore the appellants filed an auxiliary request for oral proceedings.

In the subsequent letter of 21 September 2009 containing the Grounds of Appeal the appellants requested:

- Main Request: to set aside the Decision of the Opposition Division and to remit the case to the Opposition Division for consideration of the previously unconsidered Grounds of Opposition under Articles 100 (a) and (c) EPC with correction of an error in the specification whereby the figure "1000" at column 3, line 43 of the patent should be corrected to "100";
- First Auxiliary Request: to set aside the Decision of the Opposition Division and to maintain the patent as granted, furthermore to remit the case for considering the previously unconsidered Grounds of Opposition under Art. 100(a) and 100(c) EPC;
- Second to Fifth Auxiliary Requests: to set aside the Decision of the Opposition Division and to maintain the patent on the basis of the respective sets of claims, filed with the letter of 21 September 2009.

- II. With the letter of 18 December 2009 the opponents requested that the appeal be dismissed. Furthermore the opponents filed an auxiliary request for oral proceedings.
- III. In a summons pursuant to Rule 115(1) EPC sent on 26 January 2011 the Board invited the parties to oral proceedings to take place on 25 April 2012.

At the oral proceedings on 30 April 2010 the appellants maintained their previous requests.

The respondents requested that the appeal be dismissed.

- IV. The wording of claim 1 of the Main Request reads as follows:

" A method of producing a transparent article comprised of a transparent base substrate of a plastics material having a thickness of at least 100 microns and an abrasion resistant surface coating of a transparent resin, wherein the uncoated transparent base substrate has a HAZE value as measured in accordance with ASTM D-1044 in excess of 30%, and the coated substrate has a HAZE value of less than 10%, characterised in that the resin is applied to the base substrate by means of a jet printer ".

Independent claim 1 of the First Auxiliary Request is identical to claim 1 of the Main Request.

The independent claims of the further Auxiliary Requests are based on claim 1 of the Main Request, including additional features. For the purpose of the present Decision these claims are of no interest and are not reproduced.

V. The arguments of the appellants may be summarised as follows:

In accordance with the Main Request, correction of an obvious error at col. 3, l. 43 of the granted patent is requested under the provisions of Rule 139 EPC whereby reference should be made to the procedure of ASTM D-1044 being carried out with the CS-10F standard wheel being rotated to 100 times on a sample (rather than 1000 times as presently quoted). This correction is clearly obvious in the sense that nothing else was intended and the correction does not result in a contravention of either of Article 123(2) or (3) EPC.

The present invention provides a method of producing a transparent article comprised of a transparent based substrate of a plastics material and an abrasion resistant surface coating of a transparent resin. The method of the invention is effected by applying the coating to the substrate by means of a jet printer. Claim 1 of the patent as granted requires that the uncoated and coated substrates have certain HAZE values as determined in accordance with ASTM D-1044: "...wherein the uncoated transparent based substrate has a HAZE value as measured in accordance with ASTM D-1044 in excess of 30% and the coated substrate has a HAZE value of less than 10%..." (emphasis added). The procedure to be adopted in accordance with ASTM D-1044 is set out in section 8 in the right hand column on page 3 of document D18. This procedure involves effecting abrasion of the specimen under test, a "Calibrase" wheel with a 500g load, and then making light scattering measurements on the abraded sample. Section 8.2 states:

"8.2 Mount the specimen on the specimen holder and

subject it to abrasion for a selected number of cycles. Use an abrasion of 100 cycles with the 500-load, unless otherwise specified". It is clear from the portion of claim 1 contemplated above that measurement of HAZE values for the purposes of the patent in suit should be entirely in accordance with ASTM D-1044 since nothing is "otherwise specified" in claim 1. The description at col. 3, l. 40 to 45 in para [0023] of the patent specification reads as follows: "Abrasion resistance is measured in accordance with ASTM D-1044 in which a CS-10F standard wheel having a 500 gram load is rotated 1000 times on a sample". In the context of the description the figure of "1000" is clearly in error and should read "100". More specifically, paragraph [0023] specifies that the measurement is made in accordance with ASTM D-1044. Paragraph 8.2 of ASTM D-1044 requires the use of an abrasion of 100 cycles "unless otherwise specified". The description in para [0023] (with its reference to the wheel being rotated 1000 times on a sample) would not be understood by the skilled person as being a procedure which is "otherwise specified" in the terms of 8.2 of ASTM D-1044, since the passage in para [0023] states that the abrasion resistance is measured in accordance with ASTM D-1044. The procedure "in accordance with" ASTM D-1044 requires the use of 100 cycles. Furthermore, the reference in para [0023] to the wheel being rotated "1000 times on a sample" would not be understood by the skilled person as being a departure from the 100 cycles required in accordance with ASTM D-1044 and thus falling under the provision "unless otherwise specified" in paragraph 8.2 of D18. In any case, should the skilled person find that there was a conflict between claim 1, specifying "in accordance with ASTM D-1044", thereby clearly implying: "100 cycles", and the description in para [0023], it would be clear to him that the disclosure in

claim 1 would prevail and that the value "1000" in para [0023] was therefore clearly in error and should be corrected.

Furthermore, if the patentees had intended a departure from the use of 100 cycles then the skilled person would have expected some qualifying wording in the passage in this paragraph, e.g. along the lines of "... but with the wheel being rotated 1000 times on a sample rather than 100 times as specified in accordance with ASTM D-1044". The fact that the passage in para [0023] specifies that the abrasion resistance is measured "in accordance with" ASTM D-1044 without any further qualification as to an exception based on the number of cycles can only mean that the skilled person would interpret the reference to "1000 times" as being an error which would clearly be understood as "100 times" in context. To illustrate this, reference is made to document D14 (US-A-4 115 622), which in col. 5, l. 51 to 60 discloses that measurements were made at 100, 300, 600 and 1000 cycles in place of the normally specified 100 cycles. Care has been taken to point out to the skilled reader that the test is different from that prescribed as standard. There is no such qualification in the paragraph [0023] of the patent specification. In summary, therefore, the requested correction does not contravene Article 123(2) EPC because it is clear that nothing else is intended other than the requested correction. Similarly, there is no contravention of Article 123(3) EPC for the same reason and also because claim 1 as granted clearly specified that the HAZE values are measured in accordance with ASTM D-1044. The patentees submit that the requested correction is in accordance with the principles adopted in T0108/91.

In paragraph 23 of the Decision it was concluded that the patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. Essentially the reasoning was that the skilled person did not have available materials complying with the HAZE values required by the patent in suit. However this conclusion is incorrect for the following reasons: already the ASTM D-1044 standard (document D18) discloses that such materials were available before the priority date of the patent in suit. For example, the sixth entry in Table 1 shows that the uncoated polycarbonate listed therein has a HAZE value of 42.12% and the ninth entry shows a HAZE value for the coated polycarbonate of 4.27%, both after 100 cycles. These values comply with the requirements of the patent specification that the uncoated substrate has a HAZE value in excess of 30% and the coated substrate has a HAZE value of less than 10% after 100 cycles. See also document D20 (US-A-5 693 422), disclosing abrasion resistant coatings that are applied to substrates, e.g. by dip-coating. Abrasion resistance of the uncoated and the coated substrate is measured in accordance with ASTM D-1044 (see col. 4, l. 1-3). In Example I of D20 an uncoated polycarbonate substrate had a HAZE value, measured by Taber abrasion (300 cycles) of greater than 55% whereas the coated material had a HAZE value of 7-8% (see second entry in Table I in column 4). In Example II, the values after 300 cycles for uncoated and coated substrates were greater than 55% and 3-4% respectively; and after 500 cycles greater than 55% and 6-9% respectively. All of these values meet the requirements of the patent in suit.

Document D21 (US-B-6 250 760) discloses coatings for eyeglass lenses. Abrasion resistance of these coatings

is measured in accordance with ASTM D-1044. Example 2 discloses four coating compositions. After 200 cycles, all coatings had a HAZE value of 6.7% or less (col. 6, l. 32), with composition D being the lowest at 2.4%. At 500 cycles, composition D had a HAZE value of 5%. All of these values meet the requirements of the patent specification for the coating material. Therefore, contrary to the conclusion in the Decision, the skilled person readily had available (prior to the priority date of the patent in suit) materials meeting the requirements of the patent.

With regard to the First Auxiliary Request, the appellants maintain that claim 1 as granted would be interpreted as defining HAZE values as measured in accordance with ASTM D-1044 using 100 cycles (rather than 1000 cycles). However, even for the alternative interpretation of this Request (whereby claim 1 is held to be directed to HAZE values measured using 1000 cycles) the patent still meets the requirements of Article 100(b) EPC. One requirement of the patent in suit on this second interpretation is that the uncoated substrate has a HAZE value in excess of 30% using 1000 cycles. As demonstrated above, D18 and D20 disclose that polycarbonates having a HAZE value of 42% for 100 cycles (D18) and greater than 55% for 300 cycles (D20) were available for the skilled person. Measurement using 1000 cycles would, if anything, increase the values. Therefore uncoated substrates with a HAZE value in excess of 30% using 1000 cycles were clearly available to the skilled person. With regard to the resin coating (for which the requirement is a HAZE value less than 10% using 100 cycles) such materials were also available. Thus, for example, with regard to D21, sample D in Example 2 provided HAZE values of 2.4% and 5.0% using 200 cycles and 500 cycles respectively.

The relatively small increase in going from 200 cycles to 500 cycles would suggest that using 1000 cycles the value would still be less than 10%. Additionally, reference is made to D14 which discloses application of abrasion resistant coatings to substrates and measures abrasion resistance using a Taber Abraser using 100, 300, 600 and 1000 cycles. The coatings produced in the Examples of D14 all had HAZE values (1000 cycles) less than 10%, as required by the present patent. Thus, even on this second interpretation of the First Auxiliary Request there is compliance with the requirements of Article 100(b) EPC. Notwithstanding all of the above points, it is submitted that the Opposition Division gave undue weight to the selection of substrates and coatings for use in the invention. The patent in suit relates to a procedure for applying an abrasion resistant coating to a substrate involving inkjet printing, which involves an established technology. That is the thrust of the patent. No criticism as to sufficiency of disclosure in relation to the inkjet printing procedure has been raised and, in any event, it is fully described at, e.g., column 2 of the patent.

VI. The arguments of the respondents may be summarised as follows:

With respect to the request for correction of the specification it is strongly objected to the opinion that the value 1000 given in col. 3, l. 43 in the specification should be an obvious error in the sense that nothing else was intended. First of all, it is reminded that the application has been subjected to examination throughout the world, including a set of opposition proceedings. Yet it is now for the first time that the patentees give notice of what they hold to be an obvious mistake. Reference is made to T083/88

holding that a rigorous standard, i.e. one equivalent to "beyond reasonable doubt" should be used. In this case there is no obvious mistake and it is not obvious and definitely not beyond reasonable doubt what should be a "correct value". In the specification, see paragraphs [0007], [0023] and claim 1, reference is made to ASTM D-1044 and measurements of the HAZE value of coated and uncoated substrates. This standard (document D18) reads in para 8.2 when describing the procedure: "Mount the specimen on the specimen holder and subject it to abrasion for a selected number of cycles. Use an abrasion of 100 cycles with the 500g load, unless otherwise specified". Further studying D18, table 1 and 2 give typical values regarding precision statements based on three and ten replicates respectively. It is exemplified in the tables that coated acrylic is subjected to 1000 cycles. In fact, table 1 and 2 in D18 disclose the following number of cycles: 10, 25, 50, 100, 200, 500 and 1000. Thus, based on this information, there is no reason to suspect any mistake with the patent in suit mentioning the use of 1000 cycles. According to paragraph 10.1 in D18, the measurements reported in table 1 and 2 were made as a round robin test. There is no information about the weight of the load used in this round robin test, instead the number of cycles is identified. A reasonable interpretation of the wording "unless otherwise specified" in paragraph 8.2 is therefore that a 500 gram load was used for six different numbers of cycles, one of them being 1000 cycles. This is also what is given in the patent specification in [0023]. Following this, there is no indication that the 1000 cycles given in the patent should be a mistake, and especially not that 100 cycles should be the "correct value". Based on this, the request for correction should not be granted.

In the letter of 21 September 2009, the patentees discuss paragraph 23 of the Decision objecting that the invention is not sufficiently clear and complete for it to be carried out. It is requested that this Decision is maintained. The three documents discussed in patentees' letter do not make the specification any clearer or more complete. D18, table 1 does not disclose any measurements for 1000 cycles on an uncoated substrate. D20, newly cited by the patentees, does not disclose any HAZE value for 1000 cycles under ASTM D-1044 on an uncoated or coated substrate. It discloses 300 and 500 cycles respectively. D21, newly cited by the patentees does not disclose any HAZE value for 1000 cycles under ASTM D-1044 on an uncoated or coated substrate. It discloses 200 and 500 cycles respectively. Neither D18, nor D20 or D21 disclose ink-jet printing. Still, even if documents D18, D20 and D21 disclose uncoated and coated substrates which present certain values during abrasion tests using ASTM D1044 with a different number of cycles than set out in the patent, the question remains: how does the skilled man know what combinations of substrates and coatings to use? The patent fails to give this information. The specification sets out in para [0016] that the base substrate may be a thermoplastics or thermoset material. Examples of suitable plastics include polycarbonates, polyacrylics, polyesters and allyl carbonate. In para [0018] it is disclosed that various types of resins may be applied, e.g. polyurethanes, acrylates, siloxanes, acrylics and combinations thereof. Paragraph 3.6 in Decision T0339/05 is directly applicable to the present patent since the person skilled in the art trying to use the invention will have to "...find out merely by trial and error as to which, if any, compound meets the parameter set out in

claim 1, i.e. by proceeding on a lottery basis or by making own investigations without the shadow of any useful guidance, namely by performing a research program". The conclusion in the following two sections in that Decision is that this constitutes an undue burden and the fact that this can be done by routine experimentation is not sufficient for the subject matter claimed to meet the requirements of Article 83 EPC.

With respect to the Auxiliary Requests, the above objections equally apply against Auxiliary Request 1, since claim 1 is identical to claim 1 of the Main Request. The further Auxiliary Requests refer in addition to the thickness of the resin coating and of the substrate, respectively, or specify in addition that the resin is curable and cured by UV curing. These additional features do not help to overcome the fact that the invention is not sufficiently clear and complete for it to be carried out as required under Art. 83 EPC and Art. 100(b) EPC.

Accordingly, the appeal should be dismissed.

Reasons for the Decision

1. *Main Request*

Request for correction

- 1.1 According to Rule 140 EPC, in decisions of the European Patent Office, only linguistic errors, errors of transcription and obvious mistakes may be corrected. The Board has interpreted the appellants' request for a

correction under Rule 139 EPC as a request for correction pursuant to Rule 140 EPC. The appellants have no legitimate interest in a correction under Rule 139 because such correction would have no legal effect. It could only lead to a correction of the application documents but not to an automatic correction of the decision to grant the patent. See the discussion in J 23/03, point 2.2.

- 1.2 Claim 1 of the patent as granted includes the requirement that "...the uncoated transparent base substrate has a HAZE value as measured in accordance with ASTM D-1044 in excess of 30%, and the coated substrate has a HAZE value of less than 10%".
- 1.3 Furthermore, paragraph [0023] of the patent specification discloses "... Abrasion resistance may be measured in accordance with ASTM D-1044 in which a CS10F standard wheel having a 500 gram load is rotated 1000 times on a sample. The HAZE value of the abraded substrate may then be measured. Uncoated acrylic and uncoated polycarbonate substrates give HAZE values of around 30% and 33% respectively (the exact value depending on thickness and source of supply). Use of the invention to apply a "hard-coat" to these substrates makes it possible to reduce these HAZE values to less than the 10% maximum permitted by the ASTM specification".
- 1.4 The appellants have argued that the requirement in claim 1 that the HAZE values are measured "in accordance with" the ASTM D-1044 Standard (disclosed in document D18) implicitly requires that the CS-10F "Calibrase" wheel is rotated 100 cycles on the specimen, since the paragraph 8.2 of the procedure disclosed in this Standard specifies "...Use an abrasion

of 100 cycles with the 500-g load, unless otherwise specified" (emphasis added).

1.5 It appears that the quintessence of the appellants' arguments is that the ASTM Standard requires to apply the abrasion with a 500g load during 100 cycles, and that carrying out the abrasion procedure with a different number of cycles should be explicitly reported, for instance by explaining that the number of cycles applied is in deviation of the 100 cycles in the ASTM Standard. In support of their view the appellants have referred to document D14, which in col. 5, l. 51 - 60 discloses "...In the following examples the abrasion resistance of the coating specified is tested using a Taber Abraser according to the process set forth in U.S. Standard 26-1 (1966) Test No. 17, Method 7.15 except that the samples are tested after 100, 300, 600 and 1,000 cycles on the Abraser in place of the 100 cycles specified in the above Test".

1.6 The Board does not concur with this position of the appellants for the following reasons. Firstly, to the Board's understanding, paragraph 8.2 of the ASTM Standard only specifies that if a number of cycles different from the default value of "100" is applied, this number should be explicitly stated. That applying such a number of cycles different from 100 is feasible and is not uncommon follows directly from the Note at the end of paragraph 8.2 of D18 stating "*Note 8 - For plotting curves of light scattering versus cycles of abrasion, 10, 25, 50 and 100 cycles are recommended*". Furthermore in Table 1 added to this Standard, abrasion results for different materials are disclosed with applied numbers of cycles 10, 25, 50, 100, 200, 500 and 1000. Indeed, for instance for the case of "coated acrylic" (entries 7 and 8 of Table 1), the HAZE values

when applying a higher number of cycles of 200 and 1000 are reproduced. It is likely that the reason for applying more than 100 cycles on this particular sample is that after applying only 100 abrasion cycles its HAZE value is probably still very small, and that only after an augmented number of cycles (200, respectively 1000) a significant HAZE value (2.58%, respectively 12.79%) is obtained. On the other hand, for uncoated polystyrene (entries 1 and 2), already after 10 cycles the HAZE value has a mean value of 43.05%, and after 50 cycles it amounts to 79.17%. It is evident that with such high HAZE values, applying a number of 100 cycles is not useful. Therefore the skilled person learns from this Table that the measuring method specified in the ASTM D-1044 Standard may be applied for any number of cycles in dependence of the resistance properties of the particular specimen under test, and that the only requirement is that for applying a number of abrasion cycles different from 100 this number must be stated. This also follows from the instruction in point 9.1.3 in the Section "9. Report" which reads (9.1 Report the following information) "...Load and the number of cycles used, if other than specified in 7.2" (*this should probably read: "8.2"*).

- 1.7 Therefore already from the information provided in the ASTM D-1044 Standard itself (D18) it is clear that it is by no means imperative to apply the method for 100 cycles (*in contrast to the specifications set to the apparatus, the abrasive wheel, the photometer and the load applied, which appear to be fixed in this Standard*).
- 1.8 To support their argument the appellants had referred to document D14 which discloses in col. 5, l. 51 - 60 that the samples are tested after 100, 300, 600 and

1000 cycles in place of the 100 cycles in the "above Test". In this respect the Board follows the argument in point 20.1 of the Decision under appeal, pointing out that document D14 refers to a different Standard (U.S. Standard 26-1 (1966) Test No. 17, Method 7.15) and not to the ASTM D-1044 Standard. Since the method applied in that Standard is not known to the Board, it is not possible to draw any conclusion with respect to a prescription of a number of cycles to be applied, nor is it clear whether HAZE values obtained with the method according to the "26-1" Standard are comparable with those obtained when applying the ASTM D-1044 method.

1.9 It is therefore concluded that the skilled person does not have any reason to query the value "1000" in the phrase "...in accordance with ASTM D-1044 in which a CS10F standard wheel having a 500 gram load is rotated 1000 times" in para [0023] of the patent specification, since he gets the information that the HAZE values are obtained by executing the method of this Standard for a selected number of cycles of 1000. Indeed already in Table 1 of the ASTM Standard such a number of cycles is reported (for coated acrylic, entry 8) and, as discussed supra, applying a higher number of cycles may be expedient if surfaces/coatings of high abrasion resistance are to be tested. Since the patent specification addresses exactly such abrasion resistant hard-coats (para [0023], col. 3, l. 48 - 49), the skilled person has no reason to put the disclosure in this paragraph [0023] into question.

1.10 The appellants have also reasoned that, should the skilled person find that there was a conflict between claim 1, in which "in accordance with ASTM D-1044" would automatically imply "by applying 100 cycles", and

the description in para [0023], it would be clear to him that the disclosure in claim 1 would prevail and that the value "1000" in para [0023] was therefore in error and should be corrected.

The Board does not see any conflict between claim 1 and the disclosure in para [0023]. Both the claim and the disclosure in this paragraph specify that the HAZE values are to be measured "in accordance with ASTM D-1044". Both the claim and para [0023] specify HAZE values for the uncoated substrate "in excess of 30%" and for the coated substrate values of "less than 10%". Paragraph [0023] provides the further information that in the applied method a CS-10F standard wheel with a 500 gram load is rotated 1000 times on the sample, but this is not in conflict with claim 1, rather it provides further information which is typical for a patent specification.

1.11 In conclusion it is not apparent that the disclosure in para [0023] of the patent specification would contain an error and the request for correcting the value "1000" to "100" cannot be allowed. The Main Request is therefore not allowable.

2. *First Auxiliary Request*

2.1 According to this Request, the patent should be considered in its unamended form; the appealed Decision should be set aside and the Case should be remitted to the Department of the First Instance for considering the Grounds of Opposition under Art. 100(a) and 100(c) EPC.

2.2 The Board interprets claim 1 in the light of the further disclosure, in particular para [0023], because

this paragraph provides relevant information how the ASTM method is applied for measuring HAZE values of in excess of 30% (for the uncoated transparent substrate) and less than 10% (for the coated substrate), namely by rotating the wheel 1000 times on the sample.

It is noted that the Opposition Division in addressing the grounds of opposition under Art. 100(b) EPC and Art.83 EPC against the patent as granted similarly considered that the HAZE values specified in claim 1 were defined to be measured after 1000 cycles (points 18.2, 20.4, 20.5 of the Reasons). The Opposition Division found that the description of the patent did not contain any preferred embodiment or example and that the skilled person would not know which substrate or coating materials could be used to arrive at the HAZE values defined in claim 1. In particular the patent proprietors had not provided any evidence supporting disclosure of the required materials (point 21 of the Reasons).

2.3 Against this finding of the Opposition Division the appellants have essentially argued that the gist of the invention is not in the selection of new or unknown transparent substrate or coating materials, but the use of an inkjet printer for applying a resin to a substrate material. The requirements on the resin are specified in para [0017] and [0018] of the patent specification, further information being provided in para [0013] to [0021]. Therefore the skilled person would not be faced with a problem in redoing the invention.

2.4 Furthermore, for the materials to be applied the appellants have referred to documents D14, D18, D20 and D21 (*D20 and D21 having been filed with the appeal*),

which should illustrate that suitable materials were available to the skilled person.

2.5 The respondents have objected that, even if disregarding the fact that none of the cited documents discloses materials with the required HAZE values after 1000 cycles, the patent specification also does not provide information on the combination of substrates and coatings which could be used, apart from the generic classes of materials in para [0016] and [0018]. In particular the patent specification does not provide any information whatsoever how the HAZE values can be reduced to 2-4% and in certain cases to even lower allegedly obtained values, e.g. 1-1.5% (para [0023], col. 3, l. 52 and 53).

2.6 The appellants have cited a number of documents (D14, D18, D20, D21) in support of their view that materials with the reported HAZE values had been available before the priority date of the patent, and that the skilled person would therefore not have encountered a problem in applying these materials when redoing the claimed method. First of all, the Board has some reservations to accept that these documents can be considered as generally accessible prior art, which should be in textbooks rather than in patent documents, in particular in a long-established field of technology.

2.7 When considering these disclosures separately the Board finds:

2.7.1 As already pointed out in para 1.8 supra, document D14 discloses HAZE values obtained by following a different US Standard. Therefore the issue of whether the reported values would be comparable with those obtained by following the method in ASTM D-1044 is completely

open. In any case the type of substrates (polyethylene terephthalate, PET) differs from the examples disclosed in para [0016] of the patent specification (polycarbonates, poly-acrylics, polyesters and allyl carbonate; or glass). Furthermore in the method applied in D14 the coating compositions were prepared using a casting blade depositing a wet film, with subsequent curing, instead of inkjet printing. It is not apparent that the skilled person would have considered this document at all, since both the Standards, as well as the applied substrate material and the coating methods are different from those in the patent specification.

2.7.2 Document D18 discloses the ASTM D-1044 Standard according to which the HAZE values in the claimed method were measured. Since the patent specification makes explicit reference to this Standard the skilled person might have consulted it for further details on the applied method and would have considered the results in Table 1. With respect to the uncoated substrates (*entries 1 - 6 for polystyrene, acrylic and polycarbonate*) the respondents have objected that no results for 1000 cycles are disclosed. The Board, however, concurs with the appellants that at least in case of polycarbonate the HAZE value after 100 cycles is already >30% and falls within the terms of claim 1. For acrylic, comparing the HAZE values after 25 cycles (14.88%) and after 100 cycles (27.98%) it appears quite probable that after 1000 cycles the HAZE value would also be in excess of 30%, as defined in claim 1.

With respect to the coated surfaces (*entries 6 - 10*) document D18 does not give any information about the type of the coating material, nor about the method of applying it onto the (acrylic or polycarbonate) substrate materials. In any case, the HAZE value for

coated acrylic after 1000 cycles is 12.79%, which is not within the range defined in claim 1. The same holds for coated polycarbonate, which has a HAZE value of 27.06% after 500 cycles. Hence, according to Table 1 of document D18, both coated substrate materials (acrylic and polycarbonate) referred to in para [0023] of the patent specification have HAZE values outside the range defined in claim 1. Therefore the disclosure in this document is of no avail to the skilled person, rather he might conclude that the values defined in claim 1 were not routinely obtainable.

- 2.7.3 Document D20 had been cited by the appellants for demonstrating that uncoated polycarbonate has a HAZE value of >55% after 300 cycles abrasion in accordance with ASTM D-1044 (col. 4, l. 1 - 4; and Tables I and II), therefore its value after 1000 cycles should clearly also be in excess of 30%. The document does not give HAZE values after 1000 cycles.

According to Table I, the HAZE value for coated polycarbonate after 300 cycles Taber abrasion is 7-8%. In a further example shown in Table II, coated polycarbonate samples after 300 cycles Taber abrasion show a HAZE value of 3-4% and after 500 cycles 6-9%. Since D20 does not provide HAZE data for 1000 cycles and, in addition, the coating compositions are applied by spraying, dipping or flow coating (col. 2, l. 22 - 24), its usefulness for the skilled person attempting to redo the method defined in claim 1 by using a jet printer is in doubt.

- 2.7.4 Finally the appellants have cited document D21, where in Example 2, a polycarbonate lens having been coated with a solution "D" discloses HAZE values after 200 and 500 cycles Taber abrasion of 2.4% and 5.0%. According

to the appellants, the relatively small increase of the HAZE value from 200 to 500 cycles would suggest that going to 1000 cycles this value would still be below 10%.

However, this coating solution D includes a metal oxide colloid in sufficient concentration as to prevent mudcracking, see claim 1 and the Abstract of D21. Furthermore the coatings were applied by dipping and subsequently curing for 1.5 hours at 120°C. Since both the composition of the solution of the coating, the manner of applying it and the number of cycles differ from the method proposed in the current patent, it is not clear that the teaching of document D21 would be of any assistance to the skilled person attempting to redo the claimed method.

2.8 Therefore the documents referred to by the appellants do not substantiate the availability before the priority date of the present patent of coated substrates of the materials mentioned in the patent specification (in particular acrylic and polycarbonates) having a HAZE value of less than 10% after 1000 cycles according to ASTM D-1044, and in particular not in the range of 2-4% or even 1-1.5% as disclosed in col. 3, l. 52 and 53 of para [0023].

2.9 Furthermore, apart from disclosing values for the viscosity of the solution to be applied (para [0017]), the patent specification does not disclose information as to whether applying a coating by means of a jet printer would give comparable results as the known techniques (dipping, spraying, flow coating), since different parameters (viscosity, temperature, adherence to the substrate, hardening or curing) might influence the adherence of the coating to the substrate.

Therefore the question of whether the materials used in these prior art techniques could be used without further modification of the parameters, including post-treatment (curing or hardening), remains unanswered.

- 2.10 It is added that, as already noted in point 21 of the Decision under appeal, the patent proprietors (appellants) have not provided any evidence or comparative measurements supporting disclosure of the required materials.
- 2.11 The appellants have argued that the gist of the invention resides in an enabling technology, namely: the use of a jet printer for producing abrasion resistant coatings on a transparent substrate, and that the question of sufficiency of disclosure is therefore not related to a selection of materials. It is, however, not shown that the materials and parameters of existing coating techniques could be used in a jet printer without modification and which effect the deposition of the coating solution by jet printer on the coating would have. Furthermore, none of the prior art coatings cited by the appellants meets the requirement for the HAZE values after 1000 cycles as stated in para [0023] and defined in claim 1. Finally the patent specification does not disclose a preferred embodiment which the skilled person could use as a cue to be able to reproduce the claimed method successfully.
- 2.12 Therefore the Board concurs with the respondents that in the present case the person skilled in the art encounters a situation similar to that referred to in T0399/05, in that "...the person skilled in the art has to find out merely by trial and error as to which, if any, compound meets the parameter set out in claim 1,

i.e. by proceeding on a lottery basis or by making own investigations without the shadow of any useful guidance, namely by performing a research program".

2.13 Consequently the disclosure cannot be reproduced without undue burden (see Case Law of the Boards of Appeal, 6th edition, 2010, II.A.4.2).

2.14 In conclusion, the subject-matter of the patent specification, in particular that of claim 1, does not meet the requirements of Art. 100(b) and 83 EPC 1973.

3. *Auxiliary Requests 2 - 5*

The independent claims of these Requests are based on claim 1 of the patent as granted. They include further features, but still comprise the above definitions in terms of HAZE values. for the base substrate and surface coating. Since it has been found that the subject-matter of the patent specification does not in this respect meet the requirements of Art. 100(b) EPC 1973, this objection similarly arises against these further Requests.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



M. Kiehl

A. Klein

Decision electronically authenticated