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DECISION
of 15 January 2004

Case Number: T 0878/01 - 3.2.5
Application Number: 89112137.8
Publication Number: 0515702
IPC: B29C 49/16
Language of the proceedings: EN

Title of invention:

Method of blow-moulding a biaxially oriented polyethylene terephthalate resin bottle-shaped container

Patentee:

Yoshino Kogyosho Co., Ltd.

Opponent:

SIDEL S.A.

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 76(1), 123(2)
EPC R. 25

Keyword:

"Rule 25 EPC not a ground of opposition"
"Divisional application (extension beyond the content of the earlier application as filed: main request and first auxiliary request, yes; third auxiliary request, no)"
"Addition of subject-matter (third auxiliary request, no)"
"Novelty (second auxiliary request, no; third auxiliary request, yes)"
"Inventive step (third auxiliary request, yes)"

Decisions cited:

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Catchword:

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Case Number: T 0878/01 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 15 January 2004

Appellant: Yoshino Kogyosho Co., Ltd.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 7 June 2001
revoking European patent No. 0515702 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: W. Moser
Members: P. E. Michel
W. Widmeier

Summary of Facts and Submissions

I. The appellant (patentee) lodged an appeal against the decision of the Opposition Division revoking European Patent No. 0 515 702. The patent in suit is based on the European Patent application as filed with the publication No. 0 515 702 which is a divisional application of the European Patent application as filed with the publication No. 0 155 763 (subsequently herein referred to as the earlier application).

The Opposition Division held that the subject-matter of claim 1 of a sole request lacked novelty.

II. Oral proceedings were held before the Board of Appeal on 15 January 2004.

III. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following documents:

- (a) main request: claims 1 to 16 filed as main request on 15 December 2003; or
- (b) first auxiliary request: claims 1 to 16 filed as second auxiliary request on 15 December 2003; or
- (c) second auxiliary request: claims 1 to 16 filed as first auxiliary request on 15 December 2003; or
- (d) third auxiliary request: claims 1 to 12 filed as third auxiliary request during oral proceedings; or

- (e) fourth auxiliary request: claims 1 to 12 filed as sixth auxiliary request on 15 December 2003; or
- (f) fifth auxiliary request: claims 1 to 12 filed as seventh auxiliary request on 15 December 2003; or
- (g) sixth auxiliary request: claims 1 to 12 filed as eighth auxiliary request on 15 December 2003.

The respondent (opponent) requested that the appeal be dismissed.

IV. The following documents are referred to in the present decision:

D3: GB-A-2 108 899

D4: JP-A-56 105935 (abstract)

D5: JP-A-57 53326 (abstract)

D6: US-A-4 385 089

V. Claim 1 of the main request of the appellant reads as follows:

"1. A method of blow-moulding a biaxially-oriented polyethylene terephthalate resin bottle-shaped container comprising
biaxial-orientation blow-moulding a preform to form a primary intermediate moulded bottle-shaped piece; and forming a bottle-shaped container from the primary intermediate moulded bottle-shaped piece;
characterized in that

the primary intermediate moulded bottle-shaped piece is heated to be forcibly thermally contracted to form a secondary intermediate moulded bottle-shaped piece; and the secondary intermediate moulded bottle-shaped piece is blow moulded to form the bottle-shaped container."

Claim 1 of the first auxiliary request of the appellant differs from claim 1 of the main request in that the expression "heated to be forcibly" is deleted and the expression "while heating is conducted" is introduced after the expression "thermally contracted".

Claim 1 of the second auxiliary request of the appellant differs from claim 1 of the main request in that the expression "heated to be forcibly" is deleted and the expression "by heating" is introduced after the expression "thermally contracted".

Claim 1 of the third auxiliary request of the appellant differs from claim 1 of the main request in that the expression "at a primary blow mould temperature" is introduced after the expression "biaxial-orientation blow-moulding a preform", the expression "heated to be forcibly" is deleted, and the expression "by heating said primary intermediate bottle-shaped piece to a temperature at least 20°C higher than the primary blow mould temperature" is introduced after the expression "thermally contracted".

VI. The appellant has argued substantially as follows in the written and oral procedure:

The objection under Rule 25 EPC raised by the respondent does not constitute a ground of opposition under Article 100 EPC and so should not be considered.

The subject-matter of claim 1 of the main request does not extend beyond the content of the earlier application as filed. As disclosed in particular at page 6, lines 24 to 29, and page 9, lines 1 to 4, of the earlier application as filed, the thermal shrinkage is an active step which goes beyond natural shrinkage. This is referred to in claim 1 by the expression "heated to be forcibly thermally contracted".

The subject-matter of claim 1 of the first auxiliary request also does not extend beyond the content of the earlier application as filed. The expression "while heating is conducted" is derived from the passages in the earlier application as filed at page 2, lines 27 to 29; page 6, lines 24 to 29; page 9, lines 1 to 4 and claim 7. These passages make it clear that shrinkage takes place during heating.

The subject-matter of claim 1 of the second auxiliary request is distinguished over the disclosure of document D3 by the feature of the primary intermediate moulded bottle-shaped piece being "thermally contracted by heating"; that is, in a single step involving simultaneous contraction and heating as opposed to the two steps of the method of document D3. The claim should be construed as requiring a single step in the light of the description.

As regards the third auxiliary request, the feature of heat treatment at "a temperature at least 20°C higher

than the primary blow mould temperature" is disclosed in the earlier application and the present application as filed as an alternative to the range of 130° to 255°C. In the case of the earlier application as filed, the disclosure of this feature should be read in combination with the generic disclosure at page 2, line 25 to page 3, line 1. In the case of the present application as filed, the disclosure of this feature should be read in combination with the subject-matter of claim 1. These generic disclosures include a functional limitation of the temperature at which blow moulding takes place.

The closest prior art is document D3. The problem to be solved is to eliminate internal stress in the final bottle and thereby improve the heat stability of the container.

All the known prior art with the exception of document D6 teaches heat treatment at the same temperature as the temperature at which the preform is blow-moulded to form the primary intermediate moulded bottle-shaped piece. Document D6 teaches at column 3, line 65 to column 4, line 1 heat treatment in the range from "about the minimum effective temperature for biaxial orientation of the thermoplastic material to about 40°C above the minimum effective temperature for biaxial orientation". Such a treatment only, however, results in a partial relaxation of internal stresses as disclosed at column 4, lines 8 to 14. Document D6 thus does not offer a solution to the problem.

The subject-matter of claim 1 of the third auxiliary request thus involves an inventive step.

VII. The respondent has argued substantially as follows in the written and oral procedure:

Decision J 11/90 should be invalidated in view of the decision G 10/92. Whilst it is accepted that Rule 25 EPC is not a ground of opposition, the Board should consider this issue of its own motion under Article 114(1) EPC.

The subject-matter of claim 1 of the main request extends beyond the content of the earlier application as filed. There is no disclosure in the earlier application as filed of forcible thermal contraction. Thermal contraction occurs naturally as a direct result of a reduction in pressure.

The subject-matter of claim 1 of the first auxiliary request also extends beyond the content of the earlier application as filed. There is no disclosure in the earlier application as filed of shrinkage occurring simultaneously with heating. Rather, shrinkage occurs in the manner disclosed in document D3, that is, after the application of heat.

The subject-matter of claim 1 of the second auxiliary request lacks novelty in view of the disclosure of document D3. The construction of claim 1 contended for by the appellant is not supported by the description. The claim requires nothing other than what is disclosed in document D3, that is, that the primary intermediate moulded bottle-shaped piece is heated, as a result of which shrinkage subsequently takes place.

As regards the third auxiliary request, the feature of heat treatment at "a temperature at least 20°C higher than the primary blow mould temperature" is not disclosed in the earlier application as filed as an independent feature. The only disclosure is together with specified ranges for the two blow moulding steps.

The subject-matter of claim 1 of the third auxiliary request thus extends beyond the content of the earlier application as filed. The same objection arises in respect of the present application as filed, giving rise to an objection under Article 123(2) EPC.

The closest prior art is document D3. As shown in Table 1 of document D3, the properties of the bottle can be influenced by varying the temperature of heat treatment, higher temperatures giving rise to better results. It therefore does not involve an inventive step to choose a higher temperature. The teaching of documents D3 and D6 render the choice of a heat treatment temperature at least 20°C higher than the primary blow mould temperature obvious for the person skilled in the art.

The subject-matter of claim 1 of the third auxiliary request thus does not involve an inventive step in view of the disclosure of document D3 alone or in combination with document D6.

Reasons for the Decision

Objection under Rule 25 EPC

1. Whilst the Board and the Opposition Division have the power to examine the facts of their own motion under Article 114(1) EPC, the opposition and appeal proceedings are nevertheless restricted to the grounds of opposition as set out in Article 100 EPC. Rule 25 EPC does not constitute a ground of opposition. Thus, neither the Board, nor the Opposition Division, is competent to deal with this objection under Rule 25 EPC.

Main Request

2. *Article 76(1) EPC*
 - 2.1 At page 2, lines 27 to 29, of the earlier application as filed, in the context of a reference to an object of the invention, it is stated that "the primary intermediate molded piece is heat treated to thermally contract and deform the piece to form a secondary intermediate molded piece". In the description of the preferred embodiment, at page 4, lines 1 to 6, of the earlier application as filed, it is stated that the primary intermediate moulded bottle-shaped piece is heated at 130° to 255°C "or at a temperature which is 20°C or higher than the primary blowing mold temperature". At page 6, lines 2 to 4, of the earlier application as filed, there is a reference to "heating the primary intermediate molded bottles-shaped piece 4 to thermally shrink it". A similar disclosure occurs at page 6, lines 24 to 26, of the earlier application as filed. In the preferred example at page 9, lines 1 to 4,

of the earlier application as filed, it is disclosed that the primary intermediate moulded bottle-shaped piece was heated and thermally shrunk. Whilst claims 1 and 2 of the earlier application as filed refer to the heat treatment step, there is no reference to shrinkage.

2.2 Thus, whilst the earlier application as filed discloses that the heating of the primary intermediate moulded piece gives rise to thermal shrinkage, there is no explicit or implicit disclosure of forcible thermal contraction.

2.3 It was argued on behalf of the appellant that the earlier application as filed discloses thermal shrinkage as an active step which goes beyond natural shrinkage, and that this is what is referred to in claim 1 of the patent in suit by the expression "heated to be forcibly thermally contracted". This cannot be accepted. Firstly, it is not clear in what sense a force is applied and, secondly, the earlier application as filed does not disclose any active measures other than heating.

2.4 The subject-matter of claim 1 of the main request thus extends beyond the content of the earlier application as filed. The main request is accordingly not allowable in view of Article 76(1) EPC.

First Auxiliary Request

3. *Article 76(1) EPC*

3.1 Referring to the passages in the earlier application as filed cited at point 2.1 above, there is no disclosure

of thermal contraction occurring simultaneously with heating. There is merely a disclosure of thermal contraction occurring as a result of heating. The thermal contraction could, however, occur either simultaneously with, or subsequently to, the period during which heat is applied to the piece.

3.2 The appellant placed particular reliance in this respect on the passage at page 9, lines 1 to 4, of the description and claim 7 of the earlier application as filed. As regards the passage at page 9, lines 1 to 4, whilst the reference to a heating temperature of 225°C occurs after the term "thermally shrunk", it cannot be deduced from this order of words that the shrinkage occurs during heating. Claim 7 of the earlier application as filed specifies that heating occurs in the primary blowing mould. It does not, however, follow from this that shrinkage, which will occur when the pressure in the bottle-shaped piece is sufficiently reduced, occurs simultaneously with heating.

3.3 The subject-matter of claim 1 of the first auxiliary request thus extends beyond the content of the earlier application as filed. The first auxiliary request is thus not allowable in view of Article 76(1) EPC.

Second Auxiliary Request

4. *Novelty*

4.1 Document D3 discloses a method of blow-moulding a biaxially-oriented polyethylene terephthalate resin bottle-shaped container, in which, after the step of biaxial-orientation blow-moulding a preform to form a

primary intermediate moulded bottle-shaped piece, the piece is maintained in contact with the walls of the heated mould. After withdrawal from the mould, the piece is in a softened state and "undergoes natural shrinkage as the strain created by stress during the first stretching diminishes" (page 3, lines 36 and 37). This process is regarded by the Board as constituting the thermal contraction by heating required by claim 1.

- 4.2 It was submitted on behalf of the appellant that the feature of claim 1 of the second auxiliary request, according to which the primary intermediate moulded bottle-shaped piece is "thermally contracted by heating", distinguishes the subject-matter of the claim over the disclosure of document D3, since this feature should be construed as implying a single step involving simultaneous contraction and heating in the light of the description.
- 4.3 However, there is nothing in the description of the patent in suit which can be seen as requiring such a construction of claim 1. It is noted that the description of the preferred embodiment at column 3, line 8 to column 6, line 32 of the patent in suit as granted corresponds to the description of the preferred embodiment in the earlier application as filed, so that the arguments set out at point 3.2 above apply.
- 4.4 The subject-matter of claim 1 of the second auxiliary request thus lacks novelty in view of the disclosure of document D3.

Third Auxiliary Request

5. *Article 76(1) EPC*

5.1 The feature of heat treatment at "a temperature at least 20°C higher than the primary blow mould temperature" is disclosed in the earlier application as filed at page 4, lines 5 and 6; page 7, lines 4 and 5; page 7, lines 25 and 26, and is claimed in claim 2. It was argued on behalf of the respondent that this feature is only disclosed together with specified ranges for the two blow moulding steps. This is not accepted. The passage in the earlier application as filed at page 2, line 25 to page 3, line 1 constitutes a general statement of the features which are necessary to solve the problem stated at page 2, lines 17 to 21.

5.2 The disclosure in the description of the earlier application as filed of the preferred embodiment at the passages referred to above of heating the primary intermediate moulded bottle-shaped piece at a temperature at least 20°C higher than the primary blow mould temperature is thus seen as one of two alternative preferred parameters specifying the temperature at which the heat treatment is carried out. It is not necessary to the adoption of this feature also to adopt the preferred temperature ranges disclosed for the first and second blow moulding steps. Whilst claim 1 of the patent in suit does not specify the temperature range for the step of blow moulding to form the primary intermediate moulded bottle-shaped piece, it is noted that the temperature must be such as to enable biaxial-orientation blow moulding of PET, so that there is a functional limitation on the

temperature at which such a process step can be carried out.

5.3 The subject-matter of claim 1 of the third auxiliary request thus does not extend beyond the content of the earlier application as filed. The third auxiliary request thus complies with the requirements of Article 76(1) EPC.

6. *Content of the application as filed*

6.1 The feature of heat treatment at "a temperature at least 20°C higher than the primary blow mould temperature" is disclosed in the description of the application as filed at column 3, lines 28 to 30; column 5, lines 16 to 18 and column 5, lines 39 to 41. Whilst the paragraph at column 2, lines 35 to 51 of the application as filed specifies temperature ranges for the two blow-moulding steps, the fact that these temperature ranges are omitted from claim 1 of the application as filed is seen as an indication that these temperature ranges are not essential. It is further noted that the description of the preferred embodiment in the application as filed corresponds to that of the earlier application as filed, so that the arguments set out under point 5 above also apply.

6.2 The subject-matter of claim 1 of the third auxiliary request thus does not extend beyond the content of the application as filed. In addition, the amendments made to claim 1 restrict the protection conferred and are occasioned by a ground of opposition. The amendments to claim 1 thus comply with the requirements of Article 123(2) and (3) EPC and Rule 57a EPC.

7. *Novelty*

None of the cited prior art documents discloses a method of blow-moulding a biaxially-oriented polyethylene terephthalate resin bottle-shaped container in which the primary intermediate moulded bottle-shaped piece is thermally contracted by heating to a temperature at least 20°C higher than the primary blow mould temperature.

The subject-matter of claim 1 of the third auxiliary request is thus novel. It is further noted that novelty of claim 1 was not contested by the respondent.

8. *Inventive step*

- 8.1 The closest prior art is represented by document D3. In the method of blow-moulding a biaxially-oriented polyethylene terephthalate resin bottle-shaped container disclosed in this document, the primary intermediate moulded bottle-shaped piece "is subjected to heat treatment by maintaining it in contact with the inner surface of the first mold for a predetermined period of time" (page 2, lines 55 and 56). As described in more detail at page 2, line 56 to page 3, line 9, the heat treatment is carried out at the temperature of the inner surface of the mould, that is, at the same temperature as the blow moulding of the preform. After withdrawal from the mould, the piece "is in a softened state and undergoes natural shrinkage as the strain created by stress during the first stretching diminishes" (page 3, lines 36 and 37).

- 8.2 The object of the invention is to provide a method of blow-moulding a biaxially-oriented polyethylene terephthalate resin bottle-shaped container in which the heat resistance of the container is improved (cf. column 2, lines 28 to 30 of the patent in suit).
- 8.3 According to claim 1, this object is achieved in that the heat treatment of the primary intermediate bottle-shaped piece is carried out "by heating said primary intermediate bottle-shaped piece to a temperature at least 20°C higher than the primary blow mould temperature".
- 8.4 The cited prior art does not suggest modifying the method disclosed in document D3 by carrying out the heat treatment at a temperature at least 20°C higher than the primary blow mould temperature. Whilst Table 1 of document D3 demonstrates that the properties of the container are influenced by the temperature of the inner wall of the first mould, and that improved results in terms of resisting an increase in volume under test can be obtained by increasing the temperature of the first mould up to a temperature of 240°C, there is no suggestion of employing any temperature for the heat treatment other than that used for the first blow moulding step.
- 8.5 A similar teaching is available from documents D4 and D5, which propose retaining the intermediate bottle in the first mould after blow moulding, so that the heat treatment is carried out at the same temperature as the first blow moulding step.

- 8.6 Document D6 teaches at column 3, line 63 to column 4, line 4 heat treatment in the range from "about the minimum effective temperature for biaxial orientation of the thermoplastic material to about 40°C above the minimum effective temperature for biaxial orientation". This teaching does not, however, suggest to the person skilled in the art that the method of document D3 should be modified by carrying out the heat treatment at a temperature at least 20°C higher than the primary blow mould temperature. Indeed, the thrust of the teaching of document D6 is that, in comparison with the prior art, the duration and intensity of heat setting should be reduced (see column 4, lines 15 to 32).
- 8.7 The subject-matter of claim 1 according to the third auxiliary request thus involves an inventive step. Claims 2 to 12 are directly or indirectly appendant to claim 1 and relate to preferred embodiments of the method according to claim 1. The subject-matter of these claims thus also involves an inventive step.
9. Since the third auxiliary request is held allowable, it is not necessary to deal with the fourth, fifth and sixth auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent on the basis of the following documents:
 - (a) claims 1 to 12 submitted as third auxiliary request during oral proceedings;
 - (b) description, pages 2 to 4, submitted during oral proceedings;
 - (c) drawings, Figures 1 to 3 as granted.

The Registrar:

The Chairman:

R. Schumacher

W. Moser