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D E C I S I O N
of 19 November 2002

Case Number: T 0971/01 - 3.2.3

Application Number: 97950205.1

Publication. Number: WO 98/23396
(International)

IPC: B09B 3/00, C03C 1/00

Language of the proceedings: EN

Title of invention:

Method for producing glass from incinerated solid urban waste

Applicant:

Consorzio Ricerca Innovazione Vetro (CO.R.I.VE)

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 56, 84, 123(2)

Keyword:

"Claims - clarity (no: main and first auxiliary request)"
"Amendments - added subject-matter (yes: second and third
auxiliary requests)"
"Inventive step - obvious combination of known features
(fourth auxiliary request)"

Decisions cited:

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Catchword:

-



Case Number: T 0971/01 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 19 November 2002

Appellant: Consorcio Ricerca Innovazione Vetro
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Decision under appeal: Decision of the Examining Division 2.3.09 of the
European Patent Office dated 8 February 2001,
posted on 28 March 2001, refusing European patent
application No. 97 950 205.1 pursuant to
Article 97(1) EPC.

Composition of the Board:

Chairman: C. T. Wilson
Members: F. Brösamle
J. P. Seitz

Summary of Facts and Submissions

- I. In the oral proceedings of 8 February 2001 the examining division refused European patent application No. 97 950 205.1. The written decision was issued on 28 March 2001. The examining division argued that the subject-matter of the independent claim does not meet the requirements of Article 56 EPC in the light of
- D1: EP-A-0 577 119.
- II. Against the above decision of the examining division the applicant - appellant in the following - lodged an appeal on 25 May 2001 paying the fee on 29 May 2001 and filing the statement of grounds of appeal on 30 July 2001 together with two new claims 1 according to the **main** and the **first auxiliary request**.
- III. These claims read as follows:

(a) **Main request:**

"A method of producing homogeneous stable glass by melting in a furnace a vitrifiable feedstock composed of a mixture of dry ash from the combustion of solid urban waste in an incinerator, comprising the following steps:

- selecting, as a starting material, ash which contains silica, soda and/or magnesia in the following proportions by weight relative to the feedstock:

SiO₂:30-40%
Na₂O + K₂O:7-8%
CaO + MgO: 10-15%

- the ash containing metal oxides in proportions sufficiently low that they can be ignored,
- removing any metallic residues from the ash before the melting,
- before or during the melting, adding to the feedstock, as the sole additive, a flux constituted by any of the following compounds: Na_2O , K_2O , Li_2O , Na_2CO_3 , K_2CO_3 , Li_2CO_3 ,
- the flux being added in a proportion of between 2% and 15% by weight of the total feedstock such as to give a composition of the bath of vitreous material which has a pour point of the order of 1450°C ,
- subjecting the bath to a refining step during which it is kept at a temperature equal to said pour point for a predetermined time, and
- upon completion of the refining step, casting the vitreous material at the said temperature equal to the said pour point, so that a solidified glass is obtained which can be re-used to produce useful products such as cullet."

(b) **First auxiliary request:**

"1. A method of producing homogeneous stable glass from a vitrifiable feedstock composed of a mixture of dry ash from the combustion of solid urban waste in an incinerator, in which the ash contains silica, soda and/or potash, lime and/or magnesia, and in which the composition of the feedstock is such that, when it is

melted in a furnace, it gives a bath of vitreous material having a pour point lower than 1600°C, which is then cast and solidified into a glass which can be re-used to produce products such as cullet,

characterised in that

- the method starts with ash containing silica, soda and/or magnesia in the following proportions by weight relative to the feedstock:

SiO₂: 30-40%
Na₂O+K₂O: 7-8%
CaO+MgO: 10-15%

- the ash containing metal oxides in proportions sufficiently low that they can be ignored,

- before the melting any metallic residues are removed from the ash,

- a flux is used which is constituted by any of the following compounds: Na₂O, K₂O, Li₂O, Na₂CO₃, K₂CO₃, Li₂CO₃,

- before or during the melting, said flux is added as the sole additive to the feedstock, in a proportion of between 2% and 15% by weight of the total feedstock,

- the flux being added in such a proportion as to give a composition of the bath of vitreous material which has a pour point of the order of 1450°C,

- the bath is subjected to a refining step during which it is kept at a temperature equal to said pour point

for a predetermined time, and

- upon completion of the refining step, the vitreous material is cast at the said temperature equal to the said pouring point, so that a solidified glass is obtained which can be re-used to produce useful products such as cullet."

IV. Following the board's Communication pursuant to Article 11(2) RPBA in which the board gave its provisional opinion of the case with respect to the requirements of Articles 84 and 56 EPC the appellant submitted two further auxiliary requests (**second and third auxiliary requests**) the independent claims thereof read as follows:

(a) **Second auxiliary request:**

the feature "the ash containing...can be ignored" of the main request is replaced by:
"the ash containing heavy metal oxides and oxygenated inorganic salts of heavy metals in proportions sufficiently low that they can be ignored".

(b) **Third auxiliary request:**

the above feature of the main request is replaced by:
"the ash containing, in proportions sufficiently low that they can be ignored, the following metals in the form of their oxides or their oxygenated inorganic salts: nickel, copper, lead, zinc, chromium".

V. Oral proceedings were held before the board on 19 November 2002 in which the appellant filed a **fourth auxiliary request**, claim 1 of which reads as follows

with respect to the above feature of claim 1 of the main request:

"the ash containing the following metals in the form of their oxides or their oxygenated inorganic salts and in the following amounts: nickel 54 ppm; copper 480 ppm; lead 0.52%; zinc 0.14%, chromium 0.092%"

VI. In the oral proceedings the appellant essentially argued as follows:

- Table 1 of the originally filed documents is seen as a basis for claiming little amounts of heavy metals which can be ignored when carrying out the claimed method to produce homogeneous stable glass from ash as a starting material;

- with respect to the third auxiliary request it is observed that the heavy metals are defined and according to the fourth auxiliary request are restricted to specific amounts laid down in Table 1 of the originally filed documents;

- (D1) and (D2), namely US-A-5 041 398, are seen to be contradictory to the teachings of claim 1 of the fourth auxiliary request in that according to D1 any heavy metals are separated from the ash, however, are later recycled to the ash, and in that according to the teaching of (D2), see column 2, lines 41 to 43, 10 to 16% of cullet is added to the product to be vitrified;

- in the prior art it was not recognised that in incinerator ashes heavy metals can be missing thereby enabling the application of standard glass technology for directly vitrifying this ash without being forced

to carry out separation and recycling steps as in (D1);

- summarising, the teaching of claim 1 of the fourth auxiliary request is seen to be both novel and inventive.

VII. The appellant requested that the decision under appeal be set aside and that the patent be granted on the basis of the **main** or **first auxiliary requests** filed with the grounds of appeal on 30 July 2001 or on the basis of the **second** or **third auxiliary requests** filed on the 24 August 2002, or on the basis of the **fourth auxiliary request** filed during the present oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request and first auxiliary request*

2.1 In the Communication pursuant to Article 11(2) RPBA preparing the oral proceedings before the board the appellant was informed that the claims 1 of these requests do not meet the requirements of Article 84 EPC, in respect of the feature "metal oxides...that they can be ignored" which is clearly inconsistent with the definition of the starting material, as containing metal oxides up to 15% see contents of CaO and MgO, **which are not ignored.**

2.2 Although the board informed the appellant in the oral proceedings of this deficiency of claims 1 of the **main** and **first auxiliary request** the appellant upheld these

requests without producing arguments which convinced the board with respect to the issue of clarity.

2.3 Under these circumstances the **main** and **first auxiliary request** are not allowable for the reasons detailed in the board's above Communication pursuant to Article 11(2) RPBA, Article 84 EPC.

3. *Second and third auxiliary requests*

3.1 In both requests it is claimed that heavy metals (**second auxiliary request**) and that nickel, copper, lead, zinc and chromium (**third auxiliary request**) have so little amounts "that they can be ignored".

3.2 The appellant relied on Table I of the originally filed documents as a basis for the above feature of claims 1 of the **second/third auxiliary request**.

3.3 Table I in suit is clearly an analysis of **one specific example** of the originally filed documents according to "Test I" without, however, providing support for a **generalisation** of this example so that all heavy metals present in the ash (second auxiliary request) and nickel, copper, lead, zinc and chromium, (third auxiliary request), "can be ignored" when carrying out the claimed method to vitrify an incinerator ash into a homogeneous stable glass.

3.4 Summarising, the originally filed documents cannot serve as a clear and unambiguous source for the feature of claims 1 of the **second/third auxiliary requests** with respect to the amounts of heavy metals to be ignored so that the requirements of Article 123(2) EPC are not met. For reasons of added subject-matter the

second/third auxiliary requests are not allowable, Article 123(2) EPC.

4. *Fourth auxiliary request*

4.1 The features of claim 1 thereof are clearly based on the disclosure of Table I as originally filed without inallowable claim-broadening so that the requirements of Article 123(2) EPC are met.

4.2 Since no document is available which discloses all features of claim 1 its subject-matter is novel, within the meaning of Article 54 EPC. The crucial issue to be decided is therefore the issue of inventive step.

4.3 Claim 1 is based on an ash **free** from substantial amounts of heavy metals, see the **low amounts** set out in the claim for nickel, copper, lead, zinc and chromium, which ash is vitrified by applying **standard glass technology**, namely by adding a flux in order to obtain a homogeneous, **non-crystalline** product and to define a wished pour point, for instance in the order of 1450°C. The direct use of **standard glass technology** in the claimed method was not disputed by the appellant, see also impugned decision, page 4, second paragraph ("The inventor also stated..."). In the **absence** of remarkable amounts of heavy metals in the ash it is not surprising that only flux needs to be added, since there is no necessity to deal with heavy metals or to choose any additional substances to separate them from the ash before vitrifying or to make them harmless.

4.4 Generally speaking, the claimed method is the result of investigating the compositions of incinerator ashes by analysing them with respect to contents of any heavy

metals. No steps are defined in claim 1 to deal with ash containing heavy metals since claim 1 is clearly restricted to an ash free from heavy metals.

4.5 Analysing the starting material used in claim 1 cannot be seen as an inventive endeavour of a skilled person aware of environmental regulations since it is general knowledge that toxic end products cannot be discarded without special measurements (e.g. encapsulation...). Under these circumstances the subject-matter of claim 1 is obvious within the meaning of Article 56 EPC. Claim 1 of the fourth auxiliary request is therefore not allowable.

4.6 In this context it is irrelevant what is taught in (D1) and (D2) since both documents - in contrast to the subject-matter of claim 1 - are based on incinerator ashes comprising **non-negligible** amounts of heavy metals which necessitate specific treatment, for instance their separation before vitrifying the main constituents of the ash. (D1) and (D2) cannot have therefore a positive contribution on the assessment of inventive step of the subject-matter of claim 1 so that appellant's arguments with respect to (D1) and (D2) cannot render the claimed subject-matter nonobvious.

Order

For these reasons it is decided:

The appeal is dismissed.

The Registrar:

The Chairman:

A. Counillon

C. T. Wilson