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**Datasheet for the decision
of 12 December 2012**

Case Number: T 1231/09 - 3.3.05

Application Number: 01271279.0

Publication Number: 1345740

IPC: B27K 5/00, F26B 7/00

Language of the proceedings: EN

Title of invention:

Wood accelerating drying process based on its rheological properties

Applicants:

Empresa Brasileira de Pesquisa Agropecuária - EMBRAPA
Ecole Nationale du Génie Rural des Eaux et Forêts - ENGREF

Headword:

Drying wood/EMBRAPA

Relevant legal provisions:

RPBA Art. 12(4), 13(1)(3)

Keyword:

"Admissibility of the main and 1st auxiliary requests (no):
Resubmission of requests withdrawn during the first instance
proceedings"

"Admissibility of the 2nd and 3rd auxiliary requests (no):
claims not clearly allowable - further complex issues arising
from the amendments"

Decisions cited:

T 0361/08, T 0922/08, T 2278/08

Catchword:

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Case Number: T 1231/09 - 3.3.05

D E C I S I O N
of the Technical Board of Appeal 3.3.05
of 12 December 2012

Appellants:
(Applicants)

Empresa Brasileira de Pesquisa Agropecuária -
EMBRAPA
Parque Estacao Biologica
Edificio Sede
Plano Piloto
3o Andar CEP-70770-901 Brasilia, DF (BR)

Ecole Nationale du Génie Rural des Eaux et
Forêts - ENGREF
19, avenue du Maine
F-75732 Paris (FR)

Representative:

Grünecker, Kinkeldey
Stockmair & Schwanhäusser
Leopoldstrasse 4
D-80802 München (DE)

Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted 23 December 2008
refusing European patent application
No. 01271279.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: G. Raths
Members: B. Czech
S. Hoffmann

Summary of Facts and Submissions

- I. The appeal is from the decision of the examining division refusing European patent application No. 01271279.0.
- II. At the oral proceedings held on 10 December 2008 before the examining division, the applicants withdrew two sets of amended claims filed as main and auxiliary requests on 10 November 2008, and replaced them by a single set of claims as a sole remaining request. Amended claim 1 according to said request reads as follows:

"1. A process for accelerated drying of wood based on its rheological properties, wherein said process comprises the following stages:

*(i) gradually heating wood to be dried **in a drier** by using a controlled temperature increase, while monitoring wood and ~~surround~~ **temperatures of air in the drier**, to achieving a T_g temperature within the glass transition temperature range of lignin **wherein the T_g temperature is a temperature as determined with the help of a wood fluency test**;*

(ii) drying the wood, wherein the drying temperature is maintained within the glass transition temperature range of lignin for a period of time sufficient for the wood to attain an equilibrium moisture content which corresponds to a value up to the ambient relative humidity based upon the intended condition ~~of use~~ of the wood;

(iii) cooling the wood, whilst maintaining said ~~equilibrium~~ moisture content of the wood constant,

until a temperature inferior to said Tg temperature is attained; and

(iv) optionally, subjecting the wood to uniformity and conditioning processes before stage (iii)."

III. In the decision under appeal, the examining division expressed some reservations concerning the compliance of the claims according to the sole request then on file with the requirements of Article 123(2) EPC. The decision to refuse the application was, however, based on a reasoning according to which the application contained no disclosure enabling a determination of the temperature "Tg" or the so called "*glass temperature range of lignin*" as required by Article 83 EPC. The latter features were also objectionable under Article 84 EPC for their lack of clarity. The examining division held *inter alia* that "In view of its unclear meaning, the feature "glass transition temperature range of lignin" also fails to adequately define the matter for which protection is sought as required by Art. 84 EPC." In this context, the examining division also referred to *inter alia* document

D2: US 5 992 043 A.

IV. In their statement of grounds of appeal dated 4 May 2009, the appellants requested the grant of a patent based on one of the two sets of claims that had been filed on 10 November 2008 during the first instance proceedings, or on the basis of one of the sets of claims filed as second and third auxiliary requests under cover of the statement of grounds of appeal.

Said statement of grounds *inter alia* contained

arguments in support of the appellants' view that the claims were clear and sufficiently supported and that the disclosure of the application was enabling. In this connection, the appellants also referred the following new documents:

A1: "Dry kiln air flow design - What is it? Why is it important" by M. Sprague; WDKA; May 1997; pages 41 to 44;

A2: "Drying wood" E. Reeb; 1997; published by the University of Kentucky Cooperative Extension Service; pages 1 to 7; and

A3: "Wood and Moisture Relationships" by J. E. Reeb; 1995; published by the Oregon State University Extension Service; pages 1 to 7.

V. The appellants were summoned to oral proceedings.

In a communication issued in preparation of the oral proceedings, the board *inter alia* questioned the admissibility of the appellants' main and first auxiliary requests under Rule 12(4) RPBA in view of their earlier filing and withdrawal in the first instance proceedings, the allowability of some amendments to the claims under Article 123(2) EPC and the clarity of the claims and their support by the description.

A "key question" identified by the board was "whether or not the claims clearly express the temperature(s) actually to be used in steps i) to iii) (Article 84 EPC)". The board also pointed out that claims had "to

be clear by themselves, without having to refer to the description. This is not the case with the claims at issue." More particularly, it was "not clear from the wording of the claims how said "*glass temperature range of lignin*" is to be determined and how said "*Tg temperature*" is to be determined or selected".

Concerning the specific "*wood fluency test*" described in example 1 of the application, and the resulting "curve showing the deflection of the wood sample as a function of temperature and time", the board observed that it appeared "to describe the behaviour of the wood sample, rather than the behaviour of only one of its polymeric components (cellulose, hemi-cellulose and lignin), i.e. of the lignin contained in the wood."

The board went on as follows:

"Since it is not apparent why and how the graph representing the behaviour of the wood sample could be translated into a specific glass transition point or temperature, or a glass transition zone **of lignin** (of the specific wood investigated or of any lignin in general), it is far from clear what the expression "*glass transition temperature range of lignin*" is supposed to stand for."

"5.3.4 Last [but] not least, the graph obtained in a wood fluency test as described in example 1 of the application will depend to some extent on test parameters [on] which the application is silent, and which parameters include the heating rate and the moisture content of the wood sample tested; see e.g. the attached documents

D10: G. Östberg et al., in *Holzforschung* 44 (1990), 223-225; entire document; and

D11: G. M. Irvine, in *Tappi Journal*, May 1984, 118 to 121; entire document."

"Considering that the application is silent about these test conditions, it is not clear which graph is to be taken as a basis for determining a glass transition point, temperature or temperature range "*of lignin*". A skilled person is thus not in a position to decide whether or not operating at a given drying temperature falls within the terms of claim 1."

VI. Up to the day of the oral proceedings, the appellants neither replied to the objections raised by the board nor filed amended claims.

VII. At the oral proceedings held on 12 December 2012, the appellant maintained the main and auxiliary request as already on file, but filed two further amended sets of claims as new second and third auxiliary requests, respectively replacing the second and third auxiliary requests previously on file.

Claim 1 according to said new amended second auxiliary request reads as follows (amendments compared to claim 1 of the 2nd auxiliary request previously on file made apparent by the board):

"1. A process for accelerated drying of wood based on its rheological properties, wherein said process comprises the following stages:

(i) gradually heating wood to be dried in a drier by

using a controlled temperature increase **and a humidity equilibrium of the wood that does not allow the drying process to initiate**, while monitoring **temperatures of wood and temperatures of air in the drier, for a period of time** to achieveing a Tg temperature within the glass transition temperature range of **wood lignin**, wherein the Tg temperature is a temperature as determined **by means** ~~with the help of~~ a wood fluency test;

(ii) drying the wood, wherein the drying temperature is maintained within the glass transition temperature range of **wood lignin** for a period of time sufficient for the wood to attain an equilibrium moisture content **equal to the final humidity intended for the wood** ~~which corresponds to a value up to the ambient relative humidity based upon the intended condition of the wood~~;

(iii) cooling the wood, whilst maintaining said moisture content of the wood constant, until a temperature inferior to said Tg temperature is attained; and

(iv) optionally, subjecting the wood to uniformity and conditioning processes before stage (iii)."

Claim 1 according to said new amended third auxiliary request reads as follows (amendments compared to claim 1 of the 3rd auxiliary request previously on file made apparent by the board):

"1. A process for accelerated drying of wood based on its rheological properties, wherein said process comprises the, following steps:

(i) heating wood to be dried **in a drier** using a controlled temperature increase so that the difference between the temperature of the center and that of the surface of the piece of wood is maintained in a value

ranging from 2 to 5°C, **for a period of time** until a temperature T_g within the glass transition temperature range of **wood lignin** is achieved, while maintaining constant the wood surroundings humidity content which is in equilibrium with wood humidity (moisture) content in a level that the wood drying is not allowed to initiate;

(ii) drying wood at the temperature T_g of **wood lignin** while maintaining **air wood surroundings** humidity content constant in a level corresponding to the final wood humidity ratio content for a period of time sufficient for attaining said final wood humidity ratio which corresponds to the balance of moisture content that wood attains in response to the relative humidity and temperature of the surrounding atmosphere at the intended use environment;

(iii) cooling the wood, whilst maintaining the wood humidity content constant and equal to said final wood humidity ratio, until a temperature inferior to said T_g temperature is attained; and

(iv) optionally, subjecting the wood to uniformity and conditioning processes before step (iii)."

VIII. The appellants essentially argued as follows:

The claims according to the requests on file met all the requirements of the EPC. The amendments dealt with all the outstanding objections raised in the first instance proceedings and by the board.

As regards the new second and third auxiliary requests filed at the oral proceedings, the appellants submitted that the basis for the amendments in the application as filed could easily be ascertained. The amendment clarified all aspects of the process of the invention.

The skilled person could easily determine the glass transition temperature of a given wood, either by looking the values up in the literature or using known methods for determining the Tg of a material, or more particularly the method described in the application itself.

- IX. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims according to the main request submitted on 10 November 2008 or, alternatively, on the basis of the claims according to the (first) auxiliary request submitted on 10 November 2008, or according to one of the second and third auxiliary requests filed during the oral proceedings.

Reasons for the Decision

Admissibility of the main and first auxiliary requests

1. Main and first auxiliary requests
 - 1.1 The sets of claims according to the main and first auxiliary requests at issue in these appeal proceedings were already filed once (on 10 November 2008) during the first instance proceedings. They were, however, withdrawn in view of the objections under Articles 123(2), 83 and 84 EPC addressed at the oral proceedings before the examining division and replaced by another set of amended claims as sole request. Reference is made to the contested decision, point 7 of the Facts and Submissions, and to the minutes of said oral proceedings.

1.2 In its communication, the board addressed the fact that the claims according to the main and first auxiliary requests at issue are identical to the ones withdrawn during the oral proceedings before the examining division and questioned the admissibility of said requests under Article 12(4) RPBA.

The appellant has not, however, submitted arguments in this respect.

1.3 By withdrawing the two requests towards the end of the examination proceedings, the applicant foreclosed a decision on them by the examining division. By this course of action, these appeal proceedings are deprived of their main purpose, which is to provide a review of decisions taken by the department of first instance (see e.g. decisions T 0922/08 of 13 October 2011, point 2 of the reasons, and T 2278/08 of 20 March 2012, point 2 of the reasons). Moreover, in view of the filing and subsequent withdrawal of the requests in question at the oral proceedings before the examining division, it is clear that the main and first auxiliary requests at issue in these proceedings are "*requests which could have been presented ... in the first instance proceedings*" as referred to in Article 12(4) RPBA (see e.g. T 0361/08 of 3 December 2009, point 13, second paragraph).

1.4 Considering the specific circumstances of the case, the board, in the exercise of the discretion conferred on it by Article 12(4) RPBA, therefore decided not to admit these two requests to the appeal proceedings.

Admissibility of the second and third auxiliary requests

2. Having regard to the filing of the (new) second and third auxiliary requests at the oral proceedings before the board, it is to be noted that in the communication despatched in preparation of the oral proceedings (see points 6.1 and 6.4 thereof), the possibility of filing amended claims within a set time limit ("at least two weeks before the oral proceedings") was expressly addressed and the appellant's attention was also drawn to the provisions of Articles 12(4) and 13(1) and (3) RPBA.

2.1 However, the appellant submitted no arguments in order to justify the filing of the amended claims after the expiry of the set time limit, at the latest possible stage, namely on the day of the oral proceedings before the board.

2.2 For the board, the admissibility of the second and third requests at issue is already more than questionable for this reason alone.

3. Moreover, although some of the proposed amendments can be regarded as straightforward attempts to deal with objections under Articles 123(2) and/or 84 EPC raised in the board's communication, and can readily be checked for their prima facie allowability, i.e. their compliance with said provisions of the EPC, this is not the case for all the amendments made to the claims and certainly not for the amendment addressed in the following.

The respective claims 1 according to the two requests

at issue differ from the second and third auxiliary requests as previously on file in that the reference to "a temperature *T_g* within the glass temperature range of ***lignin***" was replaced by a reference to "a temperature *T_g* within the glass temperature range of ***wood***" (emphasis added).

4. Prima facie lack of basis for the amendments in the application as filed

4.1 Firstly, it is noted that the quoted amended wording does not stem from the claims of the application as filed (see PCT publication WO 02/49819 A1). On the contrary, claims 1, 2, 7 and 10 of the application as filed merely refer to "***the glass transition temperature of lignin***" emphasis added) or "*the T_g*". More particularly, in claim 10 "*the T_g*" is specified to have a value of "95°C (dry bulb)" when the wood to be dried is "*tauari*".

4.2 Secondly, it remains to be seen whether it is readily apparent that the description parts invoked by the appellant at the oral proceedings, i.e. pages 28 and 29, and in particular the sentence bridging pages 28 and 29, of the application as filed constitute a basis for the amendment in question.

4.2.1 Said bridging sentence reads as follows (emphasis added): "***The T_g value of the type of wood that is being submitted to the drying process may be obtained directly from available literature or determined in laboratory, preferentially, with the help of a wood fluency test in increasing temperatures and air humidity saturation.***"

4.2.2 Regarding this sentence, it is to be noted that it does **not** contain the expression "*a temperature Tg within the **glass temperature range of wood***" as contained in the amended claims 1. Moreover it is immediately preceded by a sentence reading "*In this phase, a temperature within the glass transition (Tg) range of **lignin** is used...*", i.e. not referring to the Tg or Tg range of wood.

4.2.3 Furthermore, when reading said particular sentence in context, the entire remainder of the application as filed has to be taken into account.

However, neither a "glass transition temperature of wood" nor a "glass transition temperature range" is literally referred to in the application. On the contrary, the "*glass transition temperature*", the "*Tg*" and/or "*the glass transition temperature range*" **of lignin** (and not of wood) is repeatedly referred to as a critical feature throughout the entire application as filed (see e.g. page 1, lines 7 to 9; page 18, lines 21 to 22; page 27, line 21 to 23; page 28; lines 24 to 25; page 29, line 20; page 32, lines 8 to 11; page 34, lines 2 to 4), although the concept of a "glass transition temperature of (dry) **wood**" was apparently known to the authors of the application in suit. More particularly, in the context of the acknowledgement of the prior art document D2 (US 5 992 043 A), the application as filed (page 16, line 11, to page 17, line 11) expressly refers to the "*glass transition temperature of dried wood*" as being "*the average between the temperature of lignin and of hemicellulose and which, according to literature, is normally above 150°C*", i.e. a temperature different from the glass

transition temperature of the lignin component in said wood.

In examples 1 and 2 of the application as filed reference is made to the determination of "*the glass transition temperature of **lignin** of the tauari wood*" (page 32, lines 8 to 10) and to its use in controlling the drying process (page 34, lines 3 to 4). Other, not fully consistent terminology is also used in these examples, e.g. "*transition zone*" (page 33, lines 1 to 2); "*glass transition point*" (page 33, line 7); "*glass transition range*" (page 33, lines 18 to 19); "*glass transition range of the **wood***" (page 34, line 11); "*glass transition zone*" (Figure 6).

4.2.4 Therefore, the board considers that in the context of the application as filed, the expression "*the Tg value of the type of wood*" referred to in the quoted sentence could also be understood to refer to the glass transition temperature or glass transition temperature range **of lignin** in the particular type of **wood** to be dried.

4.2.5 Checking whether, in the context of the entire application as filed, the expression "*glass transition temperature of **lignin***", as appearing in the claims of the application as filed and in all claims versions up to the day of the oral proceedings, imperatively had the intended or implicit meaning "*glass transition temperature of **wood***" is a non-trivial task of some complexity that would require a further in-depth analysis of the original disclosure of the application to this end.

4.3 The board concludes that the amended feature in question cannot *prima facie* be directly and unambiguously derived from the application in suit, not even from the sentence invoked by the appellant.

5. Increased complexity of the case due to the amendments

5.1 The amendment identified under point 3 above *prima facie* appears to give a different meaning to the respective claims 1, since the relevant temperature range in carrying out the process was changed.

5.2 The criticality of the glass transition temperature or temperature range of lignin is emphasised throughout the description (see points 4.2.2 and 4.2.3 above). Moreover, throughout the proceedings up to the oral proceedings before the board, the applicant/appellant never submitted that the glass temperature range of the wood was the relevant temperature range to be considered. On the contrary, in its statement of grounds of appeal, it expressly emphasised that the glass transition temperature of the **wet lignin** of the wood to be dried was to be considered.

5.3 For the board, the amendment proposed not only came as a surprise but also *prima facie* increased the complexity of the case with respect to the open questions concerning the clarity of the claims in terms of the glass transition temperature range actually to be considered. For instance, the claim itself does not provide clear instructions concerning the temperature range to be considered, e.g. whether the glass transition temperature of wet or dry wood (or lignin)

is to be considered, although this point was also addressed in the board's communication (point 5.3.4).

6. In summary, the proposed amendments were filed extremely late for no particular reason, comprise at least one amendment which is not clearly allowable since it cannot *prima facie* be recognised as being based on the content disclosure of the application as filed. Moreover, the complexity of the case was rather increased than reduced in terms of remaining questions relating to the meaning of the claims (clarity).

Considering all these specific circumstances, the board, in the exercise of the discretion conferred on it by Article 13(1) and (3) RPBA, therefore decided not to admit to the appeal proceedings the second and third auxiliary requests at issue.

Implication of the absence of an admissible request

7. Considering that the board found that none of the appellant's requests was admissible for the above reasons, the appeal cannot succeed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

C. Vodz

G. Raths