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(54) Title: IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD

(57) Abstract: The invention relates to a process which converts the appearance of green glass similar to the appearance of white glass. For this purpose the enamelling of glass plates used for refrigerators, washers etc., is made by serigraphy or screen printing, whereby layers of enamel are applied in succession. The first layer is a white one. Three layers are used to get colours from yellow to orange or clear rose to dark rose .

WO 2005/105689 A1

## **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**

The present descriptive report is mentioned to the certificate of addition invention of the BR-PI9905060-9, filed in 10/18/1999, under the title of the SERIGRAPHIC PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD.

### **FIELD OF APPLICATION**

The present **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, has for purpose to make possible one impression, for any way that allows on deposition uniform of the pigments that will be to compose the filter that will neutralize the green tone or similar of the glass standard, so that to obtain one high quality, preferentially, in the white color in glass plates of the type crystal standard for tempering with thickness of 3 to 6 mm, which will destine to be used in equipments electro domestics and electro electronics, know as white line, and that comprise, amongst others, stoves, refrigerators, freezers, microwave ovens, washers, and more particularly, to allow the substitution of glass of the type crystal "Extra Clair", "Optic White" or similar, that currently are used as substance basic for this application.

### **ANTECEDENTS OF THE TECHNIQUE**

As was described in the Invention Patent BR-PI9905060-9, in the serigraphic process in glass, the impression in the majority of the times is make without of

the glass; of this form, when it uses glass plate of the type crystal standard in the equipments of the white line, for that it can to attend to the requirements and necessities of the commerce, the serigraphic process may to be capable  
5 of to present one standard of the white color in correspondence perfect to the picture of the equipment, and, for this, the serigraphic process may to be capable of to neutralize, almost that completely, the effect green that normally the glass crystal standard presents, and whose  
10 intensity is directly related with the thickness of the plate of the glass crystal standard that is being impress; in others words, any green tonality that the glass crystal standard presents, for less intense that be, will intervene in the tone of the color printed, principally in the  
15 impression of white color.

The process until then know, destined the impression white in glass plates used in equipments of the line white, used as basic substance glass of the type special crystal, also know as "Extra Clair", "Optic White", or similar, that  
20 are imported, and that, had its composition, it present totally colorless, and, not intervening, of this form, in the impression, specially in the impression of the white color; however, the principal inconvenient of the utilization of this special glasses are related with your high cost of  
25 acquisition, for other side, the process until then existents didn't allow the use of the glass crystal standard, a time that this, had to the fact to preset one green tone, impeded

the attainment of the an impression of the white color, into of the standard demanded for the commerce.

In the IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD, object of the  
5 Invention Patent BR-PI9905060-9, was developed, after many searches, a solution technique satisfactory, functional, and above all economic, that did consisted fundamentally in the application of filters, whose its tonality varied in function of the intensity of the green  
10 coloration, proper of the glass of the type crystal standard, of the form to get the total neutralization of the effect decurrent of this green tonality of the glass crystal standard , principally about a impression in the white color, make possible a serigraphic impression satisfactory of the  
15 glass crystal standard, which shows to able of to present a impression standard of the white color equivalent to the white color obtained with the use of special glasses imported, of the type "Extra Clair", "Optic White" or similar.

In the IMPRESSION PROCESS APPLIED IN GLASS  
20 OF THE TYPE CRYSTAL STANDARD, object of the Invention Patent BR-PI9905060-9, was considered a serigraphic process that used the same equipments already in the conventional production lines, differentiating of the usual processes for the fact of this serigraphic  
25 impression to be obtained for the application of many filter layers, obtained from ceramic enamel layers, diluted in oily vehicle in the adequate viscosity for each purpose, being

the first a ceramic enamel layers, whose application could to be effected for manual serigraphic process, semi automatic, using a polyester screen, with adequate mesh, in function of the covering that desired to get, being this  
5 application effected about a plate of glass crystal standard, already cut, stoned, washed, for the side of the air or for the side of the bath (for the side about which the glass floats about the tin tank melted), being that after the application of this first layer of white enamel, the plate  
10 passes for the drying greenhouse, after the that were applied a second layer of ceramic enamel, in the same conditions of the before the previous phase, but with a coloration that could to vary between the rose clearly and the dark rose, being able, in some cases, to be used the  
15 orange tone, of accord with the colorimetric study of the green tone of the glass to be printed, in order to neutralize it, and, consequently, to get a color effectively white, when the impression is visualized through of the glass crystal standard, following, after the application of this second  
20 layer, again for greenhouse, for drying , being after that applied to the third white ceramic enamel layer, in the same conditions of the previous phases, and, later, the part, thus painted and tempered in oven, through of specific processes, determined as its characteristics,  
25 formats and standard ends that desired to get, being that, in special cases, could to be necessary already the application of a fourth layer of white enamel.

As known, the aspect green of the glass varies in accord with the thickness of the glass crystal standard that is being printed, and, through of colorimetric studies, can be defined the tonality and the number of ceramic enamel  
5 layers that will go to form the filters, a time that, through of the analysis of opposing colors, the more intense it will be the green tone of the glass used that is being printed, darker will have to be the tonality of the filters that will be used in the intermediate layers for that can neutralize the  
10 interference of this green tone of the glass crystal standard, for that the white color seen, through of the glass, present as being effectively white.

#### **SUMMARY OF THE INVENTION**

The present **IMPRESSION PROCESS APPLIED IN**  
15 **GLASS OF THE TYPE CRYSTAL STANDARD**, use the same principle revealed in the Invention Patent BR-PI9905060-9, however has for the principal purpose to allow its use through of any impression process; with objective of, equally, to allow the using of the equipments  
20 already existing in the conventional production line, differentiating of the previous process for the fact of this impression can be obtained through of the application of the several filters layers, from the painting of ceramic enamel, diluted in oily vehicle with adequate viscosity for  
25 each finality, being able the first white ceramic enamel layer already to receive rose pigmentation in adequate concentration, being able the your application be effected

for any manual process, semi automatic or automatic, that allow a uniform deposition of the pigment that will go to form the neutralization filter of the green tone proper of the glass crystal standard, being this application effected  
5 about the plate of glass crystal standard, already cut, stoned, washed, for the side of the air or for the side of the bath (for the side about which the glass floats about the tin tank melted), being that after the application of this first layer of white enamel, pigmented or not, the plate will to  
10 able, optionally, to pass for a drying greenhouse, to allow your drying and manipulation, to that, after, can be applied a second layer of filter of ceramic enamel, in the same conditions of the previous phase, which could to vary between the rose clearly and the dark rose, being able, in  
15 some cases, to be used the orange tone, of accord with the colorimetric study of the green tone of the glass of the type crystal standard that is being printed, of form to neutralize, and to obtain a color effectively white, when the impression is visualized through of the glass, being that,  
20 after the application of this second filter layer, the glass could to passes again for the drying greenhouse, being after that applied the third white ceramic enamel filter layer, in the same conditions of the previous phases, being that, later, the part painted and tempered in oven, through  
25 of specific processes determined as the characteristics, formats and ends standards that desires to get, being that,

in special cases, could still be necessary the application of others white enamel filter layers.

As knows the green tonality of the glass of the type crystal standard varies in accord with the your thickness, and, through colorimetric studies, will be possible to define the tonality and the number of ceramic enamel filter layers that will be applied, therefore, for the analysis of the opposite colors, the more green the tone of the glass used, more dark the tonality of the filter rose that will have be used in the layers to that can to neutralize the green tone of the crystal standard, in way to make with that the white can be seen, through of the glass, as being effectively white.

#### **BEDDINGS OF THE INVENTION**

The present **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD** consists in the application of a sequence of ceramic enamel filter layers, being the first in white ceramic enamel. Diluted in oily vehicle in the viscosity specifically adequate for each finally, which already will be able, or not, to receive rose pigmentation, in the adequate concentration to formation of a first filter, being that this application can be effected through of manual process, automatic or semi automatic, since that to allow one uniform deposition of the pigment that will go to form the filter, about the plate cut, stoned, washed, being able to be applied for the side of the air or for the side of the bath, after what the part will be able,

optionally, to pass for the second drying greenhouse, being that after applied one second ceramic enamel filter layer, in the same conditions previous phases, however in opposite tonality to the intensity of the green tone of the glass crystal standard that is being printed, being this  
5 tonality will be able to vary of the rose clearly to the dark rose, as the quantify of red pigment joined to the white ceramic enamel, pigmented or not, used in the first filter layer, after what the part will be able, or not, to pass again  
10 for the drying greenhouse, being able after that be applied a third white ceramic enamel filter layer, as applied in the first layer, to that the part can be later tempered, for processes that will be determined for the characteristics, formats and ends standard to be gotten in the finished  
15 part.

In case that it has necessity of the application of others impressions of colors in the glass crystal standard, as for example, impression in black color, ash or brow, reticulated or overlay, the process will include the  
20 application of a first white ceramic enamel filter layer, that will be able, or not, to receive rose pigmentation in the adequate concentration for formation the first filter, being that this application could be effected through of manual process, automatic or semi automatic, since that allow a  
25 uniform deposition pf pigment that will go to form the filter, about the plate already cut, stoned , washed and could be applied for the side of the air or for the side of the bath,

after what the part will be able, or not , to pass for the drying greenhouse, being after that applied a second ceramic enamel filter layer, in the same condition of the previous phase, however with a coloration that can to vary  
5 between the clearly orange tone and the dark orange, being that the attainment of this tonality will be determined for the quantify of yellow and red pigments that will be joined to the white ceramic enamel filter layer used in the previous layer, being able, optionally, to pass again for the  
10 drying greenhouse, being able already be applied a third ceramic enamel filter layer, for that the part can, after that, be tempered in oven, through of processes that are determined for the characteristics, formats and ends standards to be obtained in the part finished.

15 In any specific cases can have already the necessity of the application the others white ceramic enamel filter layers, pigmented or not, before of the part to pass for the tempering oven.

The present **IMPRESSION PROCESS APPLIED IN**  
20 **GLASS OF THE TYPE CRYSTAL STANDARD** is not limited to the practical aspects of the preferred, illustrated and described, and modifications and variations should be considered as being included into of the content of the invention, because the that imports is that through of  
25 colorimetric studies, was obtained the base of a new process for the attainment of a high quality impression of white color, used a glass type crystal standard.

## CLAIMS

1°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD, characterized** for the fact of the process to present the steps of:

5           - application of a sequence ceramic enamel filter layers, being the first in white ceramic enamel, diluted in oily vehicle in the adequate viscosity specifically adequate for each finally, which already will be able, or not, to receive rose pigmentation, in the adequate concentration  
10 to formation of a first filter, being that this application can be effected through of manual process, automatic or semi automatic, since that to allow one uniform deposition of the pigment that will go to form the filter;

          - application of one second ceramic enamel filter  
15 layer, in the same conditions previous phases, however in opposite tonality to the intensity of the green tone of the glass crystal standard that is being printed, being this tonality will be able to vary of the rose clearly to the dark rose, as the quantify of red pigment joined to the white  
20 ceramic enamel, pigmented or not, used in the first filter layer;

          - application of a third white ceramic enamel filter layer, as applied in the first layer, to that the part can be later tempered, for processes that will be determined for  
25 the characteristics, formats and ends standard to be gotten in the finished part.

2°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 1, **characterized** for the fact of the that, in case of to have in the glass crystal standard application of impression of others colors, reticulated or overlay, the process will include beyond of the application of a first white ceramic enamel filter layer, that will be able, or not, to receive rose pigmentation in the adequate concentration for formation the first filter, being that this application also could be effected through of process that allows a uniform deposition of pigment that will go to form the filter, being after that applied a second ceramic enamel filter layer, in the same condition of the previous phase, however with a coloration that can to vary between the clearly orange tone and the dark orange, being that the attainment of this tonality will be determined for the quantify of yellow and red pigments that will be joined to the white ceramic enamel filter layer used in the previous layer, being able, optionally, to pass again for the drying greenhouse, being able already be applied a third ceramic enamel filter layer, for that the part can, after that, be tempered in oven, through of processes that are determined for the characteristics, formats and ends standards to be obtained in the part finished.

25 3°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 1, **characterized** for the fact of that, in any specific cases,

will be able to have still the necessity of the application of others white ceramic enamel filter layers, pigmented or not, before of the part to pass for the temper oven.

4°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord the claim 1, **characterized** for the fact of to use plates of glass of the type crystal standard for tempering with thickness that can to vary between 3 to 6 mm.

5°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 1, **characterized** for the fact of the application of the ceramic enamel filter layer can be effected through of process of manual impression, automatic or semi automatic.

6°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 1, **characterized** for the fact of the application of the ceramic enamel filter layer can be effected about the plate of the glass crystal standard already cut, stoned and washed.

7°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 1, **characterized** for the fact of the application of the ceramic enamel filter layer can be effected for the side of the air or for the side of the bath.

8°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim

1, **characterized** for the fact of the application of the second ceramic enamel filter layer to use a tonality that will be able to vary of clearly rose to the dark rose.

9°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 8, **characterized** for the fact of the tonality of the second ceramic enamel filter layer can to vary as the quantify of red pigment joined the first ceramic enamel filter layer, already pigmented or not.

10 10°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 9, **characterized** for the fact of the quantify of red pigmented to be able to vary between 70 and 250 gram for each kilo of white ceramic enamel.

15 11°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 1, **characterized** for the fact of that, in case to have in the standard crystal glass impression applications of the others colors, reticulated or plated, the second of the ceramic enamel filter layer use a tonality that will be able to vary of clearly orange to the dark orange.

20 12°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 11, **characterized** for the fact of the tonality of the second layer of ceramic enamel filter to be able to vary as quantify of yellow and red pigments joined the first ceramic enamel filter layer, already pigmented or not.

13°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 12, **characterized** for the fact of the quantify of yellow pigment to be able between 30 and 50 grams, while  
5 that the quantify of the red pigment will be able to vary between 40 and 200 grams, for each kilo of ceramic enamel, already pigmented or not.

14°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the  
10 claim 1, **characterized** for the fact of that, in specific cases, will be able to have already the necessity of the application of one or more white ceramic enamel filter layers, pigmented or not, as applied in the filter layer previous, before of the passing of the part for the  
15 tempering oven.

15°) **IMPRESSION PROCESS APPLIED IN GLASS OF THE TYPE CRYSTAL STANDARD**, in accord with the claim 1, **characterized** for the fact of that, between the application of the ceramic enamel filter layers, pigmented  
20 or not, the power part, optionally, to pass for the drying greenhouse.

# INTERNATIONAL SEARCH REPORT

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**A. CLASSIFICATION OF SUBJECT MATTER**

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According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 086 695 A (CZECZOTA) 11 February 1992 (11.02.1992) <i>column 1, lines 8-11, column 1, line 34 - column 3, line 49.</i>	1-13
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A	EP 0 300 300 A2 (FLACHGLAS AKTIENGESELLSCHAFT) 25 January 1989 (25.01.1989) <i>column 2, line 43 - column 3, line 44.</i>	1-13
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A	US 5 193 457 A (HAHN ET AL.) 16 March 1993 (16.03.1993) <i>column 1, lines 1-24.</i>	1-13
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Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents:

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Information on patent family members

Intern	l application No.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP A 0300		none	
US A 5086695	1992-02-11	EP A1 0327436	1989-08-09
		DE D1 68902488D	1992-09-24
		FR A1 2626870	1989-08-11
US A 5193457		JP A 4279382	1992-10-05
		ES T3 2078470T	1995-12-16
		EP A1 0465307	1992-01-08
		DE T2 69112302T	1996-04-04
		DE D1 69112302D	1995-09-28
		CA A1 2045820	1991-12-31