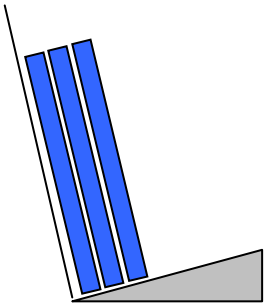
Pyrobel / Pyrobelite
Processing guide

Page n°

1. STORAGE

The same storage instructions apply to both stock and cut sizes.

- The loose glass must be stored upright, slightly inclined (6 to 10° from the vertical), but fully supported at the back and with a 90° angle.



Drawing 1.1 – Storing principle

- The cases or the loose glass must always be handled upright (picture 1.1.).

Picture 1.1.

- The non opened stock sizes cases are stored in vertical position (pictures 1.2. &1.3.).

Picture 1.2.

Picture 1.3.

1. STORAGE (cont'd)

- The cases or the loose glass must be stored in dry and ventilated conditions, not exposed to solar radiation (pictures 1.4. & 1.5.)

Picture 1.4: Box with cut sizes

Picture 1.5: A-frame with cut sizes

2. CUTTING

2.1 General

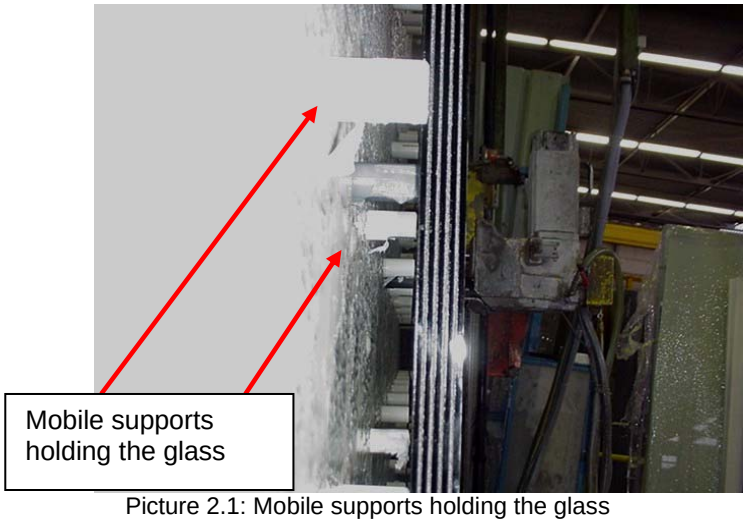
- Pyrobelite 7 can be cut as a normal laminated glass, either by hand or using a laminated glass cutting table.

- All other Pyrobel types must be sawn on multi-laminated glass sawing equipment.

- The sawing machine should be vertical, with adjustable cutting speed.

- The optimum speed must be tuned by the operator, according to the product thickness (average speed for Pyrobel 16: 0.5 m/min.).

- The back of the stock size must be fully supported to avoid vibrations (picture 2.1).
  It is recommended to clamp the two parts of the glass once cutting has started.



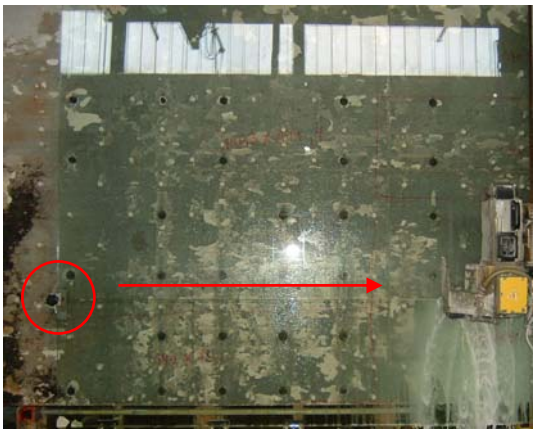
Picture 2.1: Mobile supports holding the glass

2. **CUTTING** (cont'd)

2.1.1 Vertical cuts (top to bottom):

Picture 2.2: vertical cut

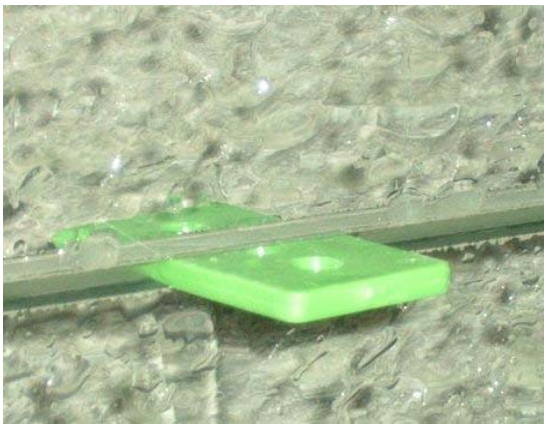
2.1.2 Horizontal cuts (left to right)



Picture 2.3: horizontal cut

- We recommend to make a first cutting line on the right edge and then to saw from left to right.

- Supporting spacers must be inserted while cutting (picture 2.4)



Picture 2.4

2. CUTTING (cont'd)

2.2 Edge arising

We recommend arising the edges of the glass, especially in case of external applications to reduce the risk of thermal cracks.

2.3 Round shapes:

The round shapes can be cut by a water jet cutting table.
Under water jet cutting, all Pyrobel EG must be cut with UV filter on the top.

2.4 Sawing machines:

Manufacturers	Product references
PUTSCH MENICONI SRL	SVP 1080
RBB DI ROBERTO BRAZZI & CO. S.N.C.	DK 2400

PUTSCH MENICONI SRL

✉ Via Irlanda 1 Bellavista
I-53036 Poggibonsi
ITALY
☎ +39-057-790311
🖷 +39-057-7979335
info@putschmeniconi.com
http://www.putschmeniconi.com

RBB DI ROBERTO BRAZZI & CO. S.N.C.

✉ Via Ortignola, 19
I-40026 Imola
ITALY
☎ +39 542 640 054
🖷 +39 542 640 639
rbb@rbbimola.com
http://www.rbbimola.com

2. CUTTING (cont'd)

2.5 Saw Blades

- Blades types and diameter must be chosen according to the saw manufacturer instructions.
- The thinner the product, the thinner (and softer) the blade must be.

Manufacturers	Product references
WENDT BOART S.A.	A/F 5015 L18CB84234
ASAHI DIAMOND INDUSTRIAL EQUIPMENT	D1F1RS 350T3.2X7 AS 25SEG #181 R1,6 H30 E2,2

WENDT BOART S.A. (Belgium)
☎ +32 2 348 32 11
🖷 +32 2 348 33 65
http://www.wendtgroup.com

ASAHI DIAMOND INDUSTRIAL EQUIPMENT
A.D.I.E. S.A.S
✉ 47, avenue d'Orléans – B.P. 841
F-28011 Chartres Cedex - France
☎ +33 02 37 24 40 40
🖷 +33 02 37 24 40 99

- Blades can be sharpened and cleaned by ad hoc stones.

2.6 Cooling water

We recommend adding a coolant to the cooling water. (Concentration 2 %)
The cooling water should be filtered if recycled.

Coolant:

Manufacturers	Product references
AACHENER CHEMISCHE WERKE GmbH.	Kühlmittelkonzentrat AC 3676

AACHENER CHEMISCHE WERKE GmbH.
✉ Adennauerstrasse 20, Europark C3
52146 Würselen - Germany
Contact names: Mr. Esser or Mr. Edmonds
☎ +49 2405 4497 0
🖷 +49 2405 4497 30
acw@chemetall.com
http://www.acw-info.com

2. CUTTING (cont'd)

2.7 Cleaning of the cut sizes

Glazing must be washed immediately after cutting, as the cooling water contains dissolved silicate which would otherwise dry and stick to the glass surface, creating white stains hard to remove afterwards.

Picture 2.5 – Dry the edge

Picture 2.6–Apply glass cleaner

Picture 2.7 –Take the water out

Picture 2.8 – Dry the glass

Picture 2.9 – Clean with wool

When a stock sheet is not fully used, the off cuts must be cleaned too.

It is possible to spray "Clearshield" or similar products on the glass surface before cutting to prevent the sticking of dried silicate onto the glass surface. Then the off-cuts can be stored away for a longer period of time; when sawed later they can be cleaned easily.

Washing machines can be used - preferably horizontal and with cold water. The water should be filtered if recycled. But even if the glass has passed through a washing machine, both surfaces must be cleaned manually.

Possible stains of silicate might be removed by using mild steel wool (type 000) combined with glass cleaner.

Possible scratches may be removed (if not too deep) by using an electrical polishing machine and cerium oxide.

3. EDGE PROTECTION PYROBEL

3.1 General

After careful cleaning and drying, the edges of the glass must be protected to avoid any further contact with water.

The following sections describe tape characteristics and application method to be strictly applied in order to comply with EN 12543-4.

The use of other tape references and/or application method is made under processor responsibility.

3.2 Tape references:

Manufacturers	Product references
KMB Klebetechnik GmbH	K-LA5025-PE200 Bi K-Aludense
Venture tape	1577CW
Vito Irmen GmbH & Co.KG	VITOMINiUM PET 230
TESA	4163

Notes:

- KMB tape references above show a better mechanical resistance than Venture tape 1577CW

KMB KLEBETECHNIK

✉ Breisenbachstrasse, 97
D-44357 Dortmund - Gemany
☎ +49 231 935 010 0
🖷 +49 231 935 010 33
http://www.kmb-klebetechnik.de/
info@kmb-klebetechnik.de

Venture Tape Europe Corp.

✉ Units 5-6, Faraday close
Drayton fields, Daventry
Northamptonshire, England NN11 8RD
☎ +44 (0) 1327 876555
🖷 +44 (0) 1327 876444
http://www.venturetape.com

VITO Irmen GmbH & Co. KG

✉ P.O. Box 1720
D-53407 Remagen - Germany
☎ +49 (0) 2642 40070
🖷 +49 (0) 2642 400763
http://www.vito-irmen.de
info@vito-irmen.de

TESA SAS
✉ 15 Rue du bois des Saints Pères
77176 SAVIGNY LE TEMPLE - France
☎ +33 1 6487 8230
http://www.tesa.com

3. EDGE PROTECTION PYROBEL (cont'd)

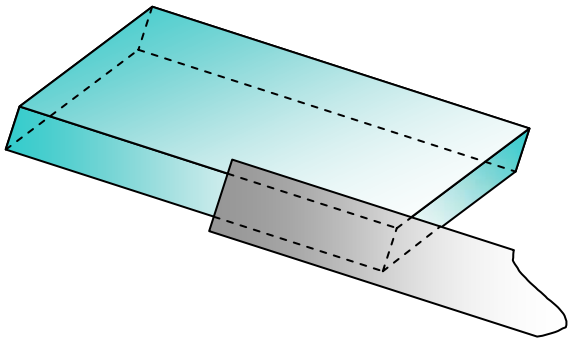
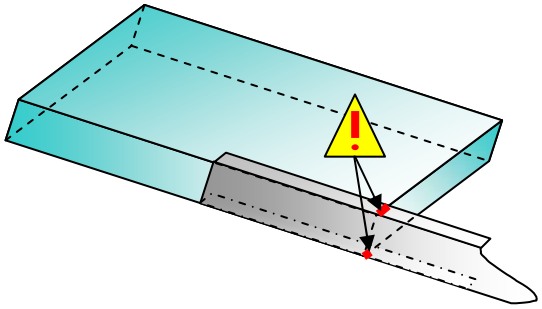
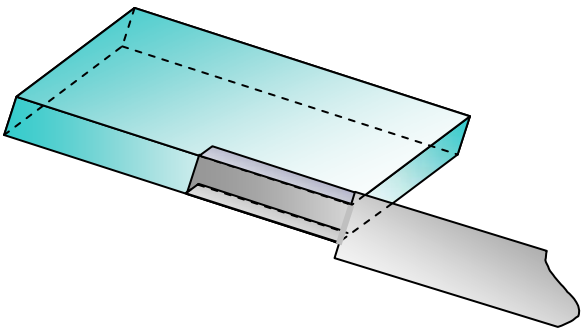
3.3 Tape width

The tape must be ca 20 mm wider than the glazing thickness, using the standard width:

Products	Tape width (mm)
Pyrobelite 7	25
Pyrobelite 10	30
Pyrobelite 12	30
Pyrobelite 13	30
Pyrobel 8	25
Pyrobel 16	35
Pyrobel 17	35
Pyrobel 17N	35
Pyrobel 21	40
Pyrobel 25	45
Pyrobel 30	50
Pyrobel 35	55
Pyrobel 53	75
Pyrobel 53N	75
Pyrobelite 7 EG / 11	30
Pyrobelite 12 EG	35
Pyrobelite 8 EG	30
Pyrobel 16 EG	40
Pyrobel 17 EG	40
Pyrobel 17N EG	40
Pyrobel 21 EG	45
Pyrobel 25 EG	50
Pyrobel 30 EG	55
Pyrobel 35 EG	60
Pyrobel 53 EG	75
Pyrobel 53N EG	75
Pyrobel 19H	40
Pyrobel 23H	45
Pyrobel 28H	50

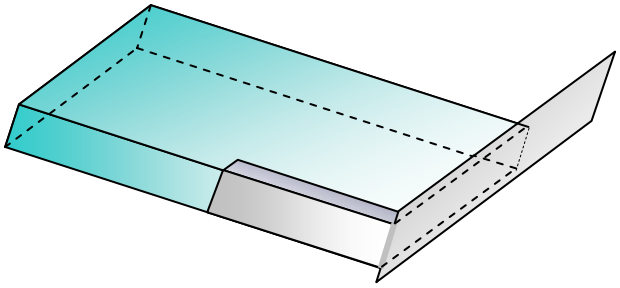
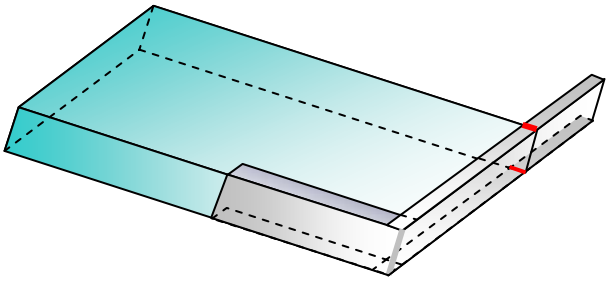
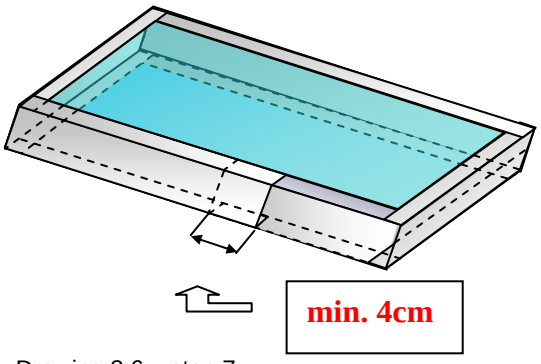
3. EDGE PROTECTION PYROBEL (cont'd)

3.4 Method for tape application

Step 1 The glass surfaces shall be perfectly clean and dry especially along the edges.	
Step 2 The tape is applied on one edge of the glass, centred in the thickness of the glass.	 Drawing 3.1. – step 2
Step 3 The tape is folded on both glass surfaces. An incision is made in the tape, ATTENTION - only the folded parts are cut (in red on the drawing).	 Drawing 3.2. – step 3
Step 4 The loose end of the tape is folded back into vertical position.	 Drawing 3.3. – step 4

3. EDGE PROTECTION PYROBEL (cont'd)

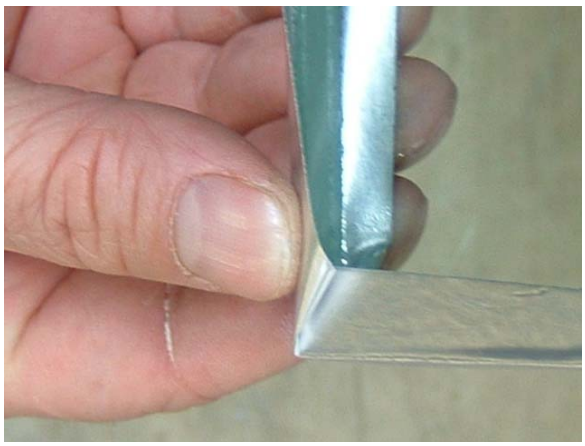
3.4 Method for tape application: (cont'd)

Step 5 The tape is applied on the second edge of glass	 Drawing 3.4. – step 5
Step 6 The tape is folded on both glass surfaces. An incision is made in the tape, ATTENTION : only the folded parts are cut (in red on the drawing)	 Drawing 3.5. – step 6
Step 7 The steps 4,5 and 6 are repeated on the two next edges of the glass. The loose end is then again applied on the first edge, covering the existing tape over several cm.	 Drawing 3.6 – step 7
Step 8 The adhesion of the tape on the glass surfaces is checked and improved by passing a piece of softwood, cloth or textile over the tape with some pressure. In this way any folds in the tape can be removed. .	 Picture 3.1. – Step 8

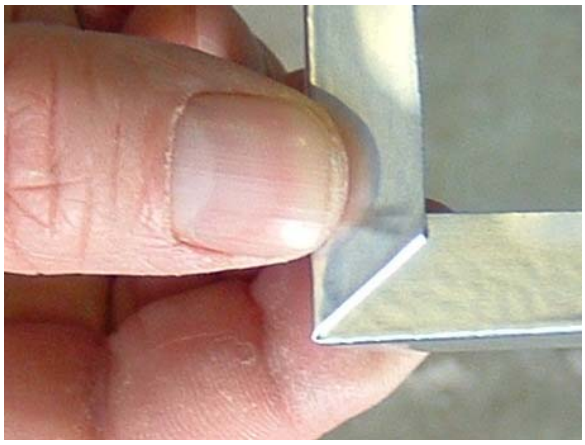
3. EDGE PROTECTION PYROBEL (cont'd)

3.5 Alternative method for tape application:

Steps 3 & 4 described above are replaced by alternative steps 3' & 4' (pictures 3.2 & 3.3). Tape is folded, no incision is made.



Picture 3.2: alternative step 3'



Picture 3.3: alternative step 4'

4. MARKING INSTRUCTIONS

4.1 General

Each glazing must be identified by a stamp (acid edge, sand blasting, laser,…) bearing at least product name & producer name

4.2 Pyrobel External Grade glazing

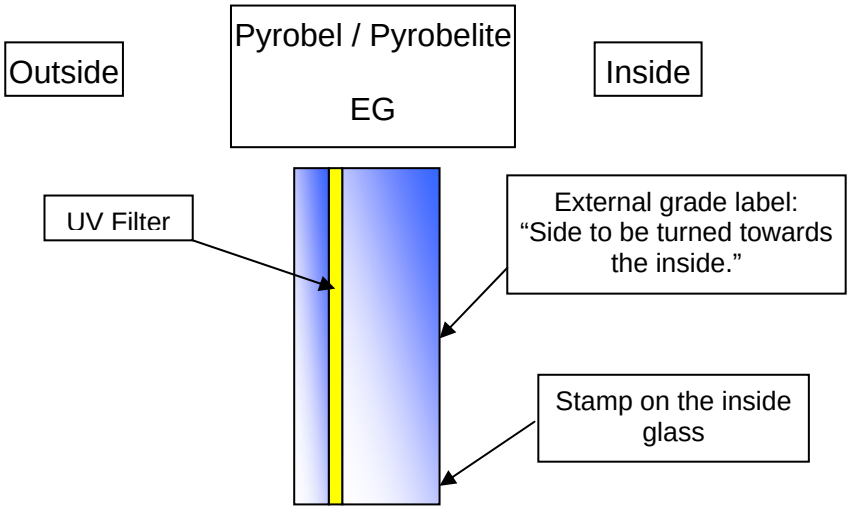
External grade glazing must be glazed with the UV filter towards the outside.

The stamp has to be applied on the glass side opposite to the UV filter, so that it can be read from inside when the glazing is installed.

External grade glazing must bear a special label that indicates its orientation to enable the glazier to make the installation correctly.

This label must be applied before sealing and taping the edges.

We recommend to apply the label on the glass side opposite to the UV filter, so that it can be read from inside by the glazier.



Drawing 4.1: Marking of the Pyrobel EG

5. PYROBEL/PYROBELITE QUALITY STANDARD

5.1 Stock sizes

Due to the nature of its process, Pyrobel and Pyrobelite stock sizes may present defects such as bubbles and impurities.
The quality of the stock size will correspond to the quality standard for cut sizes, except for the defective areas, according to EN 12543-6.

5.1.1 Marking of defects.

Each (numbered) stock-size will have its correspondingly numbered sketch, on scale 1/10 to allow the customer to control the deducted areas, and to provide a useful tool for the cut-size optimisation.

5.1.2 Allowed defects on the stock sizes

The stock sizes may present:

Table 5.1. – Allowed defects on the Stock Sizes

Allowed defects	**225 x 321 cm (Olovi & Seneffe)**
Edge deductions	• Up to 50 cm (cumulated on each dimension)
Point or linear defects[1]	• Up to 3 defects

Table 5.2. – Marking of the defects

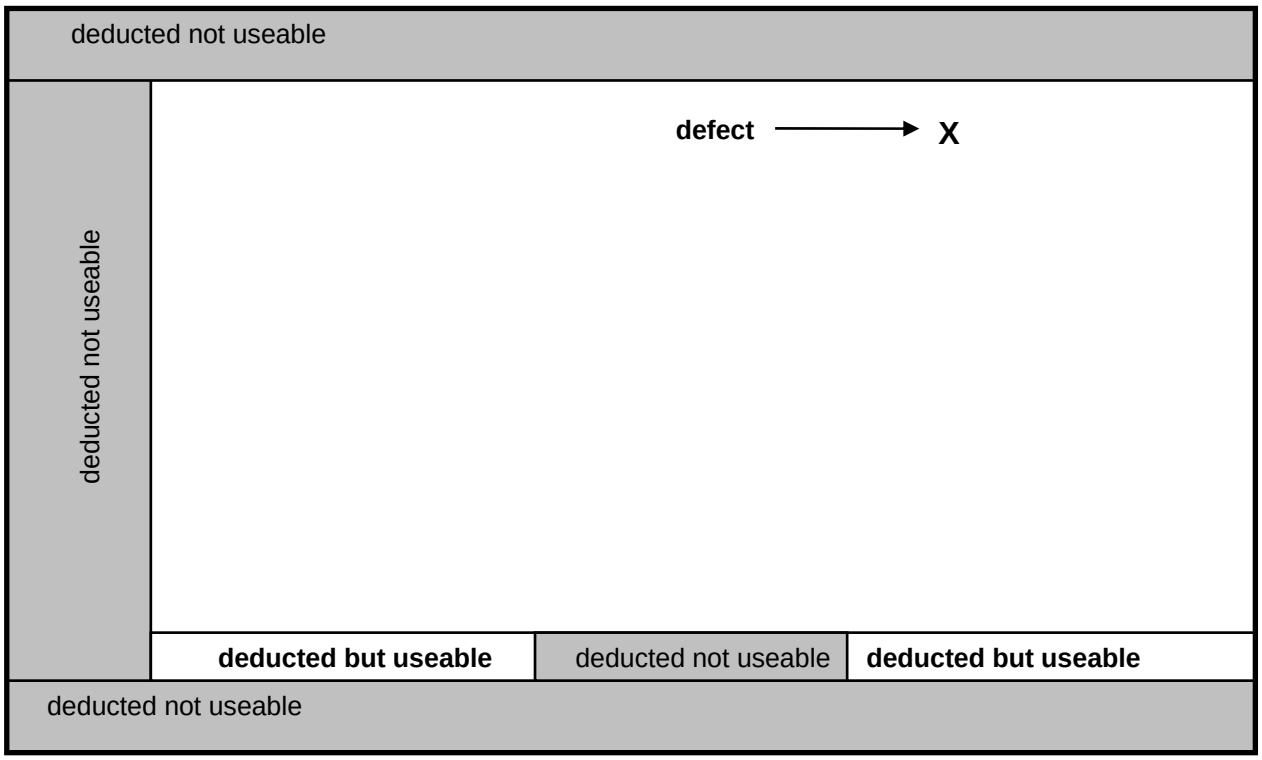
Marks on the glass	• The point defects are marked by stickers
Computer drawing	• The central defects are indicated by "x" • The non useable deducted edge area are indicated by a full line and a grey background • The useable deducted edge areas are drawn using a full line and a clear background
Deducted area per sheet	• The total deducted area in m^2 per sheet is indicated on each drawing

1 not acceptable according to EN ISO 12543-6

5. PYROBEL/PYROBELITE QUALITY STANDARD (cont'd)

5.1 Stock sizes (cont'd)

5.1.3 Example of computer drawing



Drawing 3 – Marking of the defects

- The marking of the defects by AGC Glass Europe is a non-contractual service to the stockist.
- The stockists remain responsible of the cut sizes quality towards their customers.

5.2 Cut sizes

Pyrobel and Pyrobelite are functional glasses whose optical and aesthetic appearance may exhibit:

- A light haze and/or distortion, according to its thickness;
- Small defects such as air bubbles or impurities.

These defects are to be judged according to the European Standard EN ISO 12543 Glass in building – Laminated glass and laminated safety glass.

6. MOUNTING AND GLAZING INSTRUCTIONS

6.1 Mounting

As the Pyrobel glass is part of a fire-resistant mounting, it is the responsibility of the users to ensure that the fire-resistant element as a whole satisfies the current regulations and to obtain the approval from the competent authorities.

AGC Glass Europe disclaims all liability should Pyrobel be installed in unapproved or faulty construction.

For further information, please refer to “Glazing instructions” of AGC Glass Europe.

6.2 General rules

Always refer to the fire test reports.

- avoid all glass to metal contact;
- do not exercise any restraint on glass;
- do not damage the glazed edges nor the protection tape;
- use hardwood setting blocks or equivalent; (Shore hardness A 75)
- provide an edge clearance of 4-5 mm;
- provide a lateral clearance of 4-5 mm;
- provide a rebate depth of minimum 20 mm;
- keep the rebates dry and free from aggressive products (acids, organic solvents ...)
- do not allow any contact of the glazed edges with water;
- apply a neutral silicone join or dry gasket immediately after glazing.

6.3 Outside glazing

In addition to general rules for inside glazing:

- Use an external grade structure with a UV filter, correctly orientated.
- Use a drained and ventilated frame.

Picture 6.1 – Water attack defect

Picture 6.2 – water attack defect

Do not install Pyrobel in a location where the glass temperature might exceed 50°C.

6. MOUNTING AND GLAZING INSTRUCTIONS (cont'd)

6.4. Transport, Storage and Handling

- in a dry, sheltered and ventilated place, not exposed to solar radiation;
- at temperatures between -40 °C and +50 °C;
- if in cases: these shall always remain vertical during transport and storage. In no way shall the case be placed horizontally;
- if stored on racks:

    - the feet and the back must be covered with appropriate material in order to avoid mechanical scratches;
    - the back should be slightly inclined (6° to 10 ° from vertical) with the feet being at 90° to the back of the rack;
    - the Pyrobel units shall be supported over their full height;
    - soft spacers shall be placed between each unit ;
    - not more than 20 units per stack.

7. PACKAGING OF THE STOCK SIZES

TABLE 7.1. – Olovi DLF Line – Packaging of Pyrobel(lite) Stock Sizes

OLOVI DLF			225 x 321 cm = 7.22 m² wooden case			225 x 321 cm = 7.22 m² L-Frame		
Product	mm	Kg/m²	Sheets	Total m²	Total Kg	Sheets	Total m²	Total Kg
Pyrobelite 7	8	17	16	116	1965	20	144	2456
Pyrobelite 7 EG / 11	11	25	10	72	1806	14	101	2528
Pyrobel 8	9	20	14	101	2021	18	130	2599
Pyrobel 8 EG	13	28	8	58	1617	11	79	2223
Pyrobelite 10	11	26	10	72	1872	14	101	2626
Pyrobelite 12	12	27	10	72	1950	12	87	2340
Pyrobelite 12 EG	16	35	8	58	2022	10	72	2528
Pyrobelite 13	13	20	9	65	1300	12	87	1733
Pyrobel 16	17	40	6	43	1733	8	58	2311
Pyrobel 16 EG	21	48	5	36	1733	7	51	2427
Pyrobel 17	17	40	6	44	1732	8	58	2309
Pyrobel 17 EG	21	48	5	36	1732	7	51	2425
Pyrobel 17N	18	40	6	44	1733	8	58	2310
Pyrobel 17N EG	21	48	5	36	1733	7	51	2426
Pyrobel 21	21	47	5	36	1697	7	51	2427
Pyrobel 21 EG	25	55	4	29	1588	6	43	2383
Pyrobel 25	26	60	4	29	1733	5	36	2167
Pyrobel 25 EG	30	68	3	22	1473	5	36	2456
Pyrobel 30	30	69	3	22	1495	5	36	2491
Pyrobel 30 EG	33	77	3	22	1668	4	29	2224
Pyrobel 35	35	81	3	21	1754	4	29	2338
Pyrobel 35 EG	39	89	3	21	1927	4	29	2569
Pyrobel 53[2]	52	122	2	14	1762	3	20	2478
Pyrobel 53 EG[3]	56	130	2	14	1877	3	20	2640
Pyrobel 53N	53	122	2	14	1762	3	20	2643
Pyrobel 53N EG	56	130	2	14	1877	3	20	2816

[2] dimensions 315 x 215cm = 6.77 m²/sheet
[3] dimensions 315 x 215cm = 6.77 m²/sheet

TABLE 7.2. – Seneffe DLF Line – Packaging of Pyrobel(lite) Stock Sizes

Seneffe DLF			225 x 321 cm = 7.22 m² wooden case			225 x 321 cm = 7.22 m² L-Frame		
Product	mm	Kg/m²	Sheets	Total m²	Total Kg	Sheets	Total m²	Total Kg
Pyrobelite 7	7	17	16	116	1965	20	144	2456
Pyrobelite 7 EG / 11	11	25	10	72	1806	14	101	2528
Pyrobelite 10	11	26	10	72	1872	14	101	2626
Pyrobelite 12	12	27	10	72	1950	12	87	2340
Pyrobelite 12 EG	16	35	8	58	2022	10	72	2528
Pyrobelite 13	13	20	9	65	1300	12	87	1733
Pyrobel 16	17	40	6	43	1733	8	58	2311
Pyrobel 16 EG	21	48	5	36	1733	7	51	2427
Pyrobel 17N	18	40	6	44	1733	8	58	2310
Pyrobel 17N EG	21	48	5	36	1733	7	51	2426
Pyrobel 21	21	47	5	36	1697	7	51	2375
Pyrobel 21 EG	25	55	4	29	1588	6	43	2383
Pyrobel 25	26	60	4	29	1733	5	36	2167
Pyrobel 25 EG	30	68	3	22	1473	5	36	2456
Pyrobel 30	30	69	3	22	1495	5	36	2491
Pyrobel 30 EG	33	77	3	22	1668	4	29	2224
Pyrobel 53N	53	122	2	14	1762	3	20	2643
Pyrobel 53N EG	56	130	2	14	1877	3	20	2816

8. Pyrobel WARRANTY

AGC Glass Europe S.A/N.V. guarantees its fire resistant glasses, PYROBEL and PYROBELITE, manufactured "Cut to Size" in its facilities, or by one of its authorized distributors, shall remain free from defects for a period of five years to be calculated from the date of delivery of the glass. Defects shall be recognised only by reference to the characteristics of the products described in the product data sheets published by AGC Glass Europe and applicable at the time of delivery.

The guarantee shall be null and void if the products are processed, packaged, stored, transported, installed, placed, used or maintained in a way that is not fully compliant with the recommendations of AGC Glass Europe GLAZING INSTRUCTIONS.

Due to the composition and the natural properties of the intumescent interlayers used in the manufacture of PYROBEL and PYROBELITE, the product may develop some minor imperfections such as small bubbles and slight distortion, which do not affect the free vision through the unit nor its fire resistance and shall not be considered as defect. AGC Flat Glass Europe will follow the standard EN12543-6 to inspect the PYROBEL glass upon request.

For the same reason, a variation of up to 5% of light transmission and haze shall not be considered as a defect.

As usually applied in the glass industry, the guarantee does not cover breakage. The guarantee also excludes any defect and any related damage that becomes apparent after the expiration of the guarantee period.

The guarantee shall apply only after AGC Glass Europe has had the opportunity to assess the existence of the defects and, under the scope of the guarantee, AGC Glass Europe shall supply free of charge, at the same place of delivery as that of the original supply, in same quantity and size, the defective PYROBEL or PYROBELITE. **ANY OTHER COSTS OR DAMAGES ARE HEREBY EXCLUDED UNDER THE GUARANTEE.**

The guarantee shall apply only to glasses handled, transported, stored and installed in accordance with normal procedures applied in the glass industry and in particular with AGC Glass Europe instructions (see PYROBEL brochure and AGC Glass Europe GLAZING INSTRUCTIONS).In particular, the warranty shall not apply in one of the following cases:

- The fire resistant construction element and its placement do not meet the current regulations or the requirements or recommendations of AGC Glass Europe**;**
- The glass has been damaged or modified by crumbling, cutting, sawing, edge working, application of films or anti-solar varnishes, deliberate or accidental mistreatment, in transport, storage or incorrect maintenance or contrary to AGC Glass Europe's recommendations;
- The edge protection has been altered or removed;
- The edge of the glazing has been in contact with water, liquid or aggressive materials;
- Water (condensation or infiltration) has been allowed to stagnate in the frame;
- The glass has been exposed to abnormal stresses or temperatures, e.g. storage in the vicinity of radiators or other heat sources;
- The glass has been exposed to temperature exceeding 50°C or below –40 °C;
- Internal grade glasses have been exposed to direct U.V. radiation.

The present guarantee is given to the exclusion of any other, implicit or explicit guarantee. Any deviation, extension, amendment or modification shall be valid only upon a written bilateral and specific agreement.

The present guarantee is governed by Belgium law or by Czech Republic law depending on the place of the manufacturing of the products.