GEVACRIL

Cast and Extruded Acrylic Tubes, Rods, Bars, Balls

Quality description for cast acrylic tubes[1]

Contents

[1] In the whole text as QS. Our QS is written in conformity with the norms ISO 9002

Preface

Our QS has been valid since 1994. Purpose of this certification is to guarantee the excellent quality of every single tube.
The strict quality control during the production process and a constant improvement of the production technologies allowed the standardisation of the quality of the cast acrylic tubes.

1 Material features

Cast acrylic tubes are polymerized plastic semi-finished products. They are got through casting and centrifugation and they are known as cast acrylic tubes. After the production process they are clear and bright both on the internal and the external wall. High purity, brightness and transparency are their most important characteristics; besides they are very resistant against weather conditions: the above mentioned features remain unalterable over years[2].

2 Quality description

The QS - quality description - includes following contents: optical quality; thermic features; weather resistance; tolerances; delivery condition.

2.1 Optical quality

Cast acrylic tubes are transparent and have a clear bright internal and external wall. They are free of any kind of tracks or deep scratches. In spite of this some optical defects are not to avoid while looking sidelong through the tubes. Following defects are admitted:

- orange peel effect[3];
- see table 1:

[2] See 2.3 on weather resistance
[3] So long these defects do not alter the optical qualities of brightness and transparency on the whole tube

Table 1: Admitted defects

Defect group	Superficial scratch mm	Rings on the internal wall	Bubbles, foreign bodies, filaments mm²	max. number of defects admitted on 300 mm. of tube
A	≤ 1,0	many[4]	≤ 1,0	many[5]
B	> 1,0 – 2,0	*	> 1,0 – 2,0	5 LD (B)
C	> 2,0 – 5,0	*	> 2,0 – 5,0	1 MD (C) + 2 LD (B)[6]
D	> 5,0 – 25,0	*	> 5,0 – 25,0	1 BD (D)[7]

Table l: A = negligible defect; B = little defect (LD); C = medium defect (MD); D: big defect (BD)[8].

Following defects are not admitted:

- Deep scratches;
- Unpolymerized stuff in the material bigger than 10 mm.²;
- rests of polishing material.

2.2 Thermic features

As acrylic glass is characterised by particularly long molecules, the cast acrylic tubes remain in a solid state until 110 °C. Above this temperature they get softer and softer and can be formed at about 150-200 °C.
After warming them as indicated in the table 2 following defects do not have to appear:

- internal bubbles;
- orange peel effect;
- ice effect (internal cracks);
- rings or yellowing effect.

[4] So long these defects do not alter the optical qualities of brightness and transparency on the whole tube
[5] So long these defects do not alter the optical qualities of brightness and transparency on the whole tube
[6] Minimal distance: MD to LD = > 100 mm
[7] On the entire tube (2.000 mm.)
[8] The data on the admitted defects are based on internal tests made by Gevacril srl

Table 2: Warming of cast acrylic tubes

Thickness mm.	Time min.	Temperature °C
till 6	30	160
8	40	160
10 to 15	50	160

Besides, after warming the tubes as indicated in the table 2 following results are expected:

- disfigurement on the heads of the tube: < 2%;
- yellowing effect on the heads of the tube: ≤ 1,2% (Method AP2-MP/PA92:002);
- minimal monoaxial deformation at 160 °C: 300%;
- minimal biaxial extension at 160 °C:100%.

2.3 Weather resistance

Weather resistance after 10 years open air in Melzo (Milan)

- minimal resistance: 60 MPA;
- light absorbtion: ≤ 2%;
- yellowing effect: ≤ 1%.

2.4 Tolerances

In order to guarantee an excellent standard quality the cast acrylic tubes are controlled many times during the production process. Tubes that show worse values than those indicated in the table 3 do not get through the quality control and are systematically rejected.

Table 3: Tolerances

External diameter (mm.)	Thickness 3-10 mm. (mm.)	Thickness 6 to 15 (mm.)	External diameter	Length	Conicity (mm./Lfm)	Oval-shape on the external diameter	Oval-shape on the internal diameter
40	± 1	*	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
50	± 1	*	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
60	± 1	±1,5	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
64	± 1	±1,5	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
70	± 1	±1,5	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
76	± 1	±1,5	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
80	± 1	±1,5	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
90	± 1	±1,5	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
100	± 1	±1,5	+1%,-0,5%	±0,1%	max 0,6	0,3%	0,1%
110	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
115	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
120	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
125	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
134	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
139	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
150	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
160	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
164	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
170	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
185	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
200	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
230	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
220	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
240	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
250	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
260	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
300	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
350	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
400	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%
500	± 1	±1,5	±0,5%	±0,1%	max 0,6	0,3%	0,1%

2.4 Delivery conditions

2.4.1 Packing

Every single tube is packed as follows:

- from ∅ 40 to ∅ 300 in PE film
- from ∅ 350 to ∅ 500 in PE bubble film

2.4.2 Delivery packing

Cast acrylic tubes are set on wooden pallets and packed in cardboard boxes. The standard delivery packing include:

- wood base (Palette);
- cardboard box;
- the tubes – packed as in 2.4.1 - are wrapped up in PE film and sealed with plastic tape.

The tubes are delivered in standard cardboard boxes which measures are adapted to the volume of the tubes.

2.5 Identification

2.5.1 Product identification

A label on every acrylic tube - as in 2.4.1 - indicates:
- product;
- external diameter;
- internal diameter;
- length;
- day, month, year of production;
- quality control approval.

2.5.2 Identification of the delivery crates

A label on every delivery case – as in 2.4.2 – indicates:

- destination address;
- case number;
- detailed case content.

Ask for more information by fax at 0039 02 95737357 or by mail at info@gevacril.com[9]

[9] The information given refers only to the specific products indicated in the QS. Gevacril considers this information wright, reliable and in conformity to the specific technical information available on the market at the moment of their printing but do not give any guaranty for them and for any kind of application or processing of the above mentioned products