



GEVACRIL®

Sales Handbook

2014

GEVACRIL SRL

Strada Vic. Paolina 1
20066 Melzo
Italy

T +39.02.95737351

F +39.02.95737357

E info@gevacril.com

GEVACRIL ACRYLICS

Uferstrasse 1
69120 Heidelberg
Germany

T +49.6221.752652

F +49.6221.752653

E info@gevacril.com

Table of Contents

| | |
|---|----------|
| B) QUALITY& STANDARDS | 3 |
| 1 QUALITY STANDARDS..... | 3 |
| 1.1 <i>Quality Management System</i> | 3 |
| 2 APPROVALS | 4 |
| 2.1 <i>Food Contact: Declaration of Compliance</i> | 4 |
| 2.2 <i>Fire Ratings</i> | 5 |
| 3 QUALITY DESCRIPTIONS..... | 6 |
| 3.1 <i>Cast Acrylic Tubes</i> | 6 |
| 3.1.1 <i>Cast Acrylic Metallic Tubes</i> | 13 |
| 3.2 <i>CAST CONTINUED® Tubes</i> | 18 |
| 3.3 <i>Extruded Acrylic Tubes</i> | 23 |
| 3.4 <i>Extruded Acrylic Satin, Opal Tubes</i> | 28 |
| 3.5 <i>Extruded Polycarbonate Tubes</i> | 32 |
| 3.6 <i>Cast Acrylic Rods and Bars, FLUOR-ACRYL® Rods and Bars</i> | 36 |
| 3.7 <i>Extruded Acrylic Rods, Extruded FLUOR-ACRYL® Rods, extruded Half-round Rods, Bars, Triangle Bars</i> | 43 |
| 3.8 <i>High Impact Acrylic Clear Profiles</i> | 48 |
| 3.9 <i>Acrylic Injection Balls</i> | 52 |

B) QUALITY& STANDARDS

1 Quality Standards

1.1 Quality Management System

Since our management philosophy is to satisfy 100% the customer's needs, we have been striving for constantly improving our high quality standards.

DIN and ASTM are the most famous international renowned institutes of standardization that set a series of standard norms on experience and tests base, which products have to meet in order to reach a good market quality.

We know that all our products meet the severe standard norms given by these two institutes, but in order to show you the processes that lead to our excellent quality we decided to put them down: the result is the

QUALITY DESCRIPTION SYSTEM (QS)

which we wrote also in conformity with the DIN EN ISO 9001: every product has to respect all control criteria of the QS before its quality is approved. Find our quality description documents in this chapter starting from § 3.

2 Approvals

2.1 Food Contact: Declaration of Compliance

Our acrylic semi-finished products in PMMA comply with the appropriate regulation, Commission Regulation 10/2011 (and following amendments 1282/2011 and 1183/2012)¹, and FDA REGULATION 21 CFR § 177.1010, and are manufactured according to the plastic supplier's specifications. Complying with these regulations they do not transfer or migrate their constituents to quantities which could endanger human health or bring about an unacceptable change in the composition of the foodstuffs².

| Approvalor Regulation | Title/Institute | Description | Products | Validity |
|---------------------------------|--|-------------------------------------|--|---------------|
| Commission Regulation 10/2011 | The composition of the products complies with the appropriate regulation | Valid in all the European Community | GEVACRIL® XT TUBES PMMA GEVACRIL® XT SATIN TUBES GEVACRIL® CAST- CONTINUED® TUBES GEVACRIL® CAST TUBES GEVACRIL® XT RODS, HALF-ROUND RODS, BARS, TRIANGLE BARS GEVACRIL® CAST RODS GEVACRIL® CAST BARS GEVACRIL® CAST DOMES GEVACRIL® CAST BALLS | until revoked |
| FDA Regulation 21 CFR § 177.101 | The composition of the products complies with the appropriate regulation | Valid for the USA | GEVACRIL® XT TUBES PMMA GEVACRIL® XT SATIN TUBES GEVACRIL® CAST- CONTINUED® TUBES GEVACRIL® CAST TUBES GEVACRIL® XT RODS, HALF-ROUND RODS, BARS, TRIANGLE BARS GEVACRIL® CAST RODS GEVACRIL® CAST BARS GEVACRIL® CAST DOMES GEVACRIL® CAST BALLS | until revoked |

¹ This regulation, which is a specific measure within the Regulation EC 1935/2004) substitutes and updates previous regulations like DIRECTIVE 90/128/EEC, COMMISSION BASIS DIRECTICE 76/769/EWG, COMMISSION DIRECTIVE 2002/95/EG, COMMISSION DIRECTIVE 2003/11/EG, ILRS-list (former VD-list 232-101)

² This Declaration of Compliance applies to all our products mentioned here and delivered in their standard semi-finished form. It does not apply to finished or transformed articles. Should any of our semi-finished products in any way be processed, glued, heat-formed, assembled or molded it is responsibility of the fabricator (or of those who have transformed them) to ensure observation of the existing laws. The information in this Declaration of Compliance is based on our knowledge and experience. It does not release the user from the obligation of carrying out tests and trials, in view of the many factors that may affect processing and application; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.

2.2 Fire Ratings

| Country/ Certificate | Class | Extruded PMMA | Extruded PC | Cast PMMA |
|------------------------------------|---------|------------------|----------------|--------------|
| Austria | B1 | | | |
| | B2 | all | all | all |
| France NF P 92 501& P 92 505 | M1 | | | |
| | M2 | | | |
| | M3 | | | |
| | M4 | all | all | all |
| Germany DIN 4103 | B1 | | | |
| | B2 | all | all | all |
| | B3 | | | |
| Italy CSE/RF 2/75A | Class 1 | | | |
| | Class 2 | | | |
| | Class 3 | | | |
| | Class 4 | all | all | all |
| | Class 5 | | | |
| Switzerland | V | | | |
| | IV | all | all | all |
| | III | | | |
| The Netherlands NEN 3883 | Class 1 | | | |
| | Class 2 | | | |
| | Class 3 | | | |
| | Class 4 | all | all | all |
| United Kingdom BS 476, Part 6,7 | Class 0 | | | |
| | Class 1 | | | |
| | Class 2 | | | |
| | Class 3 | | | |
| | Class 4 | all | all | all |
| USA UL 94 | V-0 | | | |
| | V-1 | | | |
| | V-2 | | | |
| | HB | all | all | all |

3 Quality Descriptions

3.1 Cast Acrylic Tubes

Quality Description for Cast Acrylic Tubes³

Contents

| | |
|---|----|
| Preface | 7 |
| 1 Material features | 7 |
| 2 Quality description | 7 |
| 2.1 Optical quality | 7 |
| 2.2 Thermic features | 8 |
| 2.3 Weather resistance | 9 |
| 2.4 Tolerances | 10 |
| 2.5 Delivery conditions | 11 |
| 2.5.1 Packing | 11 |
| 2.5.2 Delivery packing | 11 |
| 2.6 Identification | 12 |
| 2.6.1 Product identification | 12 |
| 2.6.2 Identification of the delivery crates | 12 |

³ In the whole text as QS. Our QS is written in conformity with the norms ISO 9001

Preface

Our QS has been valid since 1994. Purpose of this certification is to guarantee an 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 cast acrylic tubes.

1 Material features

Cast acrylic tubes are polymerized plastic semi-finished products. They went 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 years⁴.

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 effect⁵;
- see table 1:

⁴ See 2.3 on weather resistance

⁵ 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 mm ² | max. number of defects admitted on 300 mm of tube |
|--------------|------------------------|----------------------------|--|---|
| A | ≤ 1,0 | many ⁶ | ≤ 1,0 | many ⁷ |
| 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) ⁸ |
| D | > 5,0 – 25,0 | * | > 5,0 – 25,0 | 1 BD (D) ⁹ |

Table I: A = negligible defect; B = little defect (LD); C = medium defect (MD); D: big defect (BD)¹⁰.

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 table 2, following defects do not have to appear:

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

⁶ So long these defects do not alter the optical qualities of brightness and transparency on the whole tube.

⁷ So long these defects do not alter the optical qualities of brightness and transparency on the whole tube.

⁸ Minimal distance: MD to LD = > 100 mm.

⁹ On the entire tube (2.000 mm.).

¹⁰The 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: $\leq 1,2\%$ (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: $\leq 2\%$;
- yellowing effect: $\leq 1\%$.

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 Cast Tubes

| Ext. Ø mm | Standard Length mm | Thickness mm | Tolerance External Ø mm | Tolerance Thickness 3-10 mm | Tolerance Thickness 12-15 mm | Length | Coni-city mm/m | Oval shape OD | Oval shape ID |
|-----------|--------------------|----------------------|-------------------------|-----------------------------|------------------------------|--------|----------------|---------------|---------------|
| 40 | 2000 | 3;4 | +1%,-0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 44 | 2000 | 3;4;5 | +1%,-0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 50 | 2000 | 3;4;5;6 | +1%,-0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 60 | 2000/2100 | 3;4;5;6;7;8;10 | +1%,-0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 64 | 2000/2100 | 3;4;5;6;7;8;10 | +1%,-0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 70 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | +1%,-0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 76 | 2000 | 3;4;5;6;7;8;10;12-15 | +1%,-0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 80 | 2000 | 3;4;5;6;7;8;10;12-15 | +1%,-0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 90 | 2000 | 3;4;5;6;7;8;10;12-15 | +1%,-0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 100 | 2000 | 3;4;5;6;7;8;10;12-15 | +1%,-0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 102 | 2000 | 3;4;5;6;7;8;10 | +1%,-0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 110 | 2000 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 115 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 120 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 125 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 127 | 2000/2100 | 3;4;5;6;7;8;10 | ± 0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 134 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 139 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 150 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 153 | 2000 | 3;4;5;6;8;10 | ± 0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 160 | 2000 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 164 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 170 | 2000 | 3;4;5;6;7;8;10;12-15 | ± 0,5% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 185 | 2000 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 200 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 215 | 2000 | 3;4;5;6;8;10 | ± 0,5% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 220 | 2000 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 230 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 240 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 250 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 260 | 2000 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 270 | 2000/2100 | 3;4;5;6;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 300 | 2000/2100 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 300 | 3100 | 4;5;6 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 300 | 4100 | 5 | ± 0,3% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 350 | 2100 | 3;4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |

| | | | | | | | | | |
|-----|------|--------------------|--------|-----|-------|-------|---------|------|------|
| 400 | 2050 | 4;5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 450 | 2100 | 4;5;6;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 457 | 2100 | 4;5;6;8;10 | ± 0,3% | ± 1 | / | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 500 | 2050 | 5;6;7;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 550 | 2100 | 4;5;6;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |
| 610 | 2100 | 5;6;8;10;12-15 | ± 0,3% | ± 1 | ± 1,5 | ±0.1% | max 0,6 | 0,3% | 0,1% |

2.5 Delivery conditions

2.5.1 Packing

Every single tube is packed as follows:

- from Ø 40 to Ø 300 in PE film
- from Ø 350 to Ø 610 in PE bubble film

2.5.2 Delivery packing

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

- wood base (Palette);
- cardboard box; the tubes – packed as in 2.5.1 - 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.

2.6 Identification

2.6.1 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.

2.6.2 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.com¹¹

¹¹ The information given refers only to the specific products indicated in the QS. Gevacril considers this information right, 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.

3.1.1 Cast Acrylic Metallic Tubes

Quality Description for Cast Acrylic Metallic Tubes¹²

Contents

| | |
|---|----|
| Preface | 14 |
| 1 Material features | 14 |
| 2 Quality description | 14 |
| 2.1 Optical quality | 14 |
| 2.2 Thermic features | 15 |
| 2.3 Weather resistance | 15 |
| 2.4 Tolerances | 16 |
| 2.5 Delivery conditions | 16 |
| 2.5.1 Packing | 16 |
| 2.5.2 Delivery packing | 16 |
| 2.6 Identification | 17 |
| 2.6.1 Product identification | 17 |
| 2.6.2 Identification of the delivery crates | 17 |

¹² In the whole text as QS. Our QS is written in conformity with the norms ISO 9001.

Preface

Our QS has been valid since 2005. Purpose of this certification is to guarantee the excellent quality of every single Acrylic MetallicTube.

The strict quality control during the production process and a constant improvement of the production technologies allowed the standardisation of the high quality of our Acrylic MetallicTubes.

1 Material features

Acrylic MetallicTubes are polymerized plastic semi-finished products. They went through casting and centrifugation and they are known as Acrylic MetallicTubes. After the production process they have a shimmering metallic outer wall and have a perfectly smooth surface. High purity and brightness are their most important characteristics.

2 Quality description

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

2.1 Optical quality

Acrylic MetallicTubes have a metallic shimmering surface and are produced in different colours. 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:

- some optical pigment alterations¹³;
- see table 1:

¹³ This effect is due to the centrifugation. Some pigment alteration in form of a ring may occur on the surface. This should not alter the optical quality of the entire tube.

Table 1: Admitted defects

| Defect group | Superficial scratch mm | Rings or spots on the external wall | Bubbles, foreign bodies, filaments mm ² | max. number of defects admitted on 300 mm of tube |
|--------------|------------------------|-------------------------------------|--|---|
| A | ≤ 1,0 | many ¹⁴ | ≤ 1,0 | many ¹⁵ |
| B | > 1,0 – 2,0 | some | > 1,0 – 2,0 | 5 LD (B) |
| C | > 2,0 – 5,0 | some | > 2,0 – 5,0 | 1 MD (C) + 2 LD (B) ¹⁶ |
| D | > 5,0 – 25,0 | * | > 5,0 – 25,0 | 1 BD (D) ¹⁷ |

Table I: A = negligible defect; B = little defect (LD); C = medium defect (MD); D: big defect (BD)¹⁸.

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. Due to the pigments, we advise to use the Acrylic Metallic Tubes only by a service temperatures < 80 C.

2.3 Weather resistance

Acrylic Metallic Tubes can be used either indoor or outdoor. They have a good weather resistance and are UV stabilized. In spite of this the presence of the pigments into the chemical composition could have a limited resistance in time and may cause some colour changes.

¹⁴ So long these defects do not alter the optical qualities of brightness and transparency on the whole tube.

¹⁵ So long these defects do not alter the optical qualities of brightness and transparency on the whole tube.

¹⁶ Minimal distance: MD to LD = > 100 mm.

¹⁷ On the entire tube (2.000 mm.).

¹⁸ The data on the admitted defects are based on internal tests made by Gevacril srl.

2.4 Tolerances

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

Table 2: Tolerances Metallic Tubes

| External Ø mm | Standard Length mm | Thickness mm | Tolerance on External Ø mm | Tolerance in Thickness mm |
|---------------|--------------------|--------------|----------------------------|---------------------------|
| 50 | 2000 | 3 | +1%,-0,5% | ± 1 |
| 70 | 2000 | 3 | +1%,-0,5% | ± 1 |
| 100 | 2000 | 3 | +1%,-0,5% | ± 1 |
| 150 | 2000 | 3 | +1%,-0,5% | ± 1 |
| 215 | 2000 | 3 | +1%,-0,5% | ± 1 |

2.5 Deliveryconditions

2.5.1 Packing

Every single tube is packed as follows:

- from Ø 50 to Ø 215 in PE film

2.5.2 Deliverypacking

Acrylic metallic tubes are set on wooden pallets and packed in cardboard boxes. The standard delivery packing includes:

- wood base (Palette);
- cardboard box;
- the tubes – packed as in 2.5.1 - 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.

2.6 Identification

2.6.1 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.

2.6.2 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.com¹⁹

¹⁹ The information given refers only to the specific products indicated in the QS. Gevacril considers this information right, 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.

3.2 CAST CONTINUED[®] Tubes

Quality Description for CAST CONTINUED[®] Tubes²⁰

Contents

| | |
|--|----|
| Preface | 19 |
| 1 Material features | 19 |
| 2 Quality description | 19 |
| 2.1 Optical quality | 19 |
| 2.2 Thermic features | 20 |
| 2.3 Weather resistance | 21 |
| 2.4 Tolerances | 21 |
| 2.5 Delivery conditions | 22 |
| 2.5.1 Packing | 22 |
| 2.5.2 Delivery packing | 22 |
| 2.6 Identification | 22 |
| 2.6.1 Product identification | 22 |
| 2.6.2 Identification of the delivery pallets | 22 |

²⁰ In the whole text as QS. Our QS is written in conformity with the norms ISO 9001

Preface

Our QS has been valid since January 2004. 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 manufacturing and controlling technologies allowed the standardisation of the quality of the CAST CONTINUED[®] tubes.

1 Material features

CAST CONTINUED[®] acrylic tubes are polymerized plastic semi-finished products. They are got through casting and they are known as CAST CONTINUED[®] 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 years²¹.

2 Quality description

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

2.1 Optical quality

CAST CONTINUED[®] 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 effect²²;
- see table 1:

²¹ See 2.3 on weather resistance.

²² 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, foreignbodies, filaments mm ² | max. number of defects admitted on 300 mm of tube |
|--------------|------------------------|----------------------------|---|---|
| A | ≤ 1,0 | many ²³ | ≤ 1,0 | many ²⁴ |
| B | > 1,0 – 2,0 | some | > 1,0 – 2,0 | 5 LD (B) |
| C | > 2,0 – 5,0 | some | > 2,0 – 5,0 | 1 MD (C) + 2 LD (B) ²⁵ |
| D | > 5,0 – 25,0 | * | > 5,0 – 25,0 | 1 BD (D) ²⁶ |

Table 1: A = negligible defect; B = little defect (LD); C = medium defect (MD); D: big defect (BD)²⁷.

Following defects are not admitted:

- Deep scratches;
- Unpolymerized stuff in the material bigger than 10 mm.²;
- rests of polishing material which alter the optical quality of the tube.

2.2 Thermic features

As acrylic glass is characterised by particularly long molecules, the cast continued[®] tubes remain in a solid state until 100 °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;
- yellowing effect.

Table 2: Warming of cast acrylic tubes

| Thickness mm | Time Min. | Temperature °C |
|--------------|-----------|----------------|
| till 5 mm | 20 | 150 |

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

- disfigurement on the heads of the tube: < 5%;
- yellowing effect on the heads of the tube: ≤ 3,2% (Method AP2-MP/PA92:002).

²³ So long these defects do not alter the optical qualities of brightness and transparency on the whole tube.

²⁴ So long these defects do not alter the optical qualities of brightness and transparency on the whole tube.

²⁵ Minimal distance: MD to LD = > 100 mm.

²⁶ On the entire tube (2.000 mm.).

²⁷ The data on the admitted defects are based on internal tests made by Gevacril srl.

2.3 Weather resistance

Weather resistance after 5 years open air in Melzo (Milan)

- minimal resistance: 60 MPA;
- light absorption: $\leq 2\%$;
- yellowing effect: $\leq 1\%$.

2.4 Tolerances

In order to guarantee an excellent standard quality the CAST CONTINUED® 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 CAST CONTINUED® Tubes

| External Ø mm | On Thickness 3,4,5 mm | On External Ø | In Length | On Conicity (mm/mtr) | Oval-shape on the ext. Ø | Oval-shape on the internal Ø |
|------------------|-----------------------------|---------------------|--------------|----------------------------|--------------------------------|------------------------------------|
| 150 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 185 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 200 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 220 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 230 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 240 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 250 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 260 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 270 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 300 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |
| 350 | ± 1 | ±0,5% | -0, +20 mm | max 0,6 | 0,3% | 0,1% |

2.5 Delivery conditions

2.5.1 Packing

Every single tube is packed as follows:

- from Ø 150 to Ø 300: PE film.

2.5.2 Delivery packing

Cast continued[®] acrylic tubes are set on wooden pallets and packed in cardboard boxes. The standard delivery packing includes:

- wood base (Palette);
- cardboard box for different tubes;
- the tubes – packed as in 2.5.1 - 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.

2.6 Identification

2.6.1 Product identification

A yellow label on every acrylic tube - as in 2.4.1 - indicates:

- product;
- external diameter;
- internal diameter;
- length;
- production charge;
- quality control approval.

2.6.2 Identification of the delivery pallets

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.com²⁸.

²⁸ The information given refers only to the specific products indicated in the QS. Gevacril considers this information right, 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.

3.3 Extruded Acrylic Tubes

Quality Description for Extruded Acrylic Tubes²⁹

Contents

| | |
|---|----|
| Preface | 24 |
| 1 Material features | 24 |
| 2 Quality description | 24 |
| 2.1 Optical quality | 24 |
| 2.2 Tolerances | 24 |
| 2.3 Delivery conditions..... | 27 |
| 2.3.1 Packing | 27 |
| 2.3.2 Delivery packing | 27 |
| 2.4 Identification | 27 |
| 2.4.1 Product identification..... | 27 |
| 2.4.2 Identification of the delivery crates/boxes | 27 |

²⁹ In the whole text as QS. Our QS is written in conformity with the norms ISO 9001.

Preface

Our QS for extruded acrylic tubes in PMMA has been valid since the year 2000. 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 extruded (xt) acrylic tubes.

1 Material features

Extruded acrylic tubes in PMMA are polymerized plastic semi-finished products. They are manufactured through the process of extrusion. After the production process they are clear and bright both on the internal and the external wall³⁰. High purity, brightness and transparency are their most important characteristics; besides they are very resistant against weather conditions and ageing, since the optical quality and the light transmittance remain unchanged over years.

2 Quality description

2.1 Optical quality

Extruded acrylic tubes are absolutely colourless and have a clear internal and external wall. They are free of bubbles, filaments, foreign bodies. In spite of this, the manufacturing process of extrusion causes some light stripes which are visible from a short distance. These stripes are admitted but should not condition the optical quality and the transparency of the entire tube.

Following defects are not admitted:

- Deep scratches;
- Bubbles, inclusions or foreign bodies, unpolymerized stuff in the material bigger than 2 mm²/meter;
- crazing effect.

2.2 Tolerances

In order to guarantee an excellent standard quality the extruded acrylic tubes are controlled many times during the production process. Tubes that show worse values than those indicated in the table 1 do not get through the quality control and are systematically rejected.

³⁰ This information refers only to the extruded acrylic clear tubes.

Table 1: Tolerances for XT Tubes

| External Ø mm | Standard Length mm | Units per Batch | Thickness mm | Tolerance on External Ø mm | Tolerance in Thickness mm |
|---------------|--------------------|-----------------|--------------|----------------------------|---------------------------|
| 5 | 2000 | 50 | 1 | ± 0,3 | ± 0,20 |
| 7 | 2000 | 50 | 1 | ± 0,3 | ± 0,20 |
| 8 | 2000 | 25 | 2 | ± 0,3 | ± 0,20 |
| 10 Ø | 2000 | 25 | 1,5/2/3 | ± 0,3 | ± 0,20/0,25/0,30 |
| 12 Ø | 2000 | 25 | 1/2/3 | ± 0,3 | ± 0,20/0,25/0,30 |
| 13 | 2000 | 25 | 1,5/2/3 | ± 0,3 | ± 0,20/0,25/0,30 |
| 15 Ø | 2000 | 25 | 1/2/2,5/3 | ± 0,3 | ± 0,20/0,25/0,30/0,35 |
| 16 | 2000 | 25 | 2 | ± 0,3 | ± 0,25 |
| 18 | 2000 | 25 | 2/3 | ± 0,3 | ± 0,25/0,30 |
| 19 | 2000 | 25 | 2 | ± 0,3 | ± 0,25 |
| 20 Ø | 2000 | 5 | 1/2/3 | ± 0,3 | ± 0,20/0,25/0,30 |
| 22 | 2000 | 5 | 2/3 | ± 0,3 | ± 0,25/0,30 |
| 24 | 2000 | 5 | 2/3 | ± 0,5 | ± 0,25/0,30 |
| 25 Ø | 2000 | 5 | 2/3 | ± 0,5 | ± 0,25/0,30 |
| 26 | 2000 | 5 | 2/3 | ± 0,5 | ± 0,25/0,30 |
| 28 | 2000 | 5 | 2/3 | ± 0,5 | ± 0,25/30 |
| 30 Ø | 2000 | 5 | 2/3/4/5 | ± 0,5 | ± 0,25/0,30/0,35/0,40 |
| 32 | 2000 | 5 | 2/3/4/5 | ± 0,5 | ± 0,25/0,30/0,35/0,40 |
| 34 | 2000 | 5 | 2/3/4/5 | ± 0,5 | ± 0,25/0,30/0,35/0,40 |
| 36 | 2000 | 5 | 2/3/4/5 | ± 0,5 | ± 0,25/0,30/0,35/0,40 |
| 38 | 2000 | 5 | 3 | ± 0,5 | ± 0,30 |
| 40 Ø | 2000 | 1 | 2/3/4/5 | ± 0,8 | ± 0,25/0,30/0,35/0,40 |
| 44 | 2000 | 1 | 2/3/4/5 | ± 0,8 | ± 0,25/0,30/0,35/0,40 |
| 45 | 2000 | 1 | 2/3 | ± 0,8 | ± 0,25/0,30 |
| 50 Ø | 2000 | 1 | 2/3/4/5 | ± 0,8 | ± 0,25/0,30/0,35/0,40 |
| 56 | 2000 | 1 | 2/3/4/5 | ± 0,8 | ± 0,25/0,30/0,35/0,40 |
| 60 Ø | 2000 | 1 | 2/3/4/5 | ± 0,8 | ± 0,25/0,35/0,35/0,40 |
| 64 | 2000 | 1 | 2/3/4/5 | ± 0,8 | ± 0,25/0,35/0,35/0,40 |
| 70 Ø | 2000 | 1 | 2/3/4/5 | ± 0,8 | ± 0,30/0,35/0,40/0,45 |
| 76 Ø | 2000 | 1 | 3/4/5 | ± 0,9 | ± 0,35/0,40/0,45 |
| 80 Ø | 2000 | 1 | 2/3/4/5 | ± 0,9 | ± 0,30/0,35/0,40/0,45 |
| 90 Ø | 2000 | 1 | 3/4/5 | ± 0,9 | ± 0,35/0,40/0,45 |
| 100 Ø | 2000 | 1 | 2/3/4/5 | ± 1,2 | ± 0,30/0,35/0,40/0,45 |
| 110 Ø | 2000 | 1 | 3/4/5 | ± 1,2 | ± 0,35/0,40/0,45 |
| 120 Ø | 2000 | 1 | 2/3/4/5 | ± 1,2 | ± 0,30/0,35/0,40/0,45 |
| 125 | 2000 | 1 | 3/5 | ± 1,3 | ± 0,35/0,45 |
| 130 | 2000 | 1 | 3/4/5 | ± 1,3 | ± 0,35/0,40/0,50 |

| | | | | | |
|-------|------|---|-------|-------|------------------|
| 133 Ø | 2000 | 1 | 3/5 | ± 1,3 | ± 0,35/0,50 |
| 134 | 2000 | 1 | 3/4/5 | ± 1,3 | ± 0,35/0,40/0,50 |
| 140 | 2000 | 1 | 3/4/5 | ± 1,4 | ± 0,40/0,45/0,50 |
| 150 Ø | 2000 | 1 | 3/4/5 | ± 1,5 | ± 0,40/0,45/0,50 |
| 160 Ø | 2000 | 1 | 3/4/5 | ± 1,5 | ± 0,40/0,45/0,50 |
| 170 | 2000 | 1 | 3/4/5 | ± 1,5 | ± 0,40/0,45/0,50 |
| 180 Ø | 2000 | 1 | 3/4/5 | ± 1,5 | ± 0,40/0,50/0,55 |
| 200 Ø | 2000 | 1 | 3/4/5 | ± 2,0 | ± 0,40/0,50/0,55 |
| 220 | 2000 | 1 | 3 | ± 2,0 | ± 0,40 |
| 230 | 2000 | 1 | 4/5 | ± 2,0 | ± 0,50/0,55 |
| 250 Ø | 2000 | 1 | 3/4/5 | ± 2,0 | ± 0,40/0,50/0,55 |

2.3 Delivery conditions

2.3.1 Packing

Type of packing:

- PE stretch-film.

Packing unit:

The tubes are packed in bundles until an O.D. of 60 mm.; every tube is single packed starting from an O.D. of 70 mm.

2.3.2 Delivery packing

Extruded acrylic tubes are set on wooded pallets. The standard delivery packing include:

- wooden base (Palette);
- the tubes – packed as in 2.3.1 - are wrapped up in PE film and sealed with plastic tape.

The tubes are delivered in standard wooden pallets which are adapted and optimised to the volume of the goods ordered.

2.4 Identification

2.4.1 Product identification

A label on every acrylic tube indicates:

- product;
- external diameter;
- internal diameter;
- length;
- day, month, year of production;
- quality control approval.

2.4.2 Identification of the delivery crates/boxes

A label on every delivery case – as in 2.3.2 – indicates:

- destination address
- detailed case content.

For more information contact us at info@gevacril.com³¹

³¹ The information given refers only to the specific products indicated in the QS. Gevacril considers this information right, 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.

3.4 Extruded Acrylic Satin, Opal Tubes

Quality description for Extruded Acrylic Satin & Opal Tubes³²

Contents

| | |
|---|----|
| Preface | 29 |
| 1 Material features | 29 |
| 2 Quality description | 29 |
| 2.1 Optical quality | 29 |
| 2.2 Tolerances | 30 |
| 2.3 Delivery conditions | 30 |
| 2.3.1 Packing | 30 |
| 2.3.2 Delivery packing | 31 |
| 2.4 Identification | 31 |
| 2.4.1 Product identification | 31 |
| 2.4.2 Identification of the delivery crates/boxes | 31 |

³² In the whole text as QS. Our QS is written in conformity with the norms ISO 9001.

Preface

Our QS for extruded acrylic satin & opal tubes has been valid since the year 2000. 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 every extruded acrylic satin & opal tubes.

1 Material features

Extruded acrylic satin & opal tubes are polymerized plastic semi-finished products. They are manufactured through the process of extrusion of special diffuser beads. After the production the material has a satin surface both on the internal and the external wall³³. The optimal diffusion of light, translucency and a lower grade of scratching are their most important characteristics; besides they are very resistant against weather conditions and ageing, since the optical quality and the light transmittance remain unchanged over years.

2 Quality description

2.1 Optical quality

Extruded acrylic satin & opal tubes have a frosted, opal or coloured surface and an intensive translucency, both on the internal and external wall. They are free of bubbles, filaments and foreign bodies. In spite of this, the manufacturing process of extrusion causes some light stripes which are visible from a short distance. These stripes are admitted but should not condition the optical quality and the transparency of the entire tube.

Following defects are not admitted:

- Deep scratches;
- Bubbles, inclusions or foreign bodies, unpolymerized stuff in the material bigger than 2 mm²/meter;
- crazing effect.

³³ This information refers only to the extruded acrylic satin & opal tubes.

2.2 Tolerances

In order to guarantee an excellent standard quality the extruded acrylic tubes are controlled many times during the production process. Tubes that show worse values than those indicated in table 1 do not get through the quality control and are systematically rejected.

Table 1: TolerancesXT acrylic satin & opal tubes

| External Ø mm | Strd. length* mm | Units per batch | Thickn. mm | Min. Qty. | satin | opal | Tolerance External Ø mm | Tolerance Thickness mm |
|---------------|------------------|-----------------|------------|-----------|-------|------|-------------------------|------------------------|
| 40 | 2000 | 1 | 3 | 5 | – | x | ± 0,8 mm | ± 0,30 mm |
| 50 Ø | 2000 | 1 | 3 | 5 | x | x | ± 0,8 mm | ± 0,30 mm |
| 60 Ø | 2000 | 1 | 3 | 5 | x | x | ± 0,8 mm | ± 0,35 mm |
| 70 Ø | 2000 | 1 | 3 | 5 | x | x | ± 0,8 mm | ± 0,35 mm |
| 80 Ø | 2000 | 1 | 3 | 5 | x | x | ± 0,9 mm | ± 0,35 mm |
| 90 Ø | 2000 | 1 | 3 | 5 | x | x | ± 0,9 mm | ± 0,35 mm |
| 100 Ø | 2000 | 1 | 3 | 5 | x | x | ± 1,2 mm | ± 0,35 mm |
| 120 Ø | 2000 | 1 | 3 | 5 | x | x | ± 1,2 mm | ± 0,35 mm |
| 150 Ø | 2000 | 1 | 3 | 5 | x | x | ± 1,5 mm | ± 0,40 mm |
| 160 | 2000 | 1 | 3 | 5 | x | x | ± 1,5 mm | ± 0,40 mm |
| 200 Ø | 2000 | 1 | 3 | 5 | x | x | ± 1,5 mm | ± 0,40 mm |
| 250 Ø | 2000 | 1 | 3 | 5 | x | x | ± 1,5 mm | ± 0,40 mm |

2.3 Delivery conditions

2.3.1 Packing

Type of packaging film:

- PE stretch-film.

Packing unit:

- The tubes are packed in bundles until an O.D. of 38 mm.; every tube is single packed starting from an O.D. of 40 mm.

2.3.2 Delivery packing

Extruded acrylic tubes are set on wooded pallets. The standard delivery packing includes:

- wooden base (Pallet);
- the tubes – packed as in 2.3.1 - are wrapped up in PE film and sealed with plastic tape.

The tubes are delivered on standard pallets which are adapted and optimised to the volume of the goods ordered.

2.4 Identification

2.4.1 Product identification

A label on every acrylic tube indicates:

- product;
- external diameter;
- internal diameter;
- length;
- day, month, year of production;
- quality control approval.

2.4.2 Identification of the delivery crates/boxes

A label on every delivery case – as in 2.3.2 – indicates:

- destination address;
- detailed case content.

For more information contact us at info@gevacril.com.³⁴

³⁴ The information given refers only to the specific products indicated in the QS. Gevacril considers this information right, 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.

3.5 Extruded Polycarbonate Tubes

Quality Description for Polycarbonate Tubes³⁵

Contents

| | |
|---|----|
| Preface | 33 |
| 1 Material features | 33 |
| 2 Quality description | 33 |
| 2.1 Optical quality | 33 |
| 2.2 Tolerances | 34 |
| 2.3 Delivery conditions | 35 |
| 2.3.1 Packing | 35 |
| 2.3.2 Delivery packing | 35 |
| 2.4 Identification | 35 |
| 2.4.1 Product identification | 35 |
| 2.4.2 Identification of the delivery crates/boxes | 35 |

³⁵ In the whole text as QS. Our QS is written in conformity with the norms ISO 9001.

Preface

Our QS for extruded polycarbonate tubes has been valid since the year 2002. 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 extruded polycarbonate tubes.

1 Material features

Extruded polycarbonate tubes are polymerized plastic semi-finished products. They are manufactured through the process of extrusion. 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 high impact resistance and have an uncomparableresistance against weather conditions and aging, since the optical quality and the light transmittance remain unchanged over years.

2 Quality description

2.1 Optical quality

Extruded polycarbonate tubes are absolutely colourless and have a clear internal and external wall. They are free of bubbles, filaments, foreign bodies and rings. In spite of this, the manufacturing process of extrusion causes some light stripes which are visible from a short distance. These stripes are admitted but should not condition the optical quality and the transparency of the entire tube.

Following defects are not admitted:

- deep scratches;
- bubbles, inclusions or foreign bodies, unpolymerized stuff in the material bigger than
- 2 mm²/meter;
- orange peel effect;
- crazing effect.

2.2 Tolerances

In order to guarantee an excellent standard quality the extruded acrylic tubes are controlled many times during the production process. Tubes that show worse values than those indicated in the table 1 do not get through the quality control and are systematically rejected.

Table 1: Tolerances for XT Polycarbonate Tubes

| External Ø mm | Standard Length mm | Units per Batch | Thickness mm | Tolerance on External Ø mm | Tolerance in Thickness mm |
|---------------|--------------------|-----------------|------------------------------|----------------------------|---------------------------|
| 10 | 2000 | 25 | 1,5 Ø / 2 Ø / 3 | ± 0,3 | ± 0,20/0,25/0,30 |
| 12 | 2000 | 25 | 2 Ø / 3 | ± 0,3 | ± 0,25/0,30 |
| 13 | 2000 | 25 | 1,5 Ø / 2 | ± 0,3 | ± 0,25 |
| 15 | 2000 | 25 | 2 Ø / 3 | ± 0,3 | ± 0,25/0,30 |
| 16 | 2000 | 25 | 2 Ø / 3 | ± 0,3 | ± 0,25/0,30 |
| 18 | 2000 | 25 | 2 Ø / 3 | ± 0,3 | ± 0,25/0,30 |
| 20 | 2000 | 5 | 2 Ø / 3 | ± 0,3 | ± 0,25/0,30 |
| 22 | 2000 | 5 | 2 Ø / 3 | ± 0,3 | ± 0,25/0,30 |
| 24 | 2000 | 5 | 2 Ø / 3 | ± 0,5 | ± 0,25/0,30 |
| 25 | 2000 | 5 | 2 Ø / 3 | ± 0,5 | ± 0,25/0,30 |
| 26 | 2000 | 5 | 2 Ø / 3 | ± 0,5 | ± 0,25/0,30 |
| 30 | 2000 | 5 | 1,5 Ø / 2 Ø / 3 Ø / 4/5 | ± 0,5 | ± 0,25/0,30/0,35/0,40 |
| 32 | 2000 | 5 | 2 Ø / 3 | ± 0,5 | ± 0,25/0,30 |
| 36 | 2000 | 5 | 2 Ø / 3 | ± 0,5 | ± 0,25/0,30 |
| 38 | 2000 | 5 | 1,5 Ø / 2/3 | ± 0,5 | ± 0,20/ 0,25/0,30 |
| 40 | 2000 | 1 | 2 Ø / 3/4/5 | ± 0,8 | ± 0,25/0,30/0,35/0,40 |
| 44 | 2000 | 1 | 3 Ø | ± 0,8 | ± 0,30 |
| 50 | 2000 | 1 | 1,5 Ø / 2 Ø / 3 Ø / 4/5 Ø | ± 0,8 | ± 0,25/0,30/0,35/0,40 |
| 60 | 2000 | 1 | 2 Ø / 3/4/5 Ø | ± 0,8 | ± 0,25/0,35/0,35/0,40 |
| 64 | 2000 | 1 | 3 Ø | ± 0,8 | ± 0,35 |
| 70 | 2000 | 1 | 2 Ø / 3/4/5 Ø | ± 0,8 | ± 0,30/0,35/0,40/0,40 |
| 80 | 2000 | 1 | 2 Ø / 3/4/5 Ø | ± 0,9 | ± 0,30/0,35/0,40/0,45 |
| 90 | 2000 | 1 | 2 Ø / 3/4/5 Ø | ± 0,9 | ± 0,30/0,35/0,40/0,45 |
| 100 | 2000 | 1 | 2/3 Ø / 4/5 Ø | ± 1,2 | ± 0,30/0,35/0,40/0,45 |
| 110 | 2000 | 1 | 3 Ø / 4/5 | ± 1,2 | ± 0,30/0,35/0,40/0,45 |
| 120 | 2000 | 1 | 3 Ø / 4/5 Ø | ± 1,2 | ± 0,30/0,35/0,40/0,45 |
| 130 | 2000 | 1 | 3 Ø / 4/5 | ± 1,3 | ± 0,30/0,35/0,40/0,50 |
| 134 | 2000 | 1 | 3 | ± 1,3 | ± 0,30 |
| 140 | 2000 | 1 | 3/4/5 | ± 1,3 | ± 0,30/0,40/0,45/0,50 |
| 150 | 2000 | 1 | 3 Ø / 4/5 Ø | ± 1,5 | ± 0,30/0,40/0,45/0,50 |
| 160 | 2000 | 1 | 3 Ø | ± 1,5 | ± 0,30 |
| 180 | 2000 | 1 | 3 | ± 1,5 | ± 0,30 |
| 200 | 2000 | 1 | 3 Ø / 4/5 Ø | ± 1,5 | ± 0,30/0,40/0,45/0,50 |

2.3 Delivery conditions

2.3.1 Packing

Type of packing:

- PE stretch-film.

Packing unit:

The tubes are packed in bundles until an O.D. of 38 mm.; every tube is single packed starting from an O.D. of 40 mm.

2.3.2 Delivery packing

Extruded polycarbonate tubes are set in wooden pallets. The standard delivery packing includes:

- wooden base (Pallet);
- the tubes – packed as in 2.3.1 - are wrapped up in PE film and sealed with plastic tape.

The tubes are delivered on standard wooden pallets which are adapted and optimised to the volume of the goods ordered.

2.4 Identification

2.4.1 Product identification

A label on every acrylic tube indicates:

- product;
- external diameter;
- internal diameter;
- length;
- day, month, year of production;
- quality control approval.

2.4.2 Identification of the delivery crates/boxes

A label on every delivery case – as in 2.3.2 – indicates:

- destination address;
- detailed case content.

For more information contact us at info@gevacril.com.

3.6 Cast Acrylic Rods and Bars, FLUOR-ACRYL® Rods and Bars

Quality Description For Cast Acrylic Rods, Cast Acrylic Bars and FLUOR-ACRYL® Rods and Bars³⁶

Contents

| | |
|--|----|
| Preface | 37 |
| 1 Material features | 37 |
| 2 Quality description | 37 |
| 2.1 Optical quality | 37 |
| 2.2 Thermic features | 38 |
| 2.3 Weather resistance | 38 |
| 2.4 Tolerances | 38 |
| 2.5 Delivery conditions | 41 |
| 2.5.1 Packing | 41 |
| 2.5.2 Delivery packing | 42 |
| 2.6 Identification | 42 |
| 2.6.1 Product identification | 42 |
| 2.6.2 Identification of the delivery cases | 42 |

³⁶ In the whole text as QS. Our QS is written in conformity with the norms ISO 9001.

Preface

Our QS has been valid since 1st January 1999. Purpose of this certification is to guarantee the excellent quality of every single rod and bar.

The strict quality control during the production process and a constant improvement of the production technologies allows the standardisation of the quality of these products.

1 Material features

Cast acrylic rods and bars and FLUOR-ACRYL[®] rods and bars are polymerized plastic semi-finished products. They are got through milling of cast acrylic sheets. After the polishing process they are characterised by high purity, brightness and transparency; besides they can be easily glued through a polymer-glue and are very resistant against weather conditions: the above mentioned features remain unalterable over years³⁷.

2 Quality description

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

2.1 Optical quality

Cast acrylic round rods and square bars are transparent and have a clear bright 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 them. Following defects are admitted:

Table 1: Admitted defects

| Defect group | Superficial scratch mm | Bubbles, foreign bodies, filaments mm ² | max. number of defects admitted on 1000 mm of rod/bar |
|--------------|---------------------------|--|---|
| A | ≤ 1,0 | ≤ 1,0 | many ³⁸ |
| 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) ³⁹ |
| D | > 5,0 – 10,0 | > 5,0 – 10,0 | 1 BD (D) ⁴⁰ |

Table I: A = negligible defect; B = little defect (LD); C = medium defect (MD); D: big defect (BD)⁴¹.

³⁷ See 2.3 on weather resistance.

³⁸ So long these defects do not alter the optical qualities of brightness and transparency on the whole rod/bar.

³⁹ Minimal distance: MD to LD = > 100 mm.

⁴⁰ On the entire rod/bar (2.000 mm.).

⁴¹ The data on the admitted defects are based on internal tests made by Gevacril srl.

Following defects are not admitted:

- Deep scratches;
- Unpolymerized stuff in the material bigger than 10 mm²;
- rests of polishing material.

2.2 Thermic features

Cast acrylic rods and bars can be bent and formed at a temperature about 160-180 °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.

Tabelle 2: Warming of cast acrylic tubes

| Type of product | Time Min. | Temperature °C |
|--------------------------|-----------|----------------|
| Cast acrylic round rods | 30 | 160 |
| Cast acrylic square bars | 30 | 160 |

Besides, after warming rods/bars as indicated in the table 2 following results can be also expected:

- disfigurement on the heads of rods and bars: < 2%;
- yellowing effect on the heads of rods and bars: ≤ 1,2% (Method AP2-MP/PA92:002)

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 the following tables are indicated the values of tolerance of cast acrylic rods and bars. Rods or bars that show worse values than those indicated in the table 3-7, do not get through the quality control and are systematically rejected.

Table 3: Tolerances for cast acrylic rods

| External Ø mm | Tolerance on Ext. Ø mm |
|--------------------------|-----------------------------------|
| 5 Ø | ± 0,2 mm |
| 6 Ø | ± 0,2 mm |
| 7 | ± 0,2 mm |
| 8 Ø | ± 0,2 mm |
| 9 | ± 0,2 mm |
| 10 Ø | ± 0,2 mm |
| 11 | ± 0,2 mm |
| 12 Ø | ± 0,2 mm |
| 13 | ± 0,2 mm |
| 14 | ± 0,2 mm |
| 15 Ø | ± 0,2 mm |
| 16 | ± 0,2 mm |
| 17 | ± 0,2 mm |
| 18 Ø | ± 0,2 mm |
| 19 | ± 0,2 mm |
| 20 Ø | ± 0,2 mm |
| 21 | ± 0,2 mm |
| 22 Ø | ± 0,2 mm |
| 23 | ± 0,2 mm |
| 24 | ± 0,2 mm |
| 25 Ø | ± 0,2 mm |
| 26 | ± 0,2 mm |
| 27 | ± 0,2 mm |
| 28 | ± 0,2 mm. |
| 30 Ø | ± 0,2 mm. |
| 32 | ± 0,2 mm. |
| 34 | ± 0,2 mm. |
| 35 Ø | ± 0,2 mm. |
| 36 | ± 0,2 mm. |
| 38 | ± 0,2 mm. |
| 40 Ø | ± 0,2 mm. |
| 45 Ø | ± 0,2 mm. |
| 50 Ø | ± 1,0 mm. |
| 55 Ø | ± 1,0 mm. |
| 60 Ø | ± 1,0 mm. |
| 65 Ø | ± 1,0 mm. |
| 70 Ø | ± 1,0 mm. |
| 75 Ø | ± 1,0 mm. |
| 80 Ø | ± 1,0 mm. |
| 85 Ø | ± 1,0 mm. |
| 90 Ø | ± 1,0 mm. |
| 95 Ø | ± 1,0 mm. |
| 100 Ø | ± 1,0 mm. |

| | |
|-------|-----------|
| 110 Ø | ± 1,0 mm. |
| 120 Ø | ± 1,0 mm. |
| 130 Ø | ± 1,0 mm. |
| 140 Ø | ± 1,0 mm. |
| 150 Ø | ± 1,0 mm. |
| 160 Ø | ± 1,0 mm. |
| 170 Ø | ± 1,0 mm. |
| 180 Ø | ± 1,0 mm. |
| 190 Ø | ± 1,0 mm. |
| 200 Ø | ± 1,0 mm. |

Table 4: Tolerances for cast acrylic bars

| Side Width mm | Tolerance on Profile |
|----------------------|-----------------------------|
| 10x10 Ø | ± 0,4 mm |
| 12x12 Ø | ± 0,4 mm |
| 15x15 Ø | ± 0,4 mm |
| 18x18 Ø | ± 0,4 mm |
| 20x20 Ø | ± 0,4 mm |
| 22x22 | ± 0,4 mm |
| 24x24 | ± 0,4 mm |
| 25x25 Ø | ± 0,4 mm |
| 28x28 | ± 0,4 mm |
| 30x30 Ø | ± 0,4 mm |
| 34x34 | ± 0,4 mm |
| 35x35 Ø | ± 0,4 mm |
| 38x38 | ± 0,4 mm |
| 40x40 Ø | ± 0,4 mm |
| 45x45 Ø | ± 0,4 mm |
| 50x50 Ø | ± 0,4 mm |
| 55x55 | ± 1,0 mm |
| 60x60 Ø | ± 1,0 mm |
| 65x65 | ± 1,0 mm |
| 70x70 Ø | ± 1,0 mm |
| 75x75 | ± 1,0 mm |
| 80x80 Ø | ± 1,0 mm |
| 85x85 | ± 1,0 mm |
| 90x90 Ø | ± 1,0 mm |
| 95x95 | ± 1,0 mm |
| 100x100 Ø | ± 1,0 mm |
| 110x110 | ± 1,0 mm |
| 120x120 | ± 1,0 mm |

Table 5: CAST FLUOR – ACRYL® rods

| Ø mm | Units per Batch | Tolerance mm |
|------|-----------------|--------------|
| 20 | 5 | ± 0,5 mm |
| 25 | 5 | ± 0,5 mm |
| 30 | 1 | ± 0,5 mm |
| 40 | 1 | ± 0,5 mm |
| 50 | 1 | ± 0,5 mm |

Table 6: CAST FLUOR – ACRYL® bars

| Ø mm | Min. Order Quantity | Tolerance mm |
|-------|---------------------|--------------|
| 20x20 | 10 | ± 0,5 mm |
| 30x30 | 10 | ± 0,5 mm |
| 40x40 | 5 | ± 0,5 mm |
| 50x50 | 5 | ± 0,5 mm |

Table 7: Tolerance on length

| Product | Tolerance mm. |
|--------------|----------------|
| Rods andbars | - 0/ + max 100 |

2.5 Delivery conditions

2.5.1 Packing

Rods or bars are packed - single or in bundle – in a PE stretch film and sealed with plastic tape.

The quantity of the rods or bars in a bundle depends on the diameter/profile:

a) cast acrylic rods:

- from Ø 10 = also until 50;
- from Ø 12 to Ø 20 = 1/5/10;
- from Ø 22 to Ø 40 = 1/2/5;
- from Ø 45 to Ø 200 = 1;

b) cast acrylic bars:

- from □ 10 to □ 12 = 10/15;
- from □ 15 to □ 25 = 1/10;
- from □ 28 to □ 50 = 1 / 2;
- from □ 55 to □ 120 = 1

2.5.2 Delivery packing

Cast acrylic rods and bars are set on wooden pallets after having been packed. The standard delivery packing includes:

- a) wood base (Palette);
- b) the rods/bars - packed as in 2.5.1 - are wrapped in PE film and sealed with plastic tape for a safe transport;
- c) PE film.

Rods and bars are delivered in standard pallets cases which measures are:

Table 8: Standard woodcrates⁴²

| Measures mm |
|---------------------------|
| 2200x70/80/90/100/110/120 |

Max. height of the case: 115 cm

Max. weight of the case: 1000 Kg

2.6 Identification

2.6.1 Product identification

A label on every acrylic rod or bar - packed as in 2.4.1 - indicates:

- a) product type;
- b) diameter;
- c) length;
- d) day, month, year of production;
- e) quality control approval.

2.6.2 Identification of the delivery cases

A label on every delivery case – as in 2.6.1 – indicates:

- f) destination address;
- g) case number;
- h) detailed case content.

For more information contact us at info@gevacril.com.⁴³

⁴² In order to guarantee a good delivery we usually send the acrylic rod/bar only when a standard case is completely full.

⁴³ The information given refers only to the specific products indicated in the QS. Gevacril considers this information right, 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.

3.7 Extruded Acrylic Rods, Extruded FLUOR-ACRYL® Rods, extruded Half-round Rods, Bars, Triangle Bars

Quality Description for Extruded Acrylic Rods (Transparent, FLUOR-ACRYL®), Half-Round Rods, Bars and Triangle Bars⁴⁴

Contents

| | |
|---|----|
| Preface | 44 |
| 1 Material features | 44 |
| 2 Quality description | 44 |
| 2.1 Optical quality | 44 |
| 2.2 Tolerances | 45 |
| 2.3 Delivery conditions | 47 |
| 2.3.1 Packing | 47 |
| 2.3.2 Delivery packing | 47 |
| 2.4 Identification | 47 |
| 2.4.1 Product identification | 47 |
| 2.4.2 Identification of the delivery crates/boxes | 47 |

⁴⁴ In the whole text as QS. Our QS is written in conformity with the norms ISO 9002,

Preface

Our QS for extruded acrylic rods (transparent, FLUOR-ACRYL®), half-round rods, bars, triangle bars in PMMA has been valid since the year 2000. Purpose of this certification is to guarantee the excellent quality of every single item.

The strict quality control during the production process and a constant improvement of the production technologies allowed the standardisation of the quality of the extruded acrylic profiles.

1 Material features

Extruded acrylic rods (transparent, FLUOR-ACRYL®), half-round rods, bars and triangle bars in PMMA are polymerised plastic semi-finished products. They are manufactured through the process of extrusion. After the production process they are clear and bright on the external wall⁴⁵. High purity, brightness and transparency are their most important characteristics; besides they are very resistant against weather conditions and aging, since the optical quality and the light transmittance remain unchanged over years.

2 Quality description

2.1 Optical quality

Extruded transparent acrylic rods, bars and triangle bars in PMMA are absolutely colourless and have a clear external wall. They are free of bubbles, filaments and foreign bodies. In spite of this, the manufacturing process of extrusion causes some light stripes which are visible from a short distance. These stripes are admitted but should not condition the optical quality and the transparency of the entire profile.

Following defects are not admitted:

- Deep scratches;
- Bubbles, inclusions or foreign bodies, unpolymerized stuff in the material bigger than 2 mm²/meter;
- crazing effect.

⁴⁵ This information refers only to extruded acrylic clear material.

2.2 Tolerances

In order to guarantee an excellent standard quality the extruded acrylic rods are controlled many times during the production process. Rods that show worse values than those indicated in the table 1-6 do not get through the quality control and are systematically rejected.

Table 1: Tolerances of extruded acrylic rods

| External Ø mm | Standard Lengt* mm | Units per Batch | Min. Order Quantity | Tolerance on Ext. Ø mm |
|------------------|-----------------------|--------------------|------------------------|---------------------------|
| 2 Ø | 2000 | 100 | 100 | ± 0,2 mm |
| 3 Ø | 2000 | 100 | 100 | ± 0,2 mm |
| 4 Ø | 2000 | 50 | 100 | ± 0,2 mm |
| 5 Ø | 2000 | 50 | 100 | ± 0,3 mm |
| 6 Ø | 2000 | 25 | 50 | ± 0,3 mm |
| 8 Ø | 2000 | 25 | 50 | ± 0,3 mm |
| 10 Ø | 2000 | 25 | 25 | ± 0,4 mm |
| 12 Ø | 2000 | 10 | 20 | ± 0,4 mm |
| 15 Ø | 2000 | 10 | 20 | ± 0,5 mm |
| 18 | 2000 | 10 | 20 | ± 0,6 mm |
| 20 | 2000 | 5 | 20 | ± 0,8 mm |
| 25 | 2000 | 5 | 20 | ± 0,8 mm |

Table 2: Tolerances of extruded FLUOR-ACRYL® acrylic rods

| Ø mm | Units per Batch | Tolerance mm | Min. Order Quantity |
|------|--------------------|-----------------|---------------------|
| 5 Ø | 50 | + 0,3 mm. | 100 |
| 10 Ø | 25 | + 0,4 mm. | 50 |
| 15 Ø | 10 | +0,5 mm. | 50 |

Table 3: Tolerances of extruded acrylic half-round rods

| External Ø mm | Standard Length mm | Units per Batch | Min. Order Quantity | Tolerance on Ext. Ø mm |
|---------------|--------------------|-----------------|---------------------|------------------------|
| 4 | 2000 | 50 | 100 | ± 0,2 mm. |
| 5 | 2000 | 50 | 100 | ± 0,3 mm. |
| 6 | 2000 | 25 | 50 | ± 0,3 mm. |
| 8 | 2000 | 25 | 50 | ± 0,3 mm. |
| 10 Ø | 2000 | 10 | 25 | ± 0,4 mm. |
| 12 | 2000 | 10 | 20 | ± 0,4 mm. |
| 15 | 2000 | 10 | 20 | ± 0,5 mm. |
| 20 | 2000 | 10 | 20 | ± 0,8 mm. |
| 25 Ø | 2000 | 10 | 20 | ± 0,8 mm. |

Table 4: Tolerances of extruded acrylic bars

| Side Width mm | Standard Length mm | Units per Batch | Min. Order Quantity | Tolerance on Profile |
|---------------|--------------------|-----------------|---------------------|----------------------|
| 4x4 | 2000 | 50 | 100 | ± 0,2 mm. |
| 5x5 Ø | 2000 | 50 | 100 | ± 0,3 mm. |
| 6x6 | 2000 | 25 | 50 | ± 0,3 mm. |
| 8x8 Ø | 2000 | 25 | 50 | ± 0,3 mm. |
| 10x10 Ø | 2000 | 25 | 25 | ± 0,4 mm. |
| 12x12 Ø | 2000 | 10 | 20 | ± 0,4 mm. |
| 15x15 | 2000 | 10 | 20 | ± 0,5 mm. |
| 20x20 | 2000 | 10 | 20 | ± 0,6 mm. |
| 25x25 | 2000 | 10 | 20 | ± 0,8 mm. |

Table 5: Tolerances of extruded acrylic triangle bars

| Side Length mm | Standard Length mm | Units per Batch | Tolerance on Profile |
|----------------|--------------------|-----------------|----------------------|
| 5x5x5 | 2000 | 50 | ± 0,3 mm. |
| 8x8x8 | 2000 | 25 | ± 0,4 mm. |
| 10x10x10 | 2000 | 25 | ± 0,4 mm. |
| 15x15x15 | 2000 | 10 | ± 0,5 mm. |
| 20x20x20 | 2000 | 10 | ± 0,8 mm. |
| 25x25x25 | 2000 | 10 | ± 0,8 mm. |

2.3 Delivery conditions

2.3.1 Packing

Type of packing:

- PE film.

Packing unit:

- until []⁴⁶ 4 mm. : 100 bars/bundle;
- from [] 5 to []8 mm.: 50 bars/bundle;
- from [] 10 to []25 mm.: 25 bars/bundle.

2.3.2 Delivery packing

Extruded acrylic rods, bars, and triangle bars are set in wooden pallets. The standard delivery packing includes:

- wooden base (Palette) or PE-bubble film;
- the bars – packed as in 2.3.1 - are wrapped up in PE film and sealed with plastic tape.

The profiles are delivered on standard wooden pallets which are adapted and optimised to the volume of the goods ordered.

2.4 Identification

2.4.1 Product identification

A label on every acrylic tube indicates:

- product;
- external diameter/ side length;
- length;
- day, month, year of production;
- quality control approval.

2.4.2 Identification of the delivery crates/boxes

A label on every delivery case – as in 2.3.2 – indicates:

- destination address;
- detailed case content.

For more information contact us at info@gevacril.com.⁴⁷

⁴⁶ Indicates the side or the diameter of the profile

⁴⁷ The information given refers only to the specific products indicated in the QS. Gevacril considers this information right, 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.

3.8 High Impact Acrylic Clear Profiles

Quality description for High Impact Acrylic Profiles (L-Profile, U-Profile, U-Grip Profile, H-Profile)

Contents

| | |
|---|----|
| Preface | 49 |
| 1 Material features | 49 |
| 2 Quality description | 49 |
| 2.1 Optical quality | 49 |
| 2.2 Tolerances | 50 |
| 2.3 Delivery conditions | 50 |
| 2.3.1 Packing | 50 |
| 2.3.2 Delivery packing | 51 |
| 2.4 Identification | 51 |
| 2.4.1 Product identification | 51 |
| 2.4.2 Identification of the delivery crates/boxes | 51 |

Preface

Our QS for HI acrylic profiles has been valid since the year 2006. Purpose of this certification is to guarantee the excellent quality of every single item.

The strict quality control during the production process and a constant improvement of the production technologies allowed the standardisation of the quality of the extruded acrylic profiles.

1 Material features

HI acrylic profiles are polymerised plastic semi-finished products. They are manufactured through the process of extrusion. After the production process they are matt and smooth on the external wall⁴⁸. High purity, brightness and material purity are their most important characteristics; besides they are very resistant against weather conditions and aging, since the optical quality and the light transmittance remain unchanged over years.

2 Quality description

2.1 Optical quality

HI acrylic profiles are absolutely colourless and have a matt external surface. They are free of bubbles, filaments and foreign bodies. In spite of this, the manufacturing process of extrusion causes some light stripes which are visible from a short distance. These stripes are admitted but should not condition the optical quality and the surface of the entire profile.

Following defects are not admitted:

- Deep scratches;
- Bubbles, inclusions or foreign bodies, unpolymerized stuff in the material bigger than 2 mm²/meter;
- crazing effect.

⁴⁸ This information refers only to the extruded acrylic HI profiles.

2.2 Tolerances

In order to guarantee an excellent standard quality the extruded acrylic tubes are controlled many times during the production process. Tubes that show worse values than those indicated in the table 1-6 do not get through the quality control and are systematically rejected.

Tolerances of L-Profiles

On request we can provide a work drawing with all specific tolerances for this profile.

Tolerances of U-Profiles

On request we can provide a work drawing with all specific tolerances for this profile.

Tolerances of U-Grip Profiles

On request we can provide a work drawing with all specific tolerances for this profile.

Tolerances of H-Profiles

On request we can provide a work drawing with all specific tolerances for this profile.

2.3 Delivery conditions

2.3.1 Packing

Type of packing:

- PE film.

Packing unit:

- 50 profiles/bundle.

2.3.2 Delivery packing

HI acrylic profiles are set on wooden pallets. The standard delivery packing includes:

- wooden pallet and PE film protection;
- the profiles – packed as in 2.3.1 - are wrapped up in PE film and sealed with plastic tape.

The profiles are delivered on standard wood pallets which are adapted and optimised to the volume of the goods ordered.

2.4 Identification

2.4.1 Product identification

A label on every acrylic tube indicates:

- product;
- external diameter/ side length;
- length;
- day, month, year of production;
- quality control approval.

2.4.2 Identification of the delivery crates/boxes

A label on every delivery case – as in 2.3.2 – indicates:

- destination address;
- detailed case content.

For more information contact us at info@gevacril.com.⁴⁹

⁴⁹The information given refers only to the specific products indicated in the QS. Gevacril considers this information right, 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.

3.9 Acrylic Injection Balls

Quality Description for Acrylic Injection Balls⁵⁰

Contents

| | |
|-------------------------------|----|
| Preface | 53 |
| 1 Material features | 53 |
| 2 Quality description | 53 |
| 2.1 Optical quality | 53 |
| 2.2 Tolerances | 53 |
| 2.3 Delivery conditions | 54 |
| 2.3.1 Packing | 54 |
| 2.3.2 Delivery packing | 54 |

⁵⁰ In the whole text as QS. Our QS is written in conformity with the norms ISO 9002

Preface

Our QS for acrylic injection balls in PMMA has been valid since the year 2000. Purpose of this certification is to guarantee the excellent quality of every single ball.

The strict quality control during the production process and a constant improvement of the production technologies allowed the standardisation of the quality of the acrylic injection balls.

1 Material features

Acrylic injection balls are polymerised plastic semi-finished products. They are manufactured through the process of injection. After their production they are characterised by high purity, brightness and transparency; besides they are very resistant against weather conditions and ageing, since the optical quality and the light transmittance remain unchanged over years.

2 Quality description

2.1 Optical quality

Acrylic injection balls are transparent, are absolutely colourless and have a clear external wall. They are free of bubbles, filaments, foreign bodies. In spite of this, the manufacturing process could cause some light stripes which are visible from a short distance. These stripes are admitted but should not condition the optical quality and the transparency of the entire ball.

Following defects are not admitted:

- Deep scratches;
- Bubbles, inclusions or foreign bodies, unpolymerized stuff in the material bigger than 1 mm³/meter;
- crazing effect.

2.2 Tolerances

In order to guarantee an excellent standard quality the acrylic injection balls are controlled many times during the production process. Tubes that show worse values than those indicated in the table 1 do not get through the quality control and are systematically rejected.

Table 1: Tolerances for Acrylic Injection Balls

| Ø mm | Units per Batch | Tolerance on Profile |
|-------------|------------------------|-----------------------------|
| 20 | 50 | ± 1,0 mm |
| 30 | 50 | ± 1,0 mm |
| 40 | 10 | ± 1,0 mm |
| 50 | 10 | ± 1,0 mm |
| 60 | 5 | ± 1,0 mm |
| 70 | 5 | ± 1,0 mm |
| 80 | 5 | ± 1,0 mm |

2.3 Delivery conditions

2.3.1 Packing

Acrylic injection balls are all single packed in a PE stretch film and sealed with plastic tape.

2.3.2 Delivery packing

Acrylic injection balls are set in cardboard boxes of different measures after having been packed.

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