



OPHTHALMIC FRONT MOLD

SPECIFICATION

1.60 FLAT TOP 28 BIFOCAL MOLD

OPHTHALMICS FRONT MOULD SPECIFICATIONS

1.60 FLAT TOP 28 BIFOCAL MOULDS

Reference:

Drawing: 1.60 FLATTOP 28 BIFOCAL MOULD: **FT 001**

Datasheet: QE Glass, Code 8092.

Zone definition for cosmetic inspection: Figure 1

1.PURPOSE: The document specifies the 1.60 Flat top 28 Bifocal Front Mould specifications to cast the semi-finish organic lenses.

2.MOULD BASE CURVE & ADDITION: There are three different base curves viz. 2.25, 4.25, 6.25 & 8.25 with additions from 1.00 to 3.00 in a step of 0.25diopter.

3.DIMENSIONS: The moulds shall be manufactures with reference to Drawing No: FT 001.

4.GENERAL DIMENSIONS ON MOULD:

Parameters	Symbol	Value	Tolerance
Outer Diameter	OD	80/75mm	+0.1/-0.4mm
Center Thickness	CT	5mm	+/-0.3mm
Chamfer	Ch	Refer drawing	-0.0/+0.3mm
Angle of relief	AOR	12 deg,	+/-3 deg

5. BASE CURVE & SEGMENT RADIUS: The surface power for Base & segment has been computed with reference to 1.592 refractive index of organic lens.

Base curve/Dia.	Diopter CC (1.592)	Radius CC	Diopter CX (1.592)	Radius CX
	+/-0.04dpt.		+/-0.12dpt.	
2.25 (80Dia)	2.11	280.00mm	2.11	280.00mm
4.25 (80Dia)	4.55	130.00mm	4.55	130.00mm
6.25 (80Dia)	5.92	100.00mm	5.92	100.00mm
8.25 (75Dia)	8.82	67.09mm	8.82	67.09mm

Table showing Base curve radius

SEGMENT RADIUS (mm) WITH TOLERANCE OF +/-0.08dpt				
BASE/ADD	2.25	4.25	6.25	8.25
1.00	190.548	106.736	85.641	60.285
1.25	176.579	102.207	82.701	58.824
1.50	164.518	98.047	79.956	57.407
1.75	154.000	94.212	77.387	56.071
2.00	144.746	90.666	74.978	54.795
2.25	136.244	87.255	72.630	53.530
2.50	128.950	84.205	70.504	52.367
2.75	122.397	81.360	68.499	51.252
3.00	116.479	78.702	66.605	50.185

Table showing segment radii in millimeters

6. MATERIAL: The material of Mould is Corning Glass QE # 8092. After the process of grinding & polishing, the moulds will undergo a process of chemical tempering that hardens the glass. Refer Data sheet: QE glass: Code 8092.

7.LABELING: A 3mm high labels shall be engraved onto the convex surface of the moulds. The label identifies the Nominal Base, Additions & Orientation.

8.COSMETIC QUALITY: The inspection method for cosmetic is visual in dark room, using a bright Halogen lamp & also fluorescent tube. The mould is also been inspected on carbon arc lamp. The edges & marking are directly controlled by eye inspection.

9.ZONE DEFINATION: The different zones of inspections of concave surface are defined in the **figure 1**.

ZONE 1: is the central area of Mould.

ZONE 2: is the intermediate area.

ZONE 3: is the outer area, containing the flat for ease of De-molding & mould edges.

10.DEFECTS ACCEPTANCE CRITERIA:

DOT SHAPED DEFECTS: The size & intensity of defects based on Carl Ziess plate.

	ZONE 1	ZONE 2	ZONE 3
DOT	1 x 0.010	1 x 0.025	Any dot
	2 x 0.004	2 x 0.010	Any dot

Max number of dots allowed in Zone 1 is two.

Max number collectively in Zone 1 & 2 is three.

SCRATCHES & LINE SHAPED DEFECTS: The size & intensity of defects based on Carl Ziess plate.

	ZONE 1	ZONE 2	ZONE 3
SCRATCH	1 x 0.010	1 x 0.025	Any scratch
		2 x 0.010	Any scratch

Max number of scratches allowed in Zone 1 & 2 combine is three.

Any number of scratches allowed in Zone 3 as long as they are not Perpendicular from edge into Zone 2.

The total number of scratch & dot shape defects in Zone 1 & 2 must not exceed four.

OTHER SURFACE DEFECTS:

In Zone 3, only edge chip, not larger than 2mm along the circumference, 1mm radially & 0.50mm in depth are allowed.

No marks or stain allowed in Zone 1. Marks that are faintly visible with naked eye are acceptable in Zone 2.

Marks or stains in Zone 3 are allowed.

Visual aberration in Zone 3 is allowed.

Inspection Technique: As per **DIN 58203**.

11. ENGRAVING: All moulds shall be engraved in a manner that they are clearly legible & portray a professional appearance.

12. PACKAGING: The moulds shall be packed in a individual white boxes. The packing shall protect the moulds against damages during transportation.

The boxes shall clearly identify the mould it contains & shall mention at least Base & Addition.

Glass designation :

QE

Code **8092**

Color :

White

Glass type:

Chemtemperable, crown glass.

Application:

Molds for Organic Ophthalmic lenses.

PHYSICAL PROPERTIES

Density	2.62
Linear Exp. Coef.	95.10 ⁻⁷
Viscosity Soft. Pt	735°C
Ann. Pt	545°C
Strain pt	505°C

REFRACTIVE PROPERTIES

Refractive Index n_d	1.5231
Abbe Number v_d	57.1

TRANSMISSION PROPERTIES (2mm)
Luminous transmission Factor 91.5%

CHEMICAL DURABILITY (Class)

To Water	(NF B 35601)	3
To Acid	(DIN 12116)	3
To Alkalis	(NF B 35602)	2

CHEMTEMPERING

The chemtempering process builds up a compressive stress in the surface of the piece through ion exchanges between the glass and the salt bath.

The amount of compressive stress, and the depth of the compressed layer, are the two parameters that determine the mechanical resistance of the molds:

Maximized depth of layer (D.O.L.), insure longer mold life (ie: serviceability), as it reduces the negative impact of damaged surfaces.

Higher compression shall enhance break resistance.

The balance between those two parameters depends on processing conditions.

Recommended bath and cycle :

		D.O.L. (μ m)	Compression PSI
Bath	Potassium Nitrate	99.5%	
	Sodium Nitrate(maxi)	0.5%	
	Silicic Acid	0.5%	
Time		16 hr	90
Temperature		450°C	53000

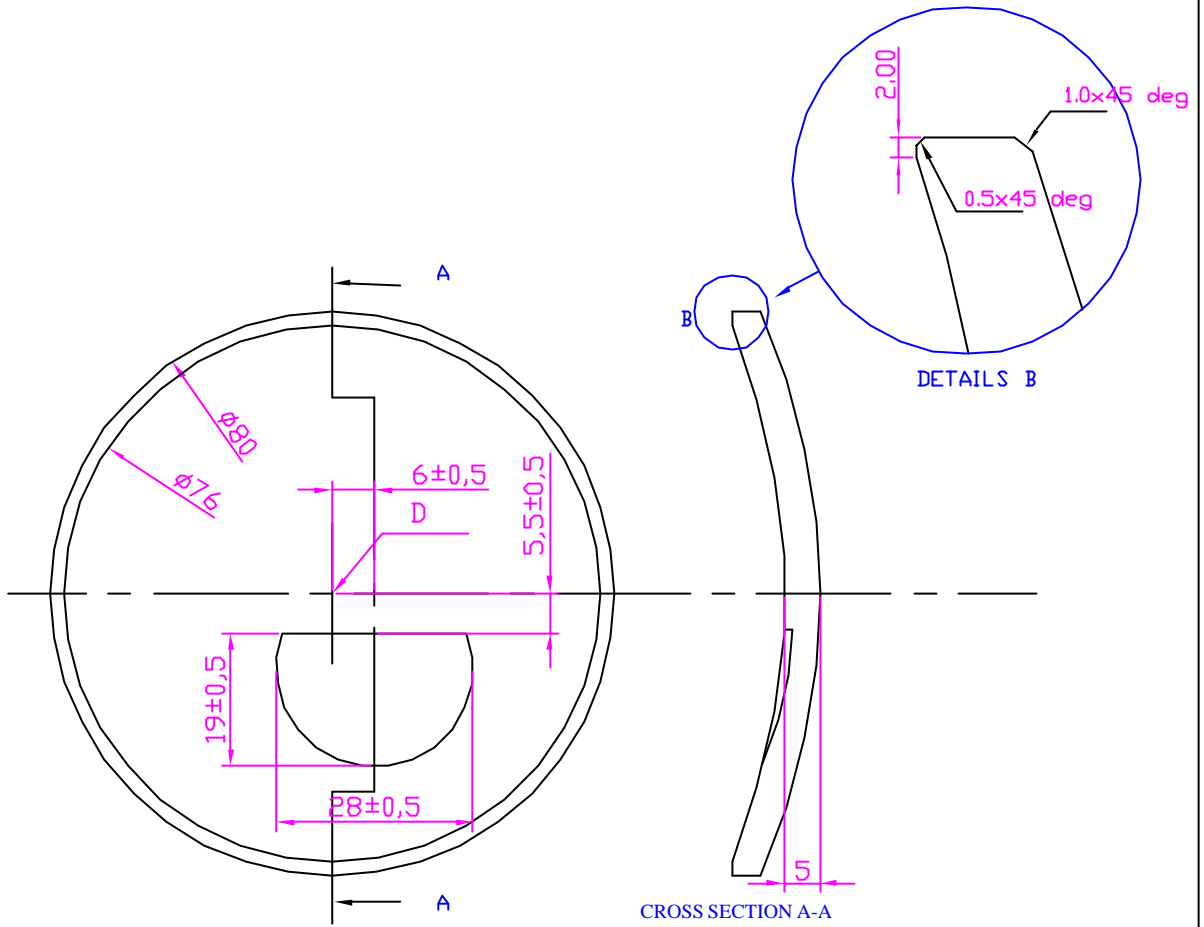
Longer time cycle , or higher processing temperature, will produce larger DOL, but decrease compression.

Short Schedule.

Short chemtempering schedules may be found appropriate, although they leads to reduced DOL, which may translate into reduced molds serviceability.

Typical performances are as follows:

Time	4hr	D.O.L.	Compression
Temperature	450°C	55 μ m	50000 psi



R_D--Radius in Distance
 R_N-- Radius in near vision
 GENERAL TOLERANCE
 =+/-0.5mm

1.60 FLAT TOP28 BIFOCAL MOULD

ALL DIMENSIONS IN MM

		File name DRWEX 001	Date 29-10-2006	REV 1 111 24-02-2006	
GKB Vision Ltd		1.60 FLAT TOP BIFOCAL MOULD			
		FT 001		Edition	Sheet

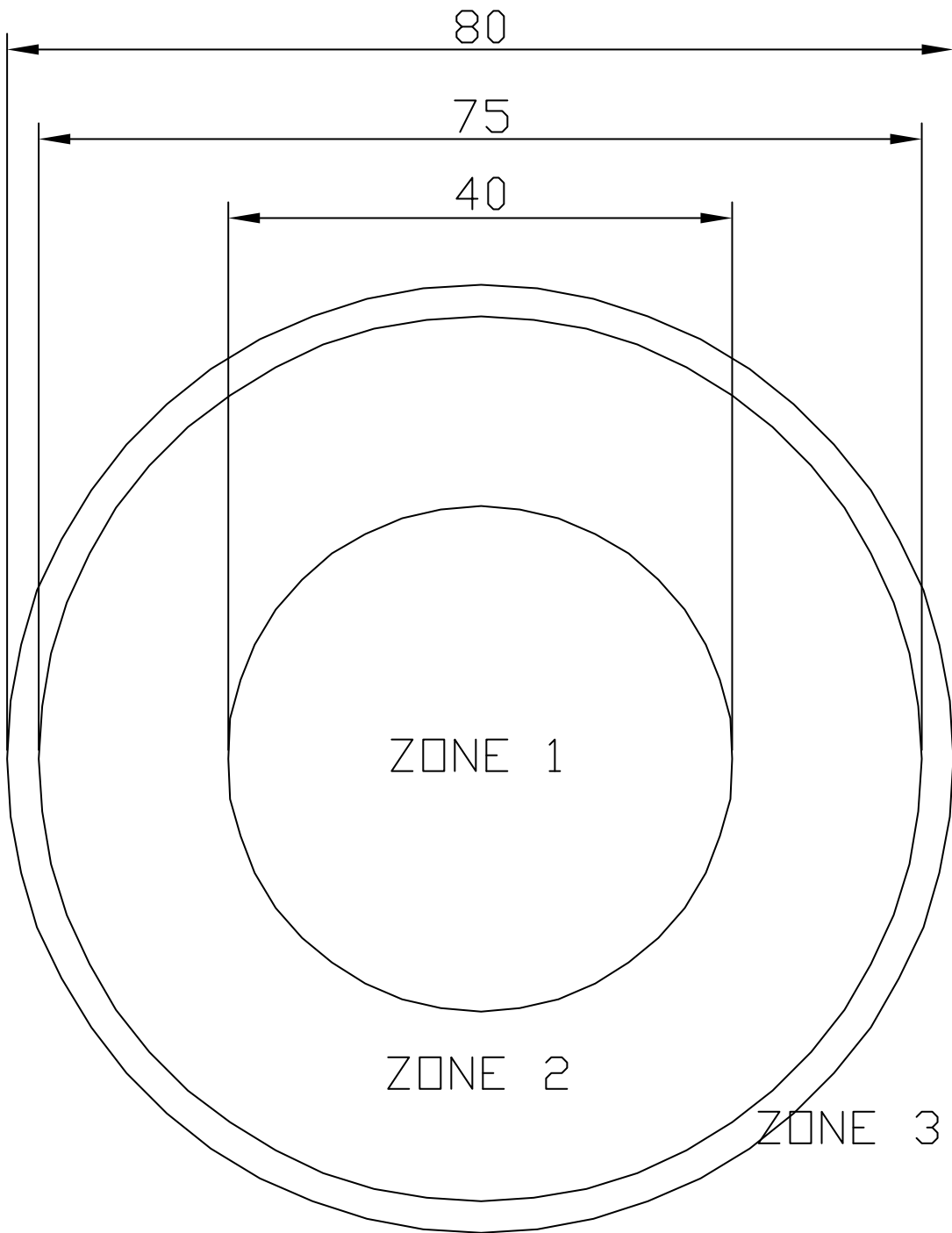


FIGURE 1

ZONE DEFINITION