



Technical Data

Chromacol Glass Specifications

Neutral Borosilicate Glasses

Property	Gold Grade	Neutral Type 1
Working Point	1255°C	1140°C
Strain Point	513°C	530°C
Annealing Point	565°C	570°C
Softening Point	827°C	785°C
Linear Coefficient of Expansion (from 0 to 300°C), in./in./°C	32x10 ⁻⁷	55x10 ⁻⁷
Density grams per mL	2.22	2.33
Refractive Index—Sodium D line (.5893 microns)	1.47	1.49
Visible Light Transmission, 2 mm thickness	92%	91%
Specific Heat (in g. cal. per g. deg.) (25 to 175°C) (25 to 175°C)	0.204	0.204
Thermal Conductivity (in cal/cm/cm2/sec/°C)	0.0027	0.0026

1. **The Working Point** — the temperature at which glass has a viscosity of 104 poises. At this temperature, glass is soft enough for most working or sealing operations.
2. **The Softening Point** — the temperature at which glass has a viscosity of 107.6 poises. In this temperature range glass will deform noticeably under its own weight: ASTM C 338.
3. **The Annealing Point** — the temperature at which the internal stress caused by rapid cooling from lampworking or forming temperatures may be substantially removed in a matter of minutes. It is determined by measuring the elongation rate versus temperature of a fiber of glass under conditions prescribed by ASTM Designation C 336. The values given here are typical for production glasses.

Typical Glass Composition

Different glass types contain different proportions of oxides to give characteristics such as colour and different expansion coefficients.

Oxide by %

	SiO ₂	B ₂ O ₃	TiO ₂	K ₂ O	Al ₂ O ₃	Fe ₂ O ₃	Na ₂ O	BaO	CaO
Soda Glass	69	1		3	4		13	2	5
Borosilicate-Clear	75	10.5			5		7	1	1.5
Borosilicate-Amber	70	7	5	1	6	1	7	2	1
Borosilicate-Gold Grade	80.6	13			2.3		4		

Hydrolytic Extraction

Chromacol autosampler vials are manufactured from glass meeting the international standards for hydrolytic extraction.

- BS ISO 3585, DIN 12217 borosilicate glass
- ASTM E-438 Type 1 class A borosilicate glass
- US Pharmacopoeia Type 1 borosilicate glass
- European Pharmacopoeia Type 1 glass

Light Transmission

The choice of clear or amber glass may also be made in order to deal with the exposure of sample to incident UV-Vis light.

