

AL-227

Technical Bulletin

Thermal Properties of Corning Glasses

For the convenience of those interested in the thermal properties of glasses manufactured by Corning, data on some representative glasses are listed in this document. The strain point represents the extreme upper limit of serviceability for annealed glass. The maximum service temperature will always be below this point. The annealing point is the temperature, at the upper end of the annealing range, at which the internal stress is reduced to a commercially acceptable value over a short period. In an annealing operation, the glass is slowly cooled from above the annealing point to somewhat below the strain point. The softening point is the temperature at which a small diameter fiber of the glass will elongate under its own weight. As one moves above this temperature, the glass becomes more workable. As a general rule, the coefficient of expansion indicates the thermal shock resistance of the glass. The lower the expansion, the greater the resistance of the glass to sudden temperature changes.

1. Corning Glass Code		0080	7740	7800	7913	0211
2. Type		Soda lime	Boro-silicate	Boro-silicate	96%Silica	ZincTitanium
3. Color		Clear	Clear	Clear	Clear	Clear
4. Principal Use		Lamp Bulbs	General Labware	Pharmaceutical	High Temp.	Cover Glass
5 ^a . Forms Usually Available		BMT	BPSTU	T	BPRST	---
6. Thermal Expansion	0 - 300°C.	93.5	32.5	55	7.5	73.8
	Multiply by 10 ⁻⁷ cm/cm/°C	25°C. to setting point	105	35	53	5.52
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7 ^b . Upper Working Temp. for annealed glass	Normal service °C.	110	230	200	900	---
	Extreme service °C.	460	490	460	1200	---
	(Mechanical considerations only)					
Upper Working Temp. for tempered glass	Normal service °C	220	260	---	---	---
	Extreme service °C.	250	290	---	---	---
	(Mechanical considerations only)					
8 ^c . Thermal Shock Resistance	3.2mm Thick °C	65	160	---	---	---
	(15x15cm annealed plates)					
	6.4mm Thick °C	50	130	---	---	---
	These data are approximate only; see footnote c.					
	12.7mm Thick °C	35	90	---	---	---
9 ^d . Thermal Stress Resistance °C.		16	54	33	220	---
10. Viscosity Data	Strain point °C.	473	510	521	890	508
	(These data are subject to normal manufacturing variations.)					
	Annealing point °C.	514	560	565	1020	550
	Softening point °C.	696	821	785	1530	720
	Working point °C.	1005	1252	1189	---	1008
11. Density g/cm ³		2.47	2.23	2.34	2.18	2.57
12. Young's Modulus	(multiply by 10 ³ Kg/mm ²)	7.2	6.4	---	6.8	7.6
Poisson's Ratio		0.22	.20	---	0.19	0.22
13. Log ₁₀ of Volume Resistivity ohm/cm.	25°C		12.4	15.0	---	17+ ---
	250°C	6.4	8.1	7.0	9.7	8.3
	350°C.	5.1	6.6	5.7	8.1	6.7
14. Dielectric Properties	Power factor %	0.9	0.50	---	---	---
	(1 MHz 20°C)					