

## Kimble N-51A<sup>®</sup> Glass Tubing

Glass Code: Kimble Kimax N-51 <sup>®</sup>		N51A
Type		Borosilicate
Color		Clear
Principal Use		General Lab ware
Thermal Expansion	0 - 300 °C.	55.0
Multiply by 10 <sup>-7</sup> cm/cm/°C	25 °C. to setting point	70.0
Thermal Shock Resistance  (15x15cm annealed plates) This data is approx.	3.2mm Thick °C	105
	6.4mm Thick °C	85
	12.7mm Thick °C	60
Thermal Stress Resistance °C.		
Viscosity Data  (These data are subject to normal manufacturing variations.)	Strain point °C.	530
	Annealing point °C.	570
	Softening point °C.	785
	Working point °C.	1140
Density g/cm <sup>3</sup>		2.33
Young's Modulus (multiply by 10 <sup>9</sup> Kg/mm <sup>2</sup> )		10.4
Log <sub>10</sub> of Volume Resistivity ohm/cm.	250 °C	7.0
	350 °C.	5.7
Dielectric Properties  (1 MHz 20°C)	Power factor %	.84
	Dielectric constant	5.8
	Loss factor %	4.9
Refractive index		1.49
Stress-Optical Coefficient, (nm/cm)/(Kg/mm <sup>2</sup> )		3.5

Approximate Chemical Composition	
Silicon Dioxide (SiO <sub>2</sub> )	72%
Boron Oxide (B <sub>2</sub> O <sub>3</sub> )	12%
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )	7%
Calcium Oxide (CaO)	1%
Magnesium Oxide (MgO)	0
Sodium Oxide (Na <sub>2</sub> O)	6%
Potassium Oxide (K <sub>2</sub> O)	2%
Barium Oxide (BaO)	<.1%