

# Technical Data Sheet

## Electronic Glass Powders Technical Glasses

### Application

Ferro's Electronic and Specialty Glass Group has produced over 3000 formulations. Many are used as protective and insulating layers, binding agents in metal or ceramic pastes, and sealants

for a variety of ceramic, metal and glass components. All of the products listed below are formulated and processed to be RoHS compliant. Typical properties can be seen below.

### Vitreous Technical Glass Powders (Set Point CTE < 70)

Product Code		EG 2740	EG 2790	EG 0024	EG 2410	EG 2800
Composition Family		Si-B-Al-R <sub>2</sub> O	Si-B-RO	Si-B-Al-RO	Si-Mg-Al	Si-Al-RO-B
Peak Firing Temperature	°C	1250	1025	900	1300	1000
Time at Peak Temperature	minutes	15	15	20	20	15
CTE at 260 °C	x10 <sup>-7</sup> /°C	34.0	35.0	45.5	45.5	52.0
CTE at Set Point	x10 <sup>-7</sup> /°C	34.0	35.0	48.4	50.0	56.0
Softening Point	°C	827	682	750	> 1000	868
Annealing Point (T <sub>a</sub> )	°C	580	600	675	825	735
Glass Transition Temp (T <sub>g</sub> )	°C	540	505	647	805	720
Powder Density	g/cc	2.23	2.12	2.40	2.70	2.72
Typical Powder Types		VSD	VSD	VWG	MVG	VSD
Typical Applications		Low CTE Sealing (Pyrex Type)	Low Loss Electrical Apps (7070 Type)	Ceramic Sintering Aid	Ceramic Sintering Aid	"TA 23" Battery Seal

### Vitreous Technical Glass Powders (Set Point CTE > 70)

Product Code		EG 3046	EG 3256	EG 2927	EG 3600
Composition Family		Zn-B-Al-Si	Zn-B-Al-Si	Sr-B-Al	Si-B-Zn-Al-R <sub>2</sub> O
Peak Firing Temperature	°C	650	600	775	650
Time at Peak Temperature	minutes	15	15	15	15
CTE at 260 °C	x10 <sup>-7</sup> /°C	75.0	79.0	82.0	125.0
CTE at Set Point	x10 <sup>-7</sup> /°C	93.0	96.0	95.0	146.0
Softening Point	°C	590	550	660	584
Annealing Point (T <sub>a</sub> )	°C	510	480	600	500
Glass Transition Temp (T <sub>g</sub> )	°C	495	465	581	470
Powder Density	g/cc	2.70	3.20	3.25	2.60
Typical Powder Types		VWG	VWG	VSD	VSD
Typical Applications		Soda Lime Glass Sealing & Thick Film	General & Thick Film Applications	Compression Sealing (SrBa <sub>4</sub> Type)	Nickel Metal Glaze & Sealant

### Crystallizing Technical Glass Powders

Product Code		CF 7574	EG 3118	EG 2840
Composition Family		Zn-B-Si	Ba-Ca-Si-B-Al	Si-Al-R <sub>2</sub> O-B
Peak Firing Temperature	°C	750	850	1050
Time at Peak Temperature	minutes	60	10	10
CTE at 260 °C	x10 <sup>-7</sup> /°C	44.0	101.0	120.0
CTE at Set Point	x10 <sup>-7</sup> /°C	34.0	117.0	125.0
Softening Point	°C	644	739	790
Annealing Point (T <sub>a</sub> )	°C	570	635	500
Glass Transition Temp (T <sub>g</sub> )	°C	556	603	480
Powder Density	g/cc	3.70	3.78	2.40
Typical Powder Types		VSD	TF	VSD
Typical Applications		Low Expansion Apps, Pyrex, Silicon	High Expansion Apps, 400 Series SS, SOFC Seals	High Expansion Apps, 300 Series SS, High Temp Seals



#### Limitation of Warranty and Liability

Ferro believes that the information contained in this document is accurate at the time of its publication. Ferro makes no warranty with respect to the information contained in this document. The information in this document is not a product specification, either in whole or in part. Your use of the information contained in this document and your purchase and use of this Ferro product are at your sole discretion. Downstream users are responsible for determination of the suitability of this product and for testing in specific applications. Nothing in this document shall be construed as a license for use that infringes upon any property rights of any third party. Please refer to the Safety Data Sheet (SDS) for safe use, handling and disposal information. All sales by Ferro to you are subject to Ferro's Terms and Conditions of Sale, as amended from time to time and available at [www.ferro.com](http://www.ferro.com). In the event this document conflicts with Ferro's Terms and Conditions of Sale, Ferro's Terms and Conditions of Sale shall control.