

## Lead-Free Ferro Frits: Analysis

Stock?	Frit	Cone	K <sub>2</sub> O	Na <sub>2</sub> O	CaO	MgO	BaO	ZnO	B <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	ZrO <sub>2</sub>	E	Expan.
Yes	3110	07	2.5	15.4	5.2	0.8			2.8	3.7	69.60			10.1
Yes	3124	05	0.6	5.6	14.5				12.5	10.0	56.80			7.9
Yes	3134	07		10.2	20.1				23.2		46.50			9.6
Disc.	3185	??		1.0					0.43		7.27			--
Yes	3195	05		12.7	11.3				15.8	12.5	47.60			6.4
	3240	05	0.6	4.5	8.8		7.9	15.8	10.0	0.9	39.50	10.2		--
Yes	3269	07	10.0	11.2					17.1	12.8	48.90			11.0
	3270	??	0.159	0.380	0.461				0.648	0.232	2.340			--
	3278	03		15.5	6.8				21.8		56.20			9.7
Disc.	3289	07		5.5			27.4		12.4	5.4	49.30			--
	3293	05		16.7	0.2	0.8				5.9	76.40			--
Yes	5301	05	5.1	19.2	2.3				11.7	11.3	41.80		8.6	11.4
Yes	CC270	1500°F	x 2	x 15	x 3			8.3	x 11	x 4	x 50	1.0		11.0
Yes	FA233	1650°F	>10		10-15			2.0	15-25	7-10	7.50	10-20		7.0

## Fusion Frits: Analysis

Stock?	Frit	Cone	K <sub>2</sub> O	Na <sub>2</sub> O	CaO	MgO	BaO	ZnO	B <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	ZrO <sub>2</sub>	Li <sub>2</sub> O	Expan.
	F2	1600°F	3.7	3.0	10.5				20.3	13.5	49.0			7.19
	F12	1450°F		10.4	20.0				23.8	0.8	45.0			8.18
Yes	F15	1675°F	3.6	2.6					23.0	3.8	67.0			4.42
Yes	F38	1550°F		5.5	4.2	16.8*			15.0	4.2	53.1	1.20		6.18
Yes	F69	1700°F				12.8			30.2	12.5	44.5			3.96
Yes	F75	1550°F	2.1	15.3	6.4				2.5	3.7	70.0			9.30
	F280	1550°F	0.6	7.0	14.2				15.0	8.5	54.8			7.90
Yes	F403	1825°F		0.5	4.8		35.0		1.5	6.2	49.0	3.0		6.92
Yes	F413	1600°F		17.0	0.5					5.5	76.5			8.67
Yes	F493	1300°F	6.0	11.7					13.2	6.3	51.8		11.0	14.13
Yes	F499	1600°F		21.0					28.4	7.2				9.46
Yes	F524	1800°F	2.6	2.1	7.3	7.6*	2.0		12.0	9.5	56.9			5.17
Yes	F537	>1850°F		2.0	28.0				10.0	3.0	57.0			7.70
Yes	F567	1450°F	5.61	12.95	0.24				24.01	11.41	48.78			9.14
Yes	FZ14	1600°F	3.0	10.0	6.5			10.0	5.0	14.0	51.5			9.53
Yes	FZ24	1450°F	8.0	14.7	3.0		1.4	2.20	6.2	10.0	54.5			11.13
Yes	FZ376A	1700°F	2.8	4.6	6.0			1.10	13.2	7.6	56.2	8.50		6.54
Yes	FZ556	1800°F	1.0	4.0		21.1*	15.0			12.0	47.6	8.50		8.50
Yes	FZ557	1800°F	4.7	0.3	11.0	2.5	0.8	11.0	4.5	5.5	59.7			6.63
Yes	FZ565	1550°F	0.5	5.8	13.5	0.5		11.20	1.5	8.5	58.5			7.78
	G8149			5.0	24.0				32.0		24.5			

(Bold & star indicates value is for STRONTIUM OXIDE.)

## Oxide Effects on Surface Tension

### Highest Surface Tension

- |                 |                   |                 |                   |                  |
|-----------------|-------------------|-----------------|-------------------|------------------|
| 1 .... Alumina  | 4 .... Calcia     | 7 .... Strontia | 10 .. Titania     | 13 .. Lead Oxide |
| 2 .... Magnesia | 5 .... Tin Oxide  | 8 .... Baria    | 11 .. Boric Oxide | 14 .. Soda       |
| 3 .... Zirconia | 6 .... Zinc Oxide | 9 .... Silica   | 12 .. Lithia      | 15 .. Potash     |

### Lowest Surface Tension