

# ZIRCONIUM OXIDE

## GLASS & HIGH PURITY GRADES

CAS NUMBER 1314-23-4



### GENERAL CHARACTERISTICS

MEL Chemicals zirconium oxides are dense, white powders of high chemical purity, which are manufactured by the calcination of chemically precipitated intermediates.

### APPLICATION

Whether the zirconium oxide is a minor component in a glass batch or a major constituent in a high purity ceramic, the chemical purity and consistency are of paramount importance. G grade oxides have controlled chemical compositions, with for example, iron oxide at levels of 60 ppm (G60), or 5 ppm (GL10). Zirconium oxide and other oxides of group IVB metals are all colourless; indeed, one of the advantages of zirconium oxide is its exceptionally low absorption in the visible and near UV wavebands.

With the exception of Group IVB metals, all transition metals are typically present at less than 5 ppm.

At room temperature, the G grade oxides are monoclinic, but reversible inversion to the tetragonal phase takes place at about 1000°C in the absence of other components.

In ophthalmic and other optical glasses, the presence of zirconium oxide enables high refractive indices to be achieved without the loss of durability.

Zr is also the basis of a new range of non-oxide glasses for use in optical fibres and other high technology applications.

### HEALTH & SAFETY

Material Safety Data Sheets are available on request.

### TYPICAL PROPERTIES OF GLASS AND GEMSTONE GRADES

Grade	ZrO <sub>2</sub> +HfO <sub>2</sub> *	SiO <sub>2</sub> (%)	TiO <sub>2</sub> (%)	Fe <sub>2</sub> O <sub>3</sub> (%)	SO <sub>3</sub> (%)	Loss on ignition (1400°C)	Tamped bulk density (gcm <sup>-3</sup> )	Average particle size (µm)	Surface area (m <sup>2</sup> g <sup>-1</sup> )
G60	99	0.10	0.15	0.006	0.25	0.3	2.4	12	3
GL10	99	0.01	0.01	0.0005	0.08	0.2	2.0	20	1

\*HfO<sub>2</sub> accounts for approximately 2 wt% of this total.

Trace element analysis (in ppm) Ni<1, Mn<5, Cu<2, Co<1, Cr<1

### PACKAGING

G60: 100 kg net weight in polythene-lined fibreboard drums with plastic lids.

GL10: 50 kg net weight in polythene-lined fibreboard drums with plastic lids.

Drums may be palletised for tonne lots.

### AVAILABILITY

Individual orders can usually be supplied in blended lots of up to 6000 kg for G60 and up to 3000 kg for GL10.

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