



>>Entry Name: Germanium(IV) oxide (GeO<sub>2</sub>)

Synonym(s): Germanium dioxide

CAS Registry Number: 1310-53-8

GeO<sub>2</sub>

Molecular Formula: GeO<sub>2</sub>

Molecular Weight: 104.609

Accurate Mass: 105.911007

Percentage Composition: Ge 69.41%; O 30.59%

Aldrich: 19947-8

Fluka: 48860

Sigma: G5902

>>Variant: Tetragonal-form

Molecular Formula: GeO<sub>2</sub>

Molecular Weight: 104.609

Accurate Mass: 105.911007

Percentage Composition: Ge 69.41%; O 30.59%

Melting Point: Mp 1086°

Solubility: Insol. H<sub>2</sub>O; sl. sol. NaOH

>>Variant: Hexagonal-form

Molecular Formula: GeO<sub>2</sub>

Molecular Weight: 104.609

Accurate Mass: 105.911007

Percentage Composition: Ge 69.41%; O 30.59%

Physical Description: Colourless cryst.

Melting Point: Mp 1115°

Solubility: Sol. H<sub>2</sub>O, acids, alkali; insol. HCl, HF

>>Variant: Microporous-form

Molecular Formula: GeO<sub>2</sub>

Molecular Weight: 104.609

Accurate Mass: 105.911007

Percentage Composition: Ge 69.41%; O 30.59%

>>Derivative: Tetramethylammonium hydroxide complex

Molecular Formula: C<sub>4</sub>H<sub>13</sub>Ge<sub>6</sub>NO<sub>13</sub>

Molecular Weight: 718.806

Accurate Mass: 726.565756

Percentage Composition: C 6.68%; H 1.82%; Ge 60.61%; N 1.95%; O 28.94%

Other Data: Struct. contains GeO<sub>4</sub> and GeO<sub>5</sub> units, with 4-, 6- and 8-membered channels parallel to *c* axis

>>Variant: Vitreous-form

Molecular Formula: GeO<sub>2</sub>

Molecular Weight: 104.609

Accurate Mass: 105.911007

Percentage Composition: Ge 69.41%; O 30.59%

Other Data: Pe studies have revealed four different types of bonding in bulk glass, i.e. Ge<sub>3</sub>≡Ge-O, Ge<sub>2</sub>=Ge=O<sub>2</sub>, Ge-Ge≡O<sub>3</sub> and O-Ge≡O<sub>3</sub>, with latter predominating; in contrast, Ge atoms with fewer bonded oxygens are major forms at glass surface

References: