

SILICON DIOXIDE

Crystalline silica dust | 200–500 μm

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SHORT DESCRIPTION

Silicon dioxide, also known as silica dust, is an oxide of silicon with the chemical formula SiO_2 , most commonly found in nature as quartz and in various living organisms. It generally shows a tetrahedral coordination, with four oxygen atoms surrounding a central Si atom. It is considered a basic element that makes up a large amount of the earth's crust and could therefore be a good base for the cometary refractory phase. Silicon dioxide can be dangerous if breathed in and cause multiple lung diseases. Usage of appropriate masks is necessary when handling it.

MAIN PROPERTIES

Grain Size (Distribution):	200–500 μm
Purity:	N/A
Material Density:	2300–2550 kgm^{-3} (apd) ¹
Tensile strength:	45–55 MPa
Volatility/Condensability:	solid
Thermal Conductivity:	1.3–1.5 $\text{Wm}^{-1}\text{K}^{-1}$
Refractive Index:	see [1] and [2]
Electric Permittivity:	3.6–4.2

REFERENCES

- [1] Mikhail N. Polyanskiy. *Refractive index database - Optical constants of SiO_2* . 2008. URL: <https://refractiveindex.info/?shelf=main&book=SiO2&page=Radhakrishnan-o> (visited on 10/15/2019).
- [2] T. Radhakrishnan. "Further studies on the temperature variation of the refractive index of crystals". In: *Proc. Indian Acad. Sci. (Math. Sci.)* 33.22 (1951). DOI: <https://doi.org/10.1007/BF03172255>.

MATERIAL IMAGE



Figure 1: Silica Dust

PRODUCTION INFO

	Producer	Sigma-Aldrich
	Production rate	N/A
	Purchase	N/A

PROS & CONS

Cost	●●●●●●●●
Availability	●●●●●●●●
Production time	●●●●●●●●

HAZARDS



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¹apparent particulate density