

# SILICON DIOXIDE

Crystalline silica dust | 0.5–1.0 mm

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## SHORT DESCRIPTION

Silicon dioxide, also known as silica dust, is an oxide of silicon with the chemical formula  $\text{SiO}_2$ , 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):	0.5–1.0 mm
Purity:	N/A
Material Density:	2300–2550 $\text{kgm}^{-3}$ (apd) <sup>1</sup>
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  $\text{SiO}_2$* . 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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<sup>1</sup>apparent particulate density