

CARBON DIOXIDE ICE

IGEP, TU Braunschweig, Germany



SHORT DESCRIPTION

CO₂ ice is produced from a pressured CO₂ reservoir. The gas is let into a closed polystyrene container where it forms a snow like material easy to handle. The CO₂ ice does not keep cold very long and should be used as quickly as possible. It forms irregular structures that form a very porous matrix. It should be produced in a well ventilated room and/or with an oxygen sensor.

MAIN PROPERTIES

Grain Size (Distribution):	see Figure 2
Purity:	> 99.9%
Material Density:	1.562 kgm ⁻³ (0% porosity)
Tensile strength:	1.56 MPa (50% porosity)
Volatility/Condensability:	see [3]
Thermal Conductivity:	see Fig.1 from [2]
Refractive Index:	N/A
Electric Permittivity:	2.12 ± 0.04 (0% porosity) [1]

REFERENCES

- [1] Elena Pettinelli et al. "Frequency and time domain permittivity measurements on solid CO₂ and solid CO₂-soil mixtures as Martian soil simulants". In: *Journal of Geophysical Research: Planets* 108.E4 (2003). DOI: 10.1029/2002JE001869. URL: <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2002JE001869>.
- [2] V. V. Sumarokov, P. Stachowiak, and A. Jeżowski. "Low-temperature thermal conductivity of solid carbon dioxide". In: *Low Temperature Physics* 29.5 (2003), pp. 449-450. DOI: 10.1063/1.1542510.
- [3] ChemicalLogic Corporation. *Carbon Dioxide: Temperature-Pressure Diagram*. 1999. URL: http://www.chemicallogic.com/Documents/co2_phase_diagram.pdf (visited on 10/14/2019).

MATERIAL IMAGE

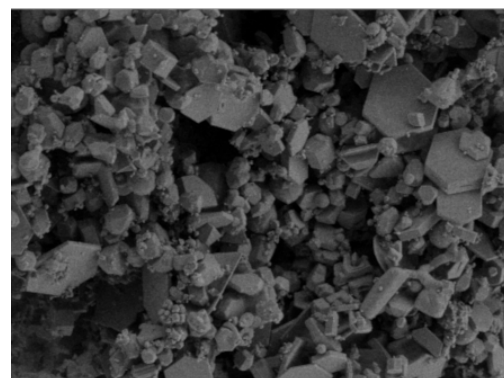


Figure 1: Carbon Dioxide Ice

PRODUCTION INFO

Producer	IGEP/TUBS
Production rate	N/A
Purchase	N/A

PROS & CONS

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

HAZARDS

CONTACT PERSON

Dr. Anthony Lethuillier
✉ a.lethuillier@tu-bs.de
🏢 TU Braunschweig/IGEP
Mendelssohnstraße 3
D-38106 Braunschweig

ADDITIONAL IMAGES AND GRAPHS

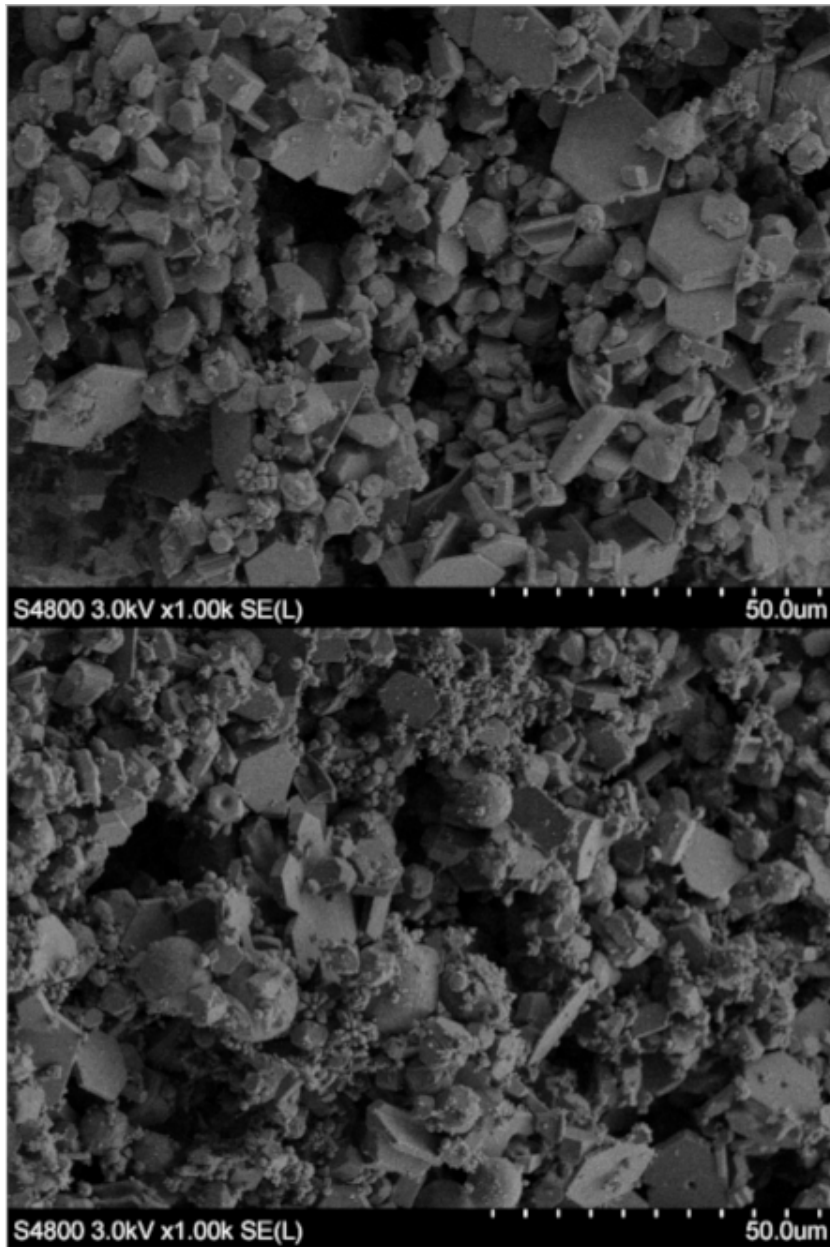


Figure 2: Grain size distribution of carbon dioxide ice