

CO₂ in Natural Ice

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Natural ice contains approximately 100 ppm (by weight) of enclosed air.

This air is mainly located in bubbles. Carbon dioxide is an exception.

The fraction of CO₂ present in bubbles was estimated to be only about 20%.

The remaining part is dissolved in the ice.

Measurements of the CO₂ content of ice samples from temperate and cold glacier ice as well as of freshly fallen snow and of a laboratory-grown single crystal were presented.

It is probable that a local equilibrium is reached between the CO₂ dissolved in the ice and the CO₂ of the surroundings and of the air bubbles.

The CO₂ content of ancient air is directly preserved neither in the total CO₂ concentration nor in the CO₂ concentration in the bubbles.

Possibly the CO₂ content of ancient air may at least be estimated if the solubility and the diffusion constant of CO₂ in ice are known as a function of temperature.

(From: Symposium on the Physics and Chemistry of Ice; Proceedings of the Third International Symposium, Cambridge (England) September 12-16, 1977. Journal of Glaciology, Vol. 21, No. 85, p 291-300, 1978. 3 fig, 5 tab, 18 ref.)(See also W79-09342) (Humphreys-ISWS)

and please read this paper as well:

http://homepage.ntlworld.com/jdrake/Questioning_Climate/userfiles/Ice-core_corrections_report_1.pdf

This paper "strongly suggests that carbon dioxide levels in the twentieth century are not very different to those on Earth over many millennia."