Technical Data Sheet

GE 124 Quartz

EMS Catalog # 72250, 72255

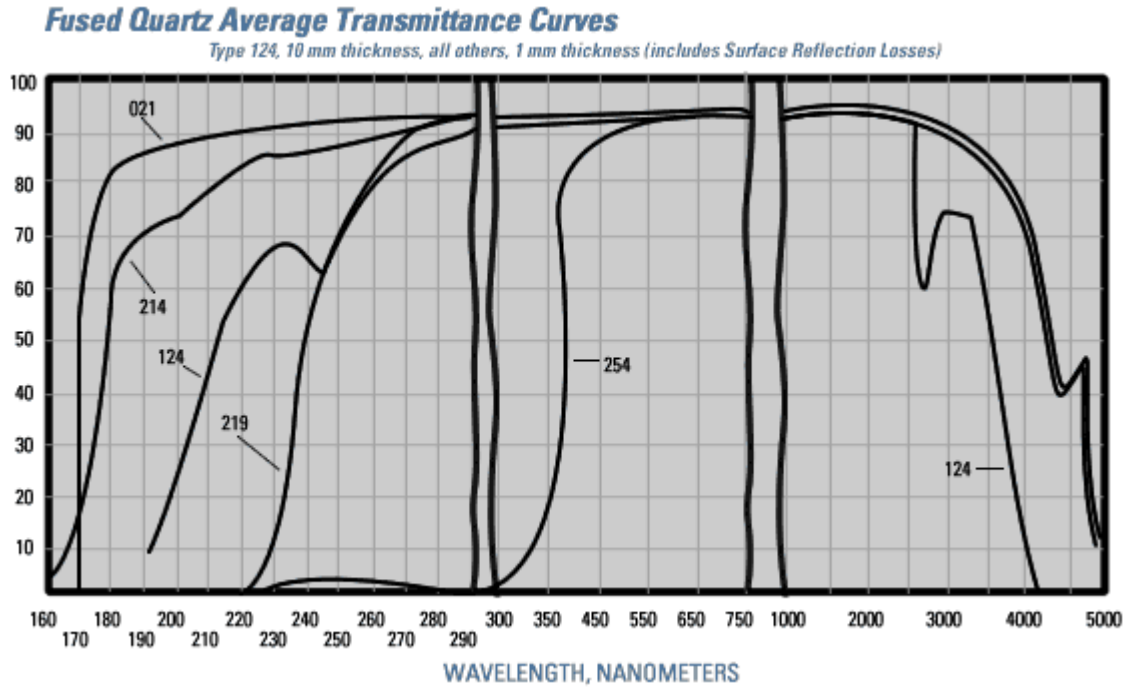
GE 124 quartz is used for quartz microscope slides and coverslips.

Typical Trace Element Composition (ppm by weight)

Type	Al	As	B	Ca	Cd	Cr	Cu	Fe	K	Li	Mg	Mn	Na	Ni	P	Sb	Ti	Zr	*OH
GE 124	14	<0.002	<0.2	0.4	<0.01	<0.05	0.05	0.2	0.6	0.6	0.1	<0.05	0.7	<0.1	<0.2	<0.003	1.1	0.8	<5

Optical transmission properties provide a means for distinguishing among various types of vitreous silica as the degree of transparency reflects material purity and the method of manufacture.

Specific indicators are the UV cutoff and the presence or absence of bands at 245 nm and 2.73 micrometers. The UV cutoff ranges from about 155 to 175 nm for a 10 mm thick specimen and for pure fused quartz is a reflection of material purity.



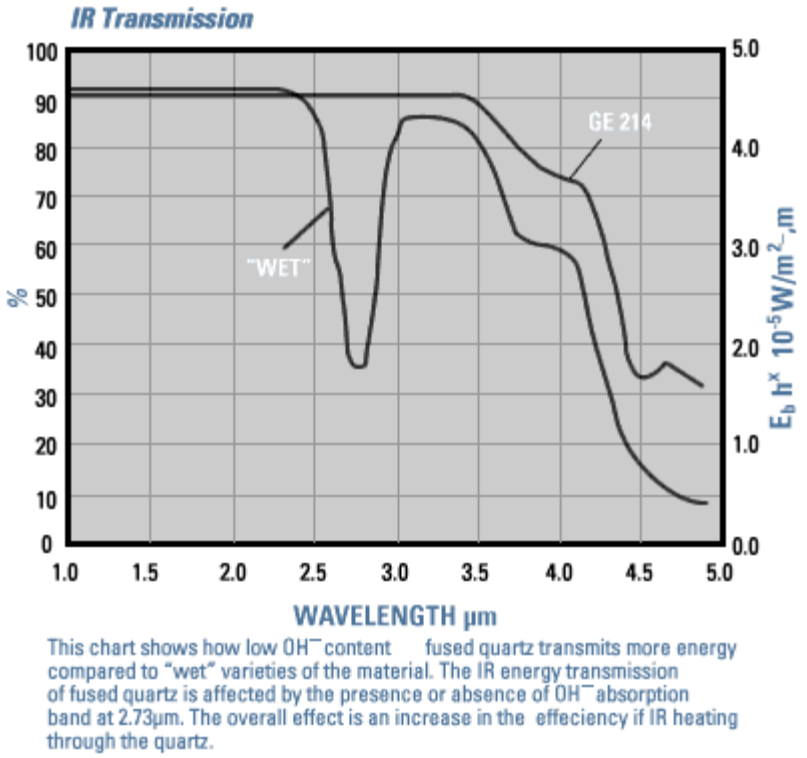
UV Cutoff

As the transmission curve illustrates, GE 214 fused quartz has a UV cutoff (1 mm thickness) at < 160 nm, a small absorption at 245 nm and no appreciable absorption due to hydroxyl ions.

High IR Transmission

The IR edge falls between 4.5 and 5.0 micrometers for a 1 mm thick sample.

GE 214/124 electrically fused quartz is a very efficient material for the transmission of infrared radiation. Its infrared transmission extends out to about 4 micrometers with little absorption in the "water band" at 2.73 micrometers. This makes Momentive Performance Materials's electrically fused quartz different than flame fused quartz (often referred to as "wet" quartz). This difference is seen in the transmission for the IR range. The IR Transmission figure illustrates this difference.



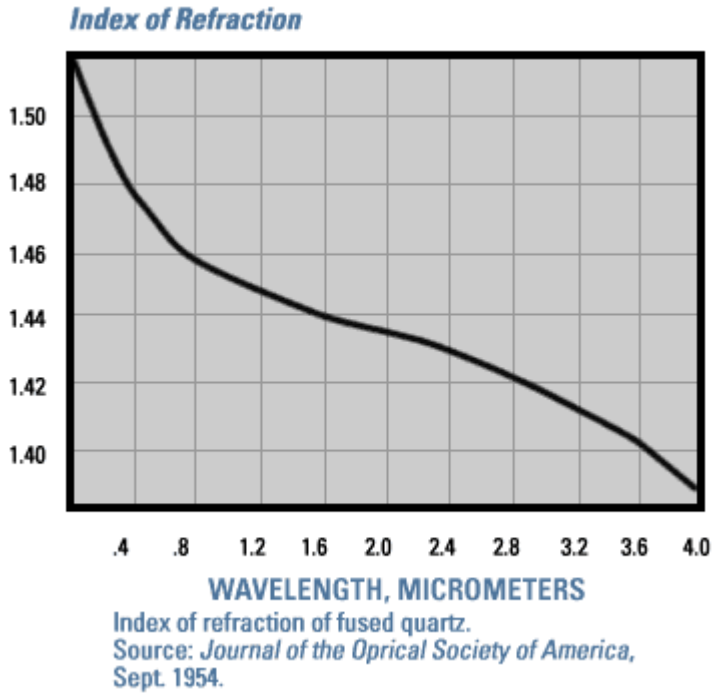
This chart shows how low OH^- content fused quartz transmits more energy compared to "wet" varieties of the material. The IR energy transmission of fused quartz is affected by the presence or absence of OH^- absorption band at 2.73µm. The overall effect is an increase in the effeciency if IR heating through the quartz.

Conversion to other thicknesses can be accomplished with the following formula:

T = (1-R)2 *e* -at

Where:
T = percent transmission expressed as a decimal.
R = surface reflection loss for one surface.
e = base of natural logarithms
a = absorption coefficient, cm-1
t = thickness, cm

Index of Refraction for Fused Quartz



Index of refraction of fused quartz.
Source: *Journal of the Oprical Society of America,* Sept. 1954.

Graphs compliments of supplier.