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(Supersedes Letter Circulars Nos. 235 and 429, and  
Form Letter, LC113)

INFORMATION ON ULTRAVIOLET TRANSPARENCY OF WINDOW  
MATERIALS AND FABRICS

Data on the ultraviolet transparency of various kinds of glass and organic substitutes for window glass (Vitaglass, Sunlit, Helio-glass, Uviol Jena, Neuglas, Corning Corex D, Quartz Glass, Celoglass, Cellophane, Tracing cloth, etc.) are given in Bureau of Standards Research Paper, RP113, entitled, "Data on Ultraviolet Solar Radiation and the Solarization of Window Materials", which is obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 15 cents a copy, prepaid. Supplemental data are given in the accompanying table.

Data on the transparency of various kinds of fabrics, feathers, etc., to ultraviolet radiation, are given in Bureau of Standards Research Paper, RP6, "Transmission of Ultraviolet Radiation Through Various Kinds of Fabrics", obtainable from the Superintendent of Documents, at a price of 5 cents a copy, prepaid.

Data on the depth of penetration of radiation of various wave lengths (ultraviolet, infrared) are given in a paper on "Spectral Characteristics of Light Sources and Window Materials", published in Trans. Illum. Eng. Soc., vol. 23, p. 251 (March 1928).

Data on the variation of ultraviolet solar radiation with altitude, latitude, time of the day and season of the year, are given in Bureau of Standards Research Papers, RP318, "Measurement of Extreme Ultraviolet Solar Radiation by a Filter Method", RP370, "A Balanced Thermocouple and Filter Method of Ultraviolet Radiometry with Practical Applications", and RP877, "Evaluation of Ultraviolet Solar Radiation of Short Wave Lengths", obtainable from the Superintendent of Documents at 10 cents each, prepaid.

In order to insure effective biological action of sunlight, the Council on Physical Therapy (Journal, American Medical Association, vol. 95, p. 864, 1930; reprint revised November, 1931) requires, for acceptance, that the transmission through window glass and substitutes for window glass, after complete solarization, shall not be less than 30 per cent of the incident radiation at wave length 302m $\mu$  (standard thickness 2.3mm). The Federal Specification for ultraviolet transmitting glass has similar requirements (Federal Specification DD-G-476, March 29, 1932; obtainable from the Superintendent of Documents, at 5 cents a copy, prepaid).



TABLE 1

Percentage transmission of various window glasses at 302m $\mu$ , when new and after exposure at a distance of 15cm from a 110-volt horizontal Uviarc quartz mercury lamp for 10 hours; and of duplicate samples exposed to the sun and weather since the date indicated in column 8. Thickness of glasses, 2.3mm.

Tests of glasses that have been solarized for 6 to 8 years show that, after exposure to the summer sun for about 3 months, the transmission becomes stabilized and remains practically constant (see columns 5, 6, 7, and 8).

Trade Name	No. of Samples Tested	Average Per Cent Transmission					
		New	After Exposure to Lamp	After Exposure to Sun			From
				To Oct. 5, 1932	To Nov. 1, 1934	To Oct. 5, 1937	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Brephos {	3	:68	: 50	: 57	: 56	: 55	:Mar., 1931
	3	:64	: 47	: 54	: 53	: 52	:Feb., 1932
Corex D	6	:67	: 65	: 66	: 66	: 66	:Apr., 1932
*Cosmos	2	:72	: 45	: 55	: 55	: 55	:May, 1931
*Helioglass {	4	:64	: 45	: 52	: 52	: 51	:Dec., 1929
	2	:69	: 47	: 56	: 56	: 55	:Nov., 1931
Quartz Glass	1	:92	: 92	: 92	: 92	: 92	:-----
Sunlit {	3	:72	: 47	: 55	: 55	: 54	:Aug., 1930
	3	:68	: 45	: 52	: 52	: 50	:Apr., 1932
Uviol-Jena {	3	:58	: 39	: 48	: 48	: 47	:Apr., 1929
	6	:69	: 55	: 64	: 64	: 63	:May, 1932
Vitaglass {	3	:63	: 31	: 42	: 41	: 39	:Mar., 1931
	3	:55	: 29	: 38	: 36	: 35	:Apr., 1932

Standard thickness Lustraglass transmits 15 to 20 per cent at 313m $\mu$  when new (10 to 15 per cent after exposure to the sun). At 302m $\mu$ , Lustraglass transmits about 2 per cent, while the special glasses, listed above, transmit upwards of 40 per cent.

(\* ) Domestic distribution discontinued.

