

## **Observation Room Windows**

Observation room windows provide psychologists, physicians, and scientists with a chance to observe patients or subjects undetected, and thus to provide better treatment or to advance research. This memo explains how glass for observation windows may be selected.

"One-way vision" can be achieved by maintaining an adequate subject/observer lighting level ratio (SOR), with clear glass or even without any glazing material. Harold Horowitz, NSF, suggests 10-15% transmittance glass (VLT) with SOR = 10 (subject 100 footcandles/observer 10 footcandles). To see clearly, yet remain undetected, observation room surfaces should be flat black, light sources must be carefully shielded, and observer must wear dark clothing.

Horowitz says, "under these lighting conditions, transparent glazing materials of all degrees of light transmission will appear to be mirrors when viewed from the bright subject side."

Low transmittance glass with a VLT of 33 or less such as Graylite<sup>®</sup>II, Solarcool<sup>®</sup> Azuria<sup>®</sup>, Solarcool<sup>®</sup> Pacifica<sup>®</sup>, Solarcool<sup>®</sup> Solarblue<sup>®</sup>, Solarcool<sup>®</sup> Solargray<sup>®</sup>, Solarcool<sup>®</sup> Solarbronze<sup>®</sup>, and Vistacool<sup>®</sup> Pacifica<sup>®</sup> products enhance one-way performance by increasing "<u>effective</u> lighting ratio" (ELR) and by reducing subject room light on the observer (see Table I). According to Horowitz, the ELR should be at least 60 when low transmittance glasses are selected. Higher ELR values may be needed with clear glass.

#### Example:

Calculate maximum glass transmittance which will provide an ELR = 60 when subject room level is 100 FTc and observation room level is 5 FTc:

 ELR = Subject room lighting level (footcandles)
 X
 100

 Observation room lighting level (footcandles)
 VLT

(VLT is glass visible light transmittance)

$$60 = \frac{100}{5} \times \frac{100}{VLT}$$

$$VLT = \frac{100 \times 100}{5 \times 60} = 33$$

From Table I, Column 1, select Graylite<sup>®</sup> II (VLT = 9) or any other glass with VLT of 33 or less. When using reflective coated glass such as Solarcool<sup>®</sup> or Vistacool<sup>®</sup>, the reflective surface must be facing the Subject Room

Reference: "Observation Room Windows", by Harold Horowitz, American Psychologist, March 1969, Vol. 24, No. 3



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### **EFFECTIVE LIGHTING RATIOS**

		SOR	SOR	SOR	SOR	SOR
		5	10	20	50	100
Vitro PRODUCT	<u>VLT</u>	<u>ELR</u>	<u>ELR</u>	<u>ELR</u>	<u>ELR</u>	<u>ELR</u>
Clear Float	89	6	11	22	56	112
Atlantica®	67	7	15	30	75	149
Azuria®	68	7	15	29	74	147
Graylite <sup>®</sup> II	9	56	111	222	556	1111
Optigray <sup>®</sup>	63	8	16	32	79	159
Pacifica®	42	12	24	48	119	238
Solarblue <sup>®</sup>	56	9	18	36	89	179
Solarbronze <sup>®</sup>	53	9	19	38	94	189
Solargray®	44	11	23	45	114	227
Solexia®	77	6	13	26	65	130
Solarcool <sup>®</sup> Azuria <sup>®</sup>	26	19	38	77	192	385
Solarcool <sup>®</sup> Pacifica <sup>®</sup>	16	31	63	125	313	625
Solarcool <sup>®</sup> Solarblue <sup>®</sup>	21	24	48	96	238	476
Solarcool <sup>®</sup> Solarbronze <sup>®</sup>	21	24	48	96	238	476
Solarcool <sup>®</sup> Solargray <sup>®</sup>	17	29	59	118	294	588
Vistacool <sup>®</sup> Azuria <sup>®</sup>	52	10	19	38	96	192
Vistacool <sup>®</sup> Pacifica <sup>®</sup>	32	16	31	63	156	313
SOR = <u>Subject Room Lighting Level (FTc)</u> Observation Room Lighting Level (FTc)						

**TABLE I.** Effective Lighting Ratio (ELR) Of Vitro Architectural Glass

 Products When Used For "One Way" Window Applications



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HISTORY TABLE						
ITEM	DATE	DESCRIPTION				
Original Publication	2/1/1975					
Revision #1	1/15/2002	Transferred to TD-116				
Revision #2	10/04/2016	Updated to Vitro Logo and format				
Revision #3	1/24/2019	Updated the Vitro Logo and format				
Revision #4	12/27/2024	Updated Vitro Products, Table 1, and general formatting.				

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