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Sound Transmittance

The following is a summary of established guidelines that can be followed by a building designer to make an evaluation of a product to meet the minimum Sound Transmission Control (STC) required for exterior windows and/or skylights of a building subject to aircraft, highway traffic, or rail noise. These are the most commonly occurring sources of excessive exterior noise exposure.

Local building codes may regulate construction of buildings with excessive exterior noise exposure, to meet a minimal STC rating. Unlike other fenestration value requirements, higher glass STC ratings indicated higher performing products. A STC requirement of 35 is common for construction near airports – therefore a STC rating of 35 or greater would qualify. Theoretically, STC ratings have no upper limit in range; however, logically there are some limitations. The entire building envelope is normally considered when addressing noise reduction.

An STC of 35 would indicate a level of noise reduction such that otherwise loud noises would be reduced to a murmur. A rating of 45 begins 'sound proofing' where a majority of all sounds is blocked or greatly reduced. This might be a goal value of an interior wall of a home that features a high-end home theatre system in a particular room. 60 or higher provides superior 'sound proofing,' most sounds inaudible.

For perspective, typical interior walls in homes (2 sheets of 1/2" drywall on a wood stud frame) have an STC of about 33. Adding absorptive insulation in the wall cavity increases the STC to 36-39, depending on stud and screw spacing. Concrete and concrete block walls have STCs in the 40s and 50s for 4-8" thicknesses.

STC ratings for windows and skylights are primarily a function of the glazing configuration as the glazing surface is what functions as the potential conduit to the interior space. The framing members of skylights in particular are less important due to the nature of the installation. Therefore, STC ratings for windows and skylights are typically approximated based on the industry validated and conservative STC ratings of the glazing configuration to be utilized.

Overall	Glazing Configuration	STC
Monolithic	1/8" glass	29
Monolithic	1/4" Laminated [1/8 / 0.030 / 1/8]	34
IGU (Temp / Temp)	1/4" 1/2" AS 1/4"	35
IGU (Temp / Lam)	1/8" 1/2" AS 1/4" Lam [1/8 / 0.030 / 1/8]	35
IGU (Temp / Lam)	1/4" 1/2" AS 1/4" Lam [1/8 / 0.030 / 1/8]	39
IGU (Temp / Lam)	1/4" 1/2" AS 1/4" Lam [1/8 / 0.060 / 1/8]	40

CrystaLite standard skylights featuring 1" IGU (Temp / Lam) units have an approx. minimum STC rating of 35.

Sound transmission loss tests are in accordance with ASTM E90. STC ratings have been determined from TL data using ASTME413 Laboratory measured STC and OITC ratings for various glass configurations. Sound reduction values of plastic sheet components based on calculated values according to DIN 52210-75. The data and information set forth are based on samples tested and are not guaranteed for all samples or applications.

References Monsanto Corporations Acoustical Glazing Design Guide Publication No. 8018B. Acoustical Glazing Design Guide – Saflex Glass Acoustical Information - Cardinal IG