

## Lexan\* Thermoclear\* Solar Control Sheet With solar reflective coating

## Product Datasheet

### Description

Lexan\* Thermoclear\* Solar Control sheet with solar reflective coating is part of the Lexan Thermoclear sheet range of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin. Lexan Thermoclear Solar Control sheet with solar reflective coating is Lexan Thermoclear with a one side solar reflective coating applied on the non U.V. side. This reduces heat build up beneath the sheet, e.g. inside the building, while remaining a high light transmission. Lexan Thermoclear Solar Control sheet with solar reflective coating offers: twin, triple, five and X-structure wall structure, one side U.V. protected (outside), one side solar reflective coating (inside), excellent light transmission, light weight, easy installation, long-term weather resistance, outstanding thermal insulation properties, excellent solar control properties result in agreeable comfort level inside.

### Typical Property Values ♦

Grade-Color	Gauge (mm)	Weight (kg/m <sup>2</sup> )	Sound reduction value † (dB)	U- value <sup>‡</sup> (W/m <sup>2</sup> K)	Hail impact Test †† (m/sec)	LT* D65 (% LT)	DST (%DST)	TST# (%TST)	SHGC #	LSGR	SC
<b>LTC82RS15SC</b> 112BSC	8	1.5	18	3.26	>21	64	53	61	0.61	1.05	0.70
<b>LTC102RS17SC</b> 112BSC	10	1.7	19	3.02	>21	66	54	63	0.63	1.05	0.72
<b>LTC163TS27SC</b> 112BSC	16	2.7	21	2.27	>21	60	50	60	0.60	1.00	0.69
<b>LTC163TS28SC</b> 112BSC	16	2.8	21	2.27	>21	60	50	60	0.60	1.00	0.69
<b>LTC163X29SC</b> 112BSC	16	2.9	22	2.10	>21	56	46	59	0.59	0.95	0.68
<b>LTC205RS33SC</b> 112BSC	20	3.3	22	1.77	>21	53	44	53	0.53	1.00	0.61
<b>LTC256RS35SC</b> 112BSC	25	3.5	23	1.45	>21	48	41	58	0.58	0.83	0.67
<b>LTC325X38SC</b> 112BSC	32	3.8	24	1.32	>21	47	39	50	0.50	0.94	0.58

♦ These property values have been derived from Lexan\* resin data for the material used to produce this sheet product

† Sound reduction value based on SABIC Innovative Plastics calculated values according DIN 52210-75

‡ U-values based on SABIC Innovative Plastics calculated values according ISO 10077 (EN673)

†† Hail simulation test developed by TNO, the Netherlands, artificial hailstones of 20 mm diameter are shot at the sheet at min. speed of 21 m/sec.

\* LT (Light Transmission), DST (Direct Solar Transmission) and TST (Total Solar Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples

# TST (Total Solar Transmission) divided by 100 equals Solar Heat Gain Coefficient (SHGC) or g-value.

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Lexan\* Thermoclear\* Solar Control sheet with solar reflective coating significantly reduces solar heat gain, cuts down the brightness of sunlight to a pleasant level, helping to maintain comfortable interior building temperatures, combined with a high light transmission. The thermal comfort level of a person below a transparent roof is determined by the heat balance of the body. This heat balance is mainly influenced by: Air temperature, mean radiant temperature, air velocity and humidity. The air temperature beneath the roof is dependant on the direct solar transmission of the solar intensity of the sun plus the inwardly released part of the heat absorbed by glazing, construction, and floor. Solar radiation falling on the sheet is either reflected (R), absorbed (A) or directly transmitted (DT).

$DT+R+A$ =total solar intensity

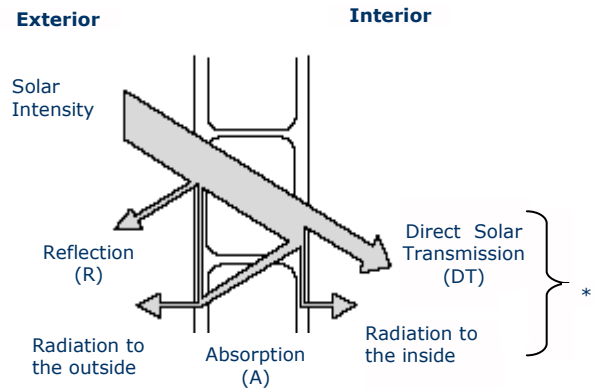
DT=direct solar transmission

R= solar reflection

A=solar absorption

Normally the largest proportion of the energy is transmitted, with the total solar transmission (ST) comprising the direct transmission (DT) plus the absorbed energy (A) released to the interior.

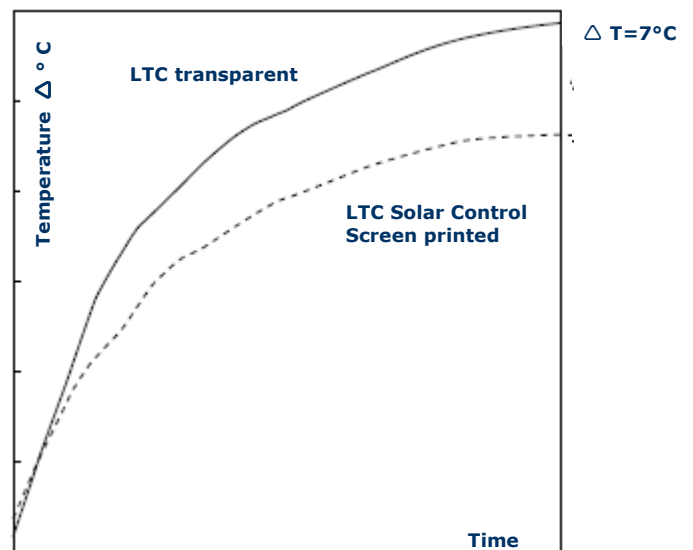
Solar transmission



\* Total solar transmission (ST)

Lexan Thermoclear Solar Control sheet with solar reflective coating significantly reduces the total solar transmission (ST) by solar reflection (R). Dark tinted glazing materials restrict the amount of direct solar transmission but this effect is counteracted by high solar absorption which results in a high glazing material temperature and so high radiation of heat into the building. To raise the comfort to more favorable levels the application of solar reflective glazing is often necessary, resulting in lower glazing temperatures, lower radiant temperature and less direct sun penetration onto floor level. Lexan Thermoclear Solar Control sheet with solar reflective coating offers an extremely light to solar gain ratio of 1.2

Inside heat build up simulation



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### Definitions

**Light Transmission D65 (% LT):**

Percentage of the incident visible light that passes through an object.

**Direct Solar Transmission (%DST):**

Percentage of incident solar radiation that passes directly through an object.

**Total Solar Transmission (%TST):**

The percentage of incident Solar radiation transmitted by an object which includes the direct Solar Transmission plus the part of the Solar Absorption reradiated inward.

**Solar Heat Gain Coefficient (SHGC):**

or g-value is the total solar energy that enters the interior of a building, divided by 100.

**Shading Coefficient ( SC):**

The ratio of the total solar radiation transmitted by a given material to that transmitted by normal 3 mm glass, whose light transmission is 87%.  $SC = \%TST/87$ .

**Light to Solar Gain Ratio (LSGR):**

The ratio between total light transmission (LT) and the total solar transmission (TST).

### UV Resistance

Despite transmitting visible light very well, Lexan Thermoclear Solar Control sheet with solar reflective coating is almost opaque to radiation in the UV and far infra-red region. This useful shielding property can prevent discoloration of sensitive materials such as fabrics or other organic materials placed under or behind Lexan Thermoclear Solar Control sheet with solar reflective coating glazing in, for example, a factory warehouse, museum or shopping centre.

The complete Lexan Thermoclear Solar Control sheet with solar reflective coating range features a proprietary both sides surface treatment designed to protect the sheet against the degrading effects of ultra-violet radiation in natural sunlight.

### Warranty

SABIC Innovative Plastics offers a Ten (10) Year Limited Written Warranty on Lexan Thermoclear Solar Control sheet with solar reflective coating covering discoloration, loss of light transmission and loss of strength due to weathering. See warranty for exact details.

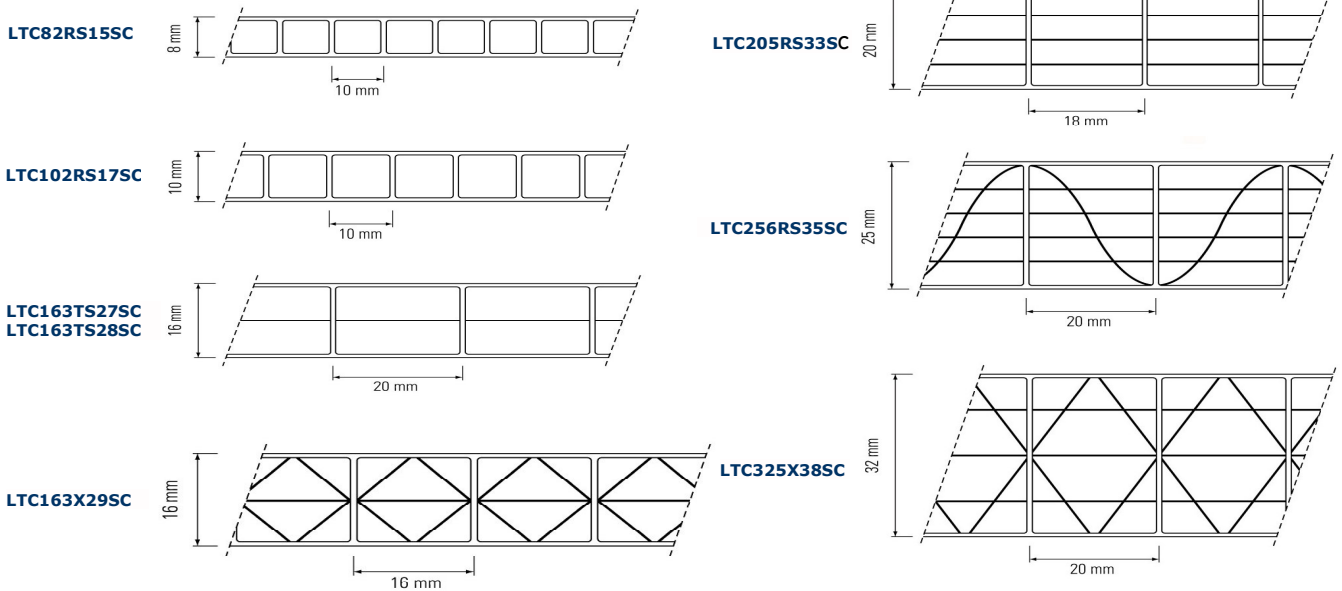
### Thermal insulation

The multi-wall structure of Lexan Thermoclear Solar Control sheet with solar reflective coating offers significant advantages where thermal insulation is a major consideration. The hollow form provides excellent insulation characteristics with heat losses significantly lower than mono-wall glazing materials.

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Structures and nomenclatures



Fire Test Performance

Lexan\* Thermoclear\* Solar Control sheet with solar reflective coating has good fire behavior characteristics, and receives high ratings in several major European fire performance tests. More detailed information is available from your local SABIC Innovative Plastics' Service Center or authorized dealer.

Sound insulation

The sound insulation characteristics of a material are largely pre-determined by its stiffness, mass and physical construction. According to DIN 52210-75, the maximum obtainable sound transmission is 24dB.

Impact Strength

Lexan Thermoclear Solar Control sheet with solar reflective coating has outstanding impact performance over a wide temperature range, -40°C to 120°C, and also after prolonged outdoor exposure.

Hail Simulation

As roofing material Lexan Thermoclear Solar Control sheet with solar reflective coating is subjected to the extremes of weather; storms, hail stones, wind, snowfalls and ice formation. Under these conditions, the product is virtually unbreakable and is able to accommodate the subsequent temperature change to sunny conditions without breaking or buckling. It should be noted that when the glass and Acrylic are tested their failure characteristics are typical brittle, whilst Lexan Thermoclear Solar Control sheet with solar reflective coating shows a ductile deformation one, e.g. small indentations. SABIC Innovative Plastics offers a Ten Year (10) Warranty on Lexan Thermoclear Solar Control sheet with solar reflective coating covering loss of strength or impact due to weathering.

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### Storage

Lexan\* Thermoclear\* Solar Control sheet with solar reflective coating should be stored and protected against atmospheric influences like sun, rain, etc. Care should be exercised when handling and transporting Lexan Thermoclear Solar Control sheet with solar reflective coating in order to prevent scratches on the panel surface and damage to the panel edges.

### Cleaning

SABIC Innovative Plastics recommends the following cleaning agent SUMALIGHT D12 BRUCODECID (check Technical manual for further details). Small surfaces can be cleaned with luke warm water, using a soft sponge and a solution of mild soap. Do not use any corrosive materials or chemicals to clean Lexan Thermoclear Solar Control sheets with solar reflective coating. Using any other cleaning agents than the recommended one must have the approval of SABIC Innovative Plastics in order to keep the properties of Lexan Thermoclear Solar Control sheet with solar reflective coating.

### Chemical Resistance

Neoprene, EPT or EPDM rubbers with an approximate Shore Hardness of the A65 are recommended. When using glazing compounds it is essential that the sealant system accepts a certain amount of movement to allow for thermal expansion, without loss of adhesion to the frame or sheet. Silicone sealants are generally recommended for use with Lexan Thermoclear Solar Control sheet with solar reflective coating. It is strongly advised when using sealing to check before compatibility before use.

### Sawing

Lexan Thermoclear Solar Control sheet with solar reflective coating can be cut easily and accurately with standard workshop equipment. This includes common circular, hand and hacksaws. Saw dust should be blown out of the channels using clean compressed air. Circular saw blade should be fine-toothed panel blades. When hand or power hacksaws are used, the sheet should be clamped to the worktable to avoid undesirable vibration.

### Thermal expansion allowance

Since Lexan Thermoclear Solar Control sheet with solar reflective coating has a greater linear thermal expansion coefficient than that of traditional glazing materials, care should be taken to allow for free expansion of the sheet to prevent bowing and internal thermal stress. Thermal expansion allowance must be made for both the length and width of the Lexan Thermoclear Solar Control sheet with solar reflective coating. In general, thermal expansion of the sheet is approximately 3 mm per linear meter.



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