Low E
Low Emissivity Glass
What is Low E Glass?

Low E glass has a special metal coating applied to one side of the glass, technically known as a low emissivity, or Low E coating.

Low E glass is a type of performance glass, which increases the energy efficiency of the building by reducing the transfer of heat or cold.

With Low E glass your house stays warmer in winter, and cooler in summer.

Types of Low E Glass

Hard Coat Low E, or pyrolytic coating, is a coating applied at high temperatures and is applied to the glass surface during the float glass manufacturing process.

Soft Coat Low E, or sputter coating, is applied in multiple layers of optically transparent silver, sandwiched between layers of metal oxide in a vacuum chamber.

National Glass only offers the Hard Coat Low E
### Advantages vs Disadvantages

#### Advantages
- Pyrolytic coating allows for tempering
- Can be used in single glazed applications
- Re-radiates solar radiation to the inside of the building if desired result is heating a building.

#### Disadvantages
- Higher U-values compared to soft coat Low E products
- Higher solar heat gain coefficient compared to soft coat Low E products
- Slightly higher haze level, can be visible at certain angles
- Specialized cleaning required
- If coating is damaged, discoloration can occur
- Not advisable for hot climates

### Figures to look out for

**U-Value**, this figure indicates the amount of energy (expressed in watts per metre squared Kelvin, or W/m²K) that is lost through 1m² of a sample pane of glass for every degree of temperature difference between the outside and the inside ambient air. **The lower the figure, the better the performance.**

**SHGC** measures how well the fenestration blocks out heat from sunlight. SHGC is the fraction of heat from the sun that enters a room, it is expressed as a number between 0 and 1. **The lower the figure, the better the performance.**
How does Low E Glass work?

The sun’s energy (short wave radiation) which passes through the fenestration is absorbed by carpets, furniture etc. The radiation coming from these furnishings is long wave radiation.

You may need double glazing depending on your building energy requirements. By using Low E glass in either a doubled glazed or its monolithic form, you can manipulate the long wave radiation to either warm or cool the building.

Winter vs Summer

**Winter**
- The Low E coating prevents heat escaping through the glazing, therefor containing the long wave radiation
- Radiant room heat is reflected back into the building
- This results in a lower winter U-value
- The higher the indoor glass temperature, the warmer the room

**Summer**
- The Low E coating filters the sun’s short wave radiation
- Reduces the amount of solar heat gain into the building
- This results in a lower SHGC value
- The lower the indoor glass temperature, the cooler the room
Standard Conventions

As energy saving becomes more important in our daily lives, installing Low E glass can assist with achieving these objectives.

Architects can use the default figures in Table 6 to assist with specifications.

<table>
<thead>
<tr>
<th>GLASS DESCRIPTION</th>
<th>PERFORMANCE VALUES</th>
<th>Default</th>
<th>Simulated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U-VALUE</td>
<td>SHGC</td>
<td>U-VALUE</td>
</tr>
<tr>
<td>ALUMINIUM/STEEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single - Clear</td>
<td>7.90</td>
<td>0.81</td>
<td>5.60</td>
</tr>
<tr>
<td>Single - Tinted</td>
<td>7.90</td>
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<td>5.60</td>
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<tr>
<td>Single - Low Eα</td>
<td>5.73</td>
<td>0.66</td>
<td>4.06</td>
</tr>
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<td>Clear Double (3/6/3)</td>
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<td>3.00</td>
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<tr>
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<tr>
<td>Clear Double Low Eα</td>
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<td>2.41</td>
</tr>
<tr>
<td>Tinted Double Low Eα</td>
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<td>0.54</td>
<td>2.41</td>
</tr>
</tbody>
</table>

Notes:
• Glazing elements require total U-values and SHGC’s and are assessed for the combined effect of glass and frames
• The measurements of these total U-values and SHGC’s are specified in the guidelines of the National Fenestration Rating Council (NFRC)
• U-Value and SHGC’s, based on the NFRC assessment methods are shown for some simple types of glazing elements in this table
• Lower numbers indicate better glazing performance
• This table gives worst-case assessments which can be improved through testing or simulation as per Eagle values
• Low Eα assumes emissivity of 0.2 or better with the coating to surface 2
• Low Eα assumes emissivity of 0.2 or better with the coating to surface 3 of the double glazed unit
• Solarvue Neutral HL has been used for the single tinted glass simulation
• Solarvue Neutral HL with a 4mm Clear inner has been used for the Tinted Double Simulation
• Solarvue Neutral HL with 4mm Low E inner has been used for the Tinted Double Low E Simulation
Specialised Cleaning

Low E coating can attract metal deposits to the coated surface. This may appear as a “stain” or “scratch”.

Recommended Cleaning Products:
- Hydrochloric acid water solution, mixed 1:10, and
- Clean lint-free soft cloth

Recommended Cleaning Procedure:
- Observe all instructions of the chemical manufacturer
- Wear gloves/eyewear and take extreme care not to spill
- Diluted solutions may be corrosive to organic matter
- Always add acid to water and not vice versa
- Adding water to acid will react violently
- First pour water in container
- Then add acid carefully as indicated
- Apply a small amount of the solution to a clean wet cloth
- Gently rub the area requiring spot cleaning
- Wipe clean with a wet cloth
- Follow with the recommended hand cleaning procedure
- Do not wipe with a dry cloth
- Do not wipe when surface is dry
- Don’t allow the cleaner to come in contact with surrounding frame, surfaces or paintwork may be damaged by these solvents

Summary

- It is lighter, more cost effective and easier to install compared to an IG Unit with similar U-value
- Available in Monolithic 4mm and 6mm, which can be toughened
- Available in Laminated 6.38mm, 8.38mm, 10.38mm, 12.38mm
- For cleaning guidelines refer to our Low E Cleaning Guide available at www.natglass.co.za