

## SunGuard® IS 20 Technical Information



### **SunGuard IS 20 interior-surface coating delivers superior thermal performance with striking clarity.**

Offering strength, durability, and cleanability comparable to standard float glass, IS 20 provides beautifully clear, extraordinarily efficient glass for windows and glazings in office buildings, high rises and other commercial and institutional settings.

Combined with a Guardian low-emissivity coating on the second surface, the addition of IS 20 on the fourth surface provides an enhanced thermal barrier, improving the energy performance of a dual-glazed or triple-glazed low-e window.

IS 20 gives you enhanced control over energy and aesthetics.

### Features

- Low u-value
- High visible light transmission
- Low haze
- Neutral color
- Smooth and durable surface
- As mechanically and chemically durable as regular glass

### Benefits

- Meet or exceed energy codes and earn LEED credits with the help of this exceptional low-e interior coating
- Save energy and money on lower heating and air-conditioning costs
- Beautiful to look at and through
- Cleanable, smooth surface
- Coating withstands cleanings, daily wear-and-tear, abrasion and exposure to the environment comparable to standard float glass
- IS 20 allows for versatile treatments in fabrication to meet building requirements and design specifications

### Options

- Clear and UltraClear™:
  - 6 mm standard stock sheets
  - 8 mm & 10 mm MTO

### Adapts to Aesthetic and Safety Needs

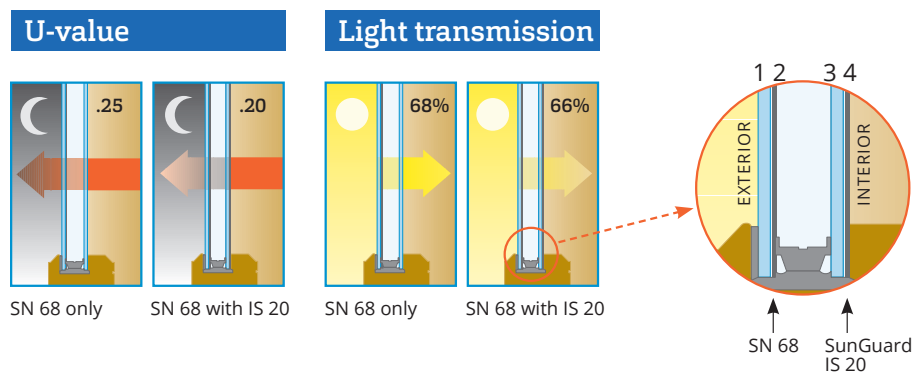
Heat-treated product can be bent, laminated and heat soaked

### Offering

SunGuard® IS 20 can be paired with other SunGuard high-performance low-e coatings to improve thermal performance

### Dimensions

- Standard stock sheet: 102" x 144"
- Maximum: 102" x 168" MTO
- Other sizes may be available upon request



### Test Specifications

- Glass configuration: 6.0 mm on Clear / ½" 90% Argon, 10% Air / 6.0 mm on Clear
- Coatings: SN 68 on the #2 surface; SunGuard IS 20 on the #4 surface
- U-value: calculated for dual-glazed, low-e window with Argon fill; winter/night measurement

## Performance Testing

IS 20 is smooth to the touch and has less haze than pyrolytic coatings.

### Temperature and Humidity

IS 20 is more resistant to corrosion than standard float glass.

When tested 14 days in a high-temperature, high-humidity chamber to accelerate aging:

- uncoated float glass shows visible staining which cannot be removed, even when using polishing agents
- IS 20 shows no damage

### Mechanical Strength

IS 20 has the mechanical and chemical strength of uncoated float glass.

SunGuard® IS 20 performs as well as uncoated float glass in tests that replicate real-world conditions such as its ability to:

- withstand machine washing during fabrication (test—1,000 cycles with a wet DQB brush)
- sustain daily wear and tear, including incidental contact with people, clothing, window treatments, etc. (test—1,000 cycles with a dry DQB brush)

In both wet and dry brush tests, IS 20 shows no damage.

### Chemical Durability

SunGuard IS 20 is chemically stable and can withstand real-world exposure to the same cleansers, fabrication chemicals and building/remodeling conditions as standard float glass.

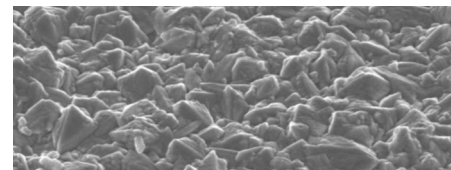
### Handling and Fabrication

IS 20 must be heat-treated. For complete handling and fabrication guidelines, please refer to the Guardian Residential Coated Products User's Guide.

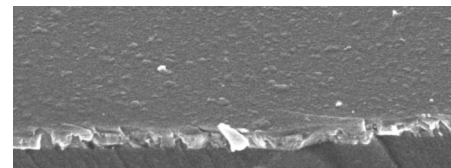
### Cleanability

The smooth surface of IS 20 cleans like standard, uncoated float glass and doesn't attract dirt and dust, whereas environmental contaminants tend to build up in the rough surface of pyrolytic coatings and are difficult to remove—leading to increased haze over time.

IS 20 can be cleaned using common products such as Glass Plus®, Windex® and Pledge® without leaving residue or causing damage.



Pyrolytic glass surface, magnified at 20,000 times, using an SEM.



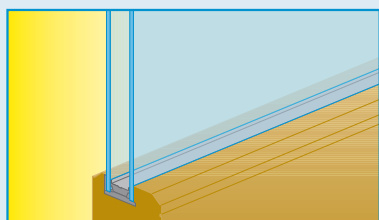
SunGuard IS 20 surface, magnified at 20,000 times, using an SEM.

Test	Results
<b>Exposure to harsh chemicals</b> Ammonium hydroxide; hydrochloric acid; nitric acid; sulfuric acid; sodium hydroxide; concrete splash	No damage
<b>Paint and stain resistance</b> Oil; acrylic; latex; urethane; wood stain	No paint residue, no damage
<b>Removability of tape</b> Painter's tape; duct tape; VHB; polyisobutylene; aged duct tape	No tape residue, no damage
<b>Sealant compatibility (removal)</b> Synthetic rubber; silicone; polyurethane; latex (Testing included new and UV-aged sealants.)	No sealant residue, no damage
<b>Sealant compatibility (adhesion)</b> Synthetic rubber; silicone; polyurethane; latex	No adhesive failure

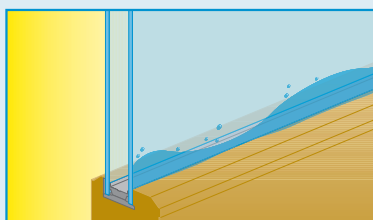
## About Condensation

Understanding condensation, and knowing what can be done to control it, can help architects and builders select the right glass solution for energy efficiency and beautiful light—to ensure longtime satisfaction from building occupants.

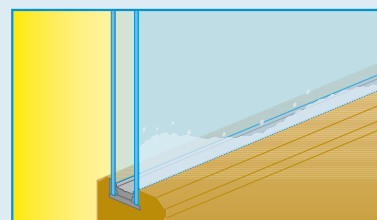
Warm air contains humidity. As air cools and reaches the dew point, humidity becomes dew or condensation. As temperatures outside drop, the temperature of the window glass itself will become cooler. When the window reaches a temperature below the dew point, moisture inside the building can cause interior condensation.



*When glass temperatures are **above the dew point**, no condensation will form*



***At or below the dew point**, windows begin to show condensation*



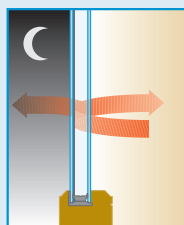
***At freezing** temperatures, condensation will become frost*

### IS 20 Interior-surface Coating and Its Effect on Condensation

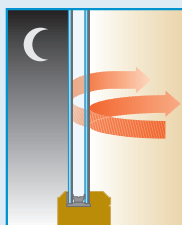
High-performance windows with interior-surface coatings are exceptionally good at preventing heat transmission through the window, ultimately causing the window temperature to be a few degrees cooler than low-e windows without the interior coating.

The heat that would be absorbed by a window without an interior-surface coating is instead reflected back into the room, resulting in a warmer room, and a cooler window. Lower window temperatures mean that condensation will occur on the glass sooner than it would without the coating.

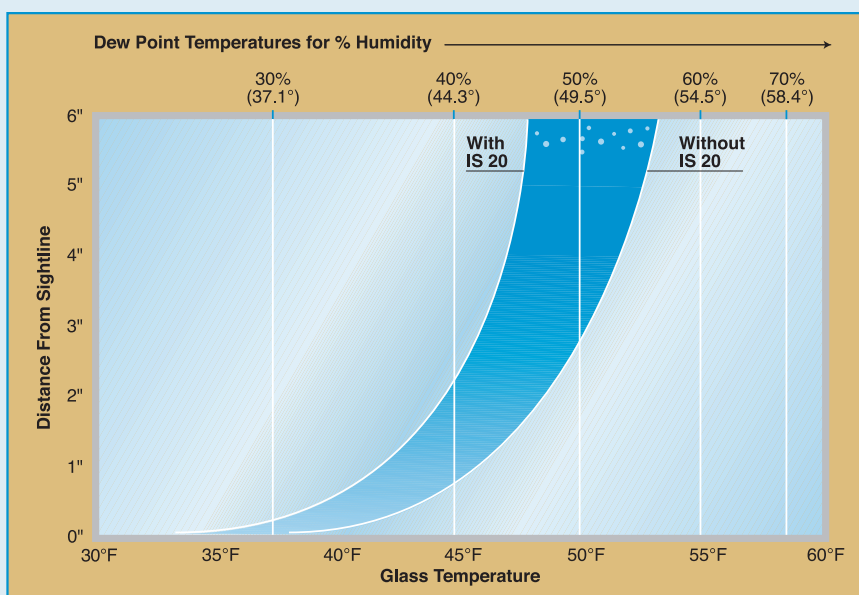
In monolithic laminated windows, the addition of IS 20 improves its overall insulating performance and its ability to reduce solar heat gain, but may condense more readily in very cold climates.



*Regular low-e window loses some heat*



*Low-e window with IS 20 has enhanced performance*



Comparison of glass temperatures for a low-e window with and without IS 20 shows that a window with IS 20 stays cooler, reaching dew-point temperatures slightly sooner than windows without IS 20. Relative humidity based on 70 F interior temperature, with NFRC outdoor winter conditions of 0 F, 15 mph wind.



## About Condensation - continued

### Controlling Condensation

Monitor and regulate moisture to achieve healthy building humidity levels.

#### Reduce moisture present in the building

Proper **vapor barriers** and adequate drainage reduce the amount of external moisture creeping in.

Appropriate use of **appliance vents** exhausts moisture outside, instead of in the building.

**Attention to materials** within the building can help control naturally occurring moisture—for example, placement of fountains or water features within a building can contribute to higher moisture content.

#### Regulate humidity at a healthy level

Daily activities, like showering, laundry, cooking, and even breathing, add moisture to the air. Healthy humidity falls in the range of 30% to 50%—for personal comfort and reduction of health risks such as mold or bacteria growth.

**Ventilation and exhaust fans** can pass moist air from high-humidity activities outside.

**Dehumidifiers** can help keep excess humidity under control—especially in summer months when outdoor humidity is a factor.

**Spare use of humidifiers** can also help keep internal humidity at a healthy level.

#### Ensure proper air flow

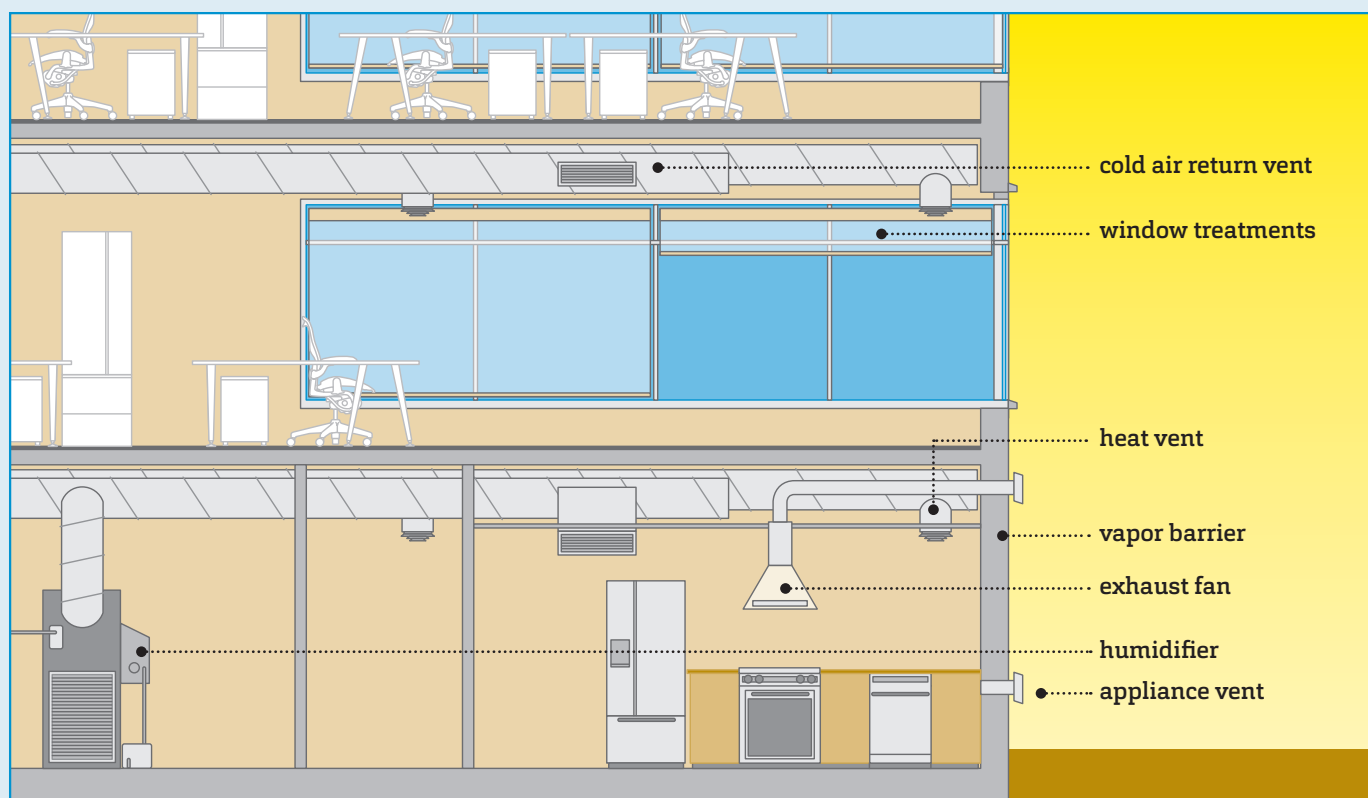
Still air cools—and condenses—faster.

**Improving air flow** near the window can help reduce condensation.

Place **heat and cold air return vents** in locations that cause good air flow near windows. Remember to account for thermal stress when planning vent locations.

Choose **window treatments** that enable air to flow near the window unhindered.

**Open curtains or blinds** to improve air flow when condensation is likely.



Many things can be done throughout a commercial space to reduce moisture, regulate humidity and ensure airflow, ultimately controlling condensation. The diagram above demonstrates several examples.



SunGuard® products are advanced glass solutions designed to offer various levels of solar control, light transmission, and aesthetic options, tailored to a wide range of architectural applications—where art and technology meet. Where innovations help architects create striking statements of light and color—as they earn LEED points and control energy costs. High-performance and aesthetic glass options specifically designed for commercial spaces are supported by exceptional service through the Guardian Select® Fabricator network and Guardian Glazier Connection.

To learn more, visit [GuardianGlass.com](https://GuardianGlass.com).

**Guardian Customer Engineering**

1-888-521-9734

**Guardian Architectural Hotline**

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Guardian Glass is a global manufacturer of float glass, including the following value-added glass products: SunGuard® Advanced Architectural Glass, Bird1st™ bird-friendly glass, CrystalGray® tinted float glass, Guardian UltraClear® low-iron float glass, SatinDeco® acid-etched glass and ShowerGuard® protective coating for shower doors. Guardian also makes heat-strengthened and fully tempered glass, laminated safety glass, patterned glass and mirrors.

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