TRANSITGUARD

THERMOGUARD GLASS

2021 EDITION

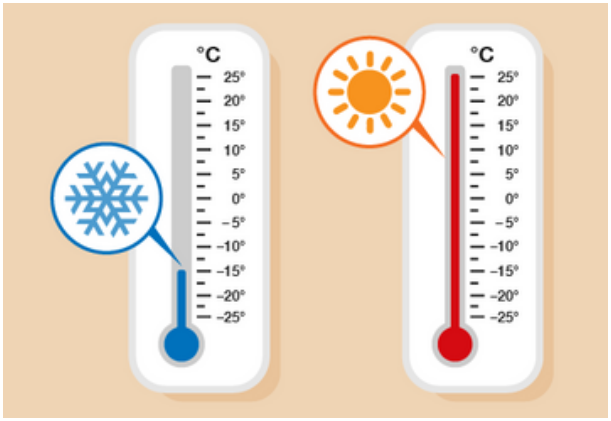
HEAT DISSIPATION GLASS
WINDOWS FOR TRANSIT

ThermoGUARD is a uniquely manufactured glass specifically designed for rail and buses that operate in all climates of the United States. Our Heat Dissipation Glass helps control the temperature inside of a bus by reflecting heat and keeping the cabin air warm or cool. What makes our glass unique is that unlike most other heat solutions, **ThermoGUARD** does not use a film.

ThermoGUARD glass has a cool blue hue with approximately 70% visibility in the driver area and 65% visibility in the passenger area. At night, when the interior lights are on, most darker-tinted glass can create a reflection, making it difficult for passengers to see outside. The visibility of **ThermoGUARD** glass allows people on the bus to see what is happening at a bus stop before disembarking whether in the day or night time.

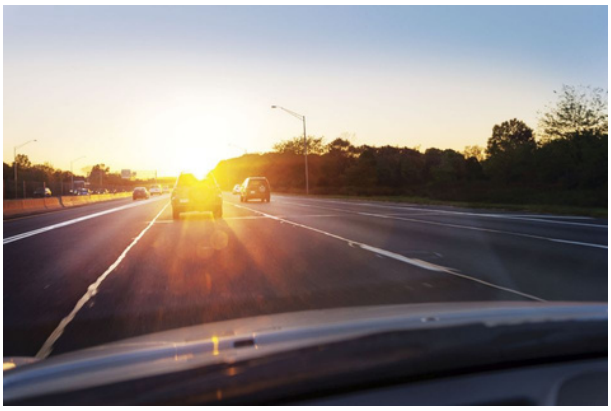
ThermoGUARD Blue Spruce high visibility safety glass helps control the temperature in all climates while eliminating passenger inconveniences and safety concerns.

GLASS BENEFITS



IMPROVE CABIN COMFORT

Redirects Infrared (IR) rays to lower the interior vehicle temperature by up to 35%. Reduces skin burn by cutting the direct sun light. Protects driver and passengers from IR and harmful UV rays.



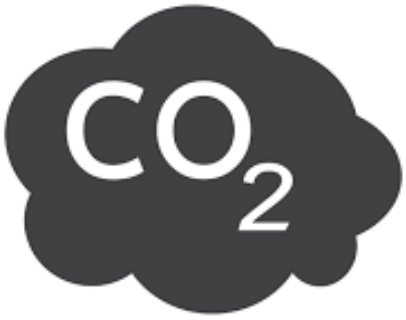
REDUCE GLARE AND REFLECTION

The light blue hue-colored glass improves safety by reducing the driver slider and front door glare during the daytime. Safety is improved in the evening because passengers are able to see out due to less reflection on the interior of the glass.

GLASS BENEFITS

INCREASE ENERGY EFFICIENCY

Reducing A/C or heater usage helps to extend battery range. Reducing cabin heat lowers A/C or heater usage by up to 20%. Reduced heater or A/C usage was found to reduce fuel consumption by up to 5% according to the California Air Resource Board.



REDUCES CO2 EMISSION

Improved fuel/energy efficiency reduces CO2 emissions

IMPROVES ACOUSTIC CABIN COMFORT

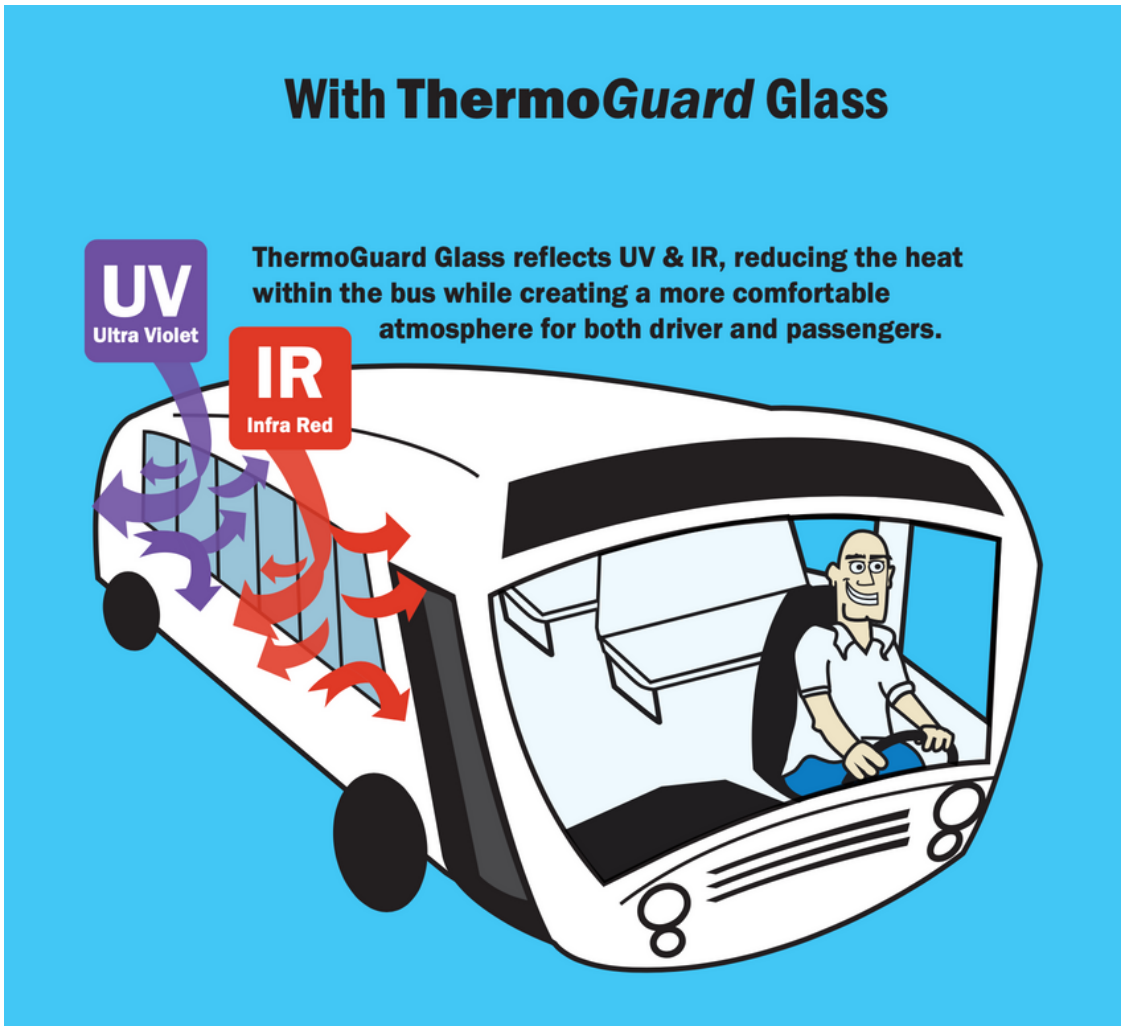
ThermoGUARD heat-treated safety glass creates a comfortable acoustic cabin. Noise coming through the window is reduced without adding weight or thickness to the glass.

HEAT REJECTION SAFETY GLASS SUMMARY

In the 2000's the transit industry moved to make all windows in buses, trains, and other public modes of transportation transparent. The transparency gave law enforcement and safety agencies the upper hand in being able to oversee interactions in vehicles. **ThermoGUARD** glass has approximately 70% visibility with a cool blue hue, allowing people on the bus to see what is happening at a bus stop before disembarking. At night, with interior lights on, the darker tinted glass can create reflections. **ThermoGUARD** Blue Spruce high visibility, low-e safety glass eliminates this passenger inconvenience and safety concern.

HEAT REJECTION SAFETY GLASS SUMMARY

1. Protecting the driver and passengers from IR and UV rays
2. Reducing driver glass glare and reflection during the day and evening
3. Less idle time = fuel saving and reduction of carbon footprint.



HEAT REJECTION SAFETY GLASS SUMMARY

Blue Spruce heat treated laminated glass has the following impressive properties:

Light Transmittance (LT) - 65-72% of light allowed to pass through
Infared (IR) - REJECTS 96-97% of Heat
Ultraviolet (UV) - REJECTS 99.9% UV Light

Although it is counterintuitive, the darker-tinted glass is NOT as good as the lighter blue-tinted glass. Technological advances have allowed us to create a product that meets all needs of safety and performance! Available for NEW and AFTERMARKET bus and rail applications

GRAFFITI

An additional benefit to having cool hue blue color glass is that people sitting in graffiti prone areas, especially the rear seats of a bus, know they can be seen. Agencies that switch from dark-tinted passenger glass to **ThermoGUARD** Blue Spruce glass see a significant reduction in graffiti, saving the agency money each year.

HEAT REJECTION SAFETY GLASS SUMMARY

WINDOW LOCATION

ThermoGUARD glass has a cool blue hue color. which helps gives the glass it's **ENERGY REJECTION/HIGH PERFORMANCE** qualities. The glass is installed in the bus doors, driver slider, and passenger window assemblies. The glass call out in a bus is as follows:

Driver and Front Door: ***BS70L*** *blue spruce 70%LT heat treated laminated safety glass*
Passenger and Rear Door: ***BS65L*** *blue spruce 65%LT tempered or laminated glass*

GLASS STRENGTHENER AND COATING

All **ThermoGUARD** glass is enhanced with **SpotGUARD**, which is applied during the manufacturing of the glass. **SpotGUARD** is based on a military glass strengthener and coating. The glass strengthener and coating is used by the Military to extend the life of their windshields. Naval ships would also use the glass strengthener and coating to help prevent and easily wipe off salt corrosion and hard water spot buildup on the glass.

THERMOGUARD GLASS SPECIFICATIONS

***THERMOGUARD* GLASS SPECIFICATIONS:**

Driver slider and front door glass shall be **ThermoGUARD BS70L**. Passenger windows and rear door glass shall be **ThermoGUARD BS65L**. manufactured out of Anaheim, CA. The glazing shall be 6.4mm (1/4 inch) nominal thickness and is heat treated laminated safety glass. The material shall conform to the requirements of ANSI Z26.1 and the recommended practices defined in SAE J673. The glass tint shall comply with the AS/AS3 DOT requirements, blocking 99% of the UV and allowing less than 3-6% of the inferred heat to pass through the pane.

***SPOTGUARD* GLASS STRENGTHENER AND COATING SPECIFICATIONS:**

All glass shall have **SpotGUARD**. The coating helps prevent water spots from building up on the surface of the glass. The glass will have the added benefits of being water repellent, impact and scratch resistant, and repel oil or fingerprints.

OUR PROCESS

ThermoGUARD is focused on becoming the premier glass supplier for your bus and rail fleet. We intend to achieve this by providing open communication, delivering quality products on time, staying within budget, and improving the transportation services for passengers and drivers during their commute.

By providing a high performance energy rejection glass we accomplish:

1. The interior of the bus is kept cooler in the summer and warmer in the winter. The blue glass reduces glare for the driver. Increased passenger and driver comfort during their trip.
2. Safety is increased by allowing the maximum amount of visible light to pass through the glass. Security teams and transit operators feel comfortable approaching the vehicle. The glass virtually eliminates the reflection of light on the interior windows at night letting passengers identify their bus stops and people outside the bus
3. The glass rejects hot and cold energy resulting in less energy required to operate the heating and A/C systems.

METHOD OF APPROACH

There are three methods to implement our glass into your fleet:

1. Based on the size of the fleet, we recommend a pilot program. We start by upgrading 10 buses with our high performance glass for the driver and front door. Additionally, we recommend 1-2 buses completely retrofitted with our glass. In most instances, the feedback from driver and passengers is immediate. They notice the new look. They feel the heat reduction in the cabin area. Based on the results, you can decide to pursue item 2, item 3, or both.
2. You can install **ThermoGUARD** glass during your mid life rehab program.
3. **ThermoGUARD** glass can be specified on all new vehicle buys. This method is the most cost efficient way to include the glass without having an impact on the operation budget. The goal is to educate drivers, passengers, transit supervisors, security teams, and city security services on the benefits and features of the glass.

METHOD OF APPROACH

ANTICIPATED RESULTS TO SUPPORT YOUR MISSION

ThermoGUARD provides an industry leading, exclusive product for bus and rail. **ThermoGUARD** is 100% manufactured and material sourced in the USA, keeping jobs and content local.

The Blue Spruce glass recipe was released by NASA. We have taken that recipe to create **ThermoGUARD** energy rejection/high performance glass. Glass properties allow the maximum amount of light to pass through the glass while rejecting 96-97% of the IR and 99-100% of the UV away from the surface of the glass. The A/C and heating systems don't have to work as hard to keep a comfortable temperature in the vehicle. The vehicle takes less time to cool down during startup, after layovers, or rest stops. Adding **ThermoGUARD** glass to your vehicle results in about 1/3 less idle time, less maintenance on the heating and cooling systems, and less energy consumption. These benefits reduce the carbon footprint, reduce the operation costs over the life cycle of the vehicle, and positively increase battery performance.

WHO WE ARE

TransitGUARD's sole focus is in the transit industry. Through our travels in the United States, we have learned all agencies have hard water problems, heating and cooling issues, and objectives to reduce emissions to help clean up the air. Our goal is to educate these agencies, help them save money in new vehicle purchases, reduce operational costs by using less energy, and minimize the labor needed to maintain the vehicles. The Blue Spruce glass technology keeps drivers and passengers more comfortable during their commute while complying with local and federal regulations.

Our team is made up of leaders who believe in open communication with agencies, the general public, and the transit industry. We believe in working directly with the shops at all levels to help meet their purchasing needs when purchasing replacement glass. **TransitGUARD's** goal is to improve transit services for passengers and drivers while generating a positive political movement for the CEO and transit board members. Overall, we will reduce fleet operation costs and greenhouse emissions.

REFERENCES

Below are agencies with **ThermoGUARD** glass installed on their fleet:

Honolulu, HI - TheBus
Adam Tamayoshi, VP of Maintenance
Adam.Tamayoshi@thebus.org
M) 951-634-2412

Tucson, AZ – SunTran
Jeff Rock, VP of Maintenance
Jeff.Rock@tucsonaz.gov
M) 520-403-6054

Bakersfield, CA – Golden Empire Transit
Chris James, Maintenance Manager
CJames@getbus.org
M) 661-889-5799

Fort Worth, TX - Trinity Metro
Bill Lambert, Director of Maintenance
Bill.Lambert@ridetm.org
M) 817-300-1005

Visalia, CA – Visalia Transit
Caleb Bowman, Transit Analyst
Caleb.Bowman@visalia.city
M) 559-799-1939

TESTIMONIALS

From: Sergio Rodriguez, Manager of Maintenance
Agency: Fort Worth Trinity Metro
Date: September 2014

When Mike Candelaria approached me about their product, ThermoGUARD, I was open to hearing what they had to say about their product and how it would benefit our fleet.

After Mike demonstrated how the product can reduce the amount of heat coming through the driver's window, we though this is the perfect opportunity to see what this glass could do. After a couple of phone calls we were able to get the green light and start with installing the product in the Driver's window. We installed ThermoGUARD Blue Spruce glass on 10 or our buses. The drivers have felt the difference and are enthusiastic that we are doing something additional for them and our customers. We all know how hot it can get in Texas, so when we can reduce the temperature in the drivers area, the outcome will be a happy driver. From here on forward we have put ThermoGUARD in all new bus specifications.

Thank you Mike and Jennifer.

TESTIMONIALS

From: Larry Tenenholz
Subject: Purchase of ThermoGUARD Windows
Date: March 2016

We are convinced all properties have heat issues in the driver's area and this was something that we could actually solve for our drivers at a very reasonable cost. Per ThermoGUARD's recommendation, I started with a retrofit of 10 Gillig buses, driver's windows only. I had such a good response from our operators after the first 10 that I began to retrofit 10 buses a month until the entire fleet was complete.

The Operators reported less glare, less heat, and a more comfortable shift as compared to the old glass. Also, their arms and faces were no longer getting sunburned, and there was less glare from the sunlight. Coincidentally, I had scheduled a meeting with RTD, who we are contracted with for service. We were to discuss the windows for the new buses being purchased. Unsolicited, an operator (a Union VP) came up to me to tell me how much he appreciated "whatever you did to make the heat go away." Not much more needed to be said at the meeting.

As you can imagine there are some nice side benefits to making our Operators more comfortable, one of the biggest has been that we have seen a major drop in Operator reported A/C issues. We have had nothing but positive experiences from all drivers as well as the team at ThermoGUARD and we look forward to using them in all our future buses.

TESTIMONIALS

From: Chris James, Maintenance Manager
Agency: Golden Empire Transit Bakersfield
Date: September 2014

Regarding our experience with ThermoGUARD glass, we first installed the heat rejection Blue Spruce 70 in our Driver's Area as we have such hot summers and our drivers have always had issues regarding heat and sunburns.
Bakersfield has temperatures in the summer that can reach 100-110 degrees for weeks. After we saw the huge change for our drivers, we began putting ThermoGUARD glass in all the window and door locations on all our new bus purchases. Our passengers who ride the bus at night commented there is a no reflection on the interior surface of the glass when the lights are turned on and they can now identify their stops during the evening. This new glass has made a very obvious difference in our passenger comfort, the driver's comfort, and our overall experience rating by customers.
We are aware that there is an up-charge for this glass but the fact that our funds are matched 80/20 with Federal money means we get the benefits, look good to our customers and our employees, and reduced our operation costs with it comes to cooling down the bus, by over 50% less time.
One of the biggest surprises is that ThermoGUARD provided FREE glass right after the final bus was delivered following each new order. This has also reduced our operation costs as we have an immediate stock of glass and don't have to order replacements. Our choice to use standard windows rather that the hidden frame has turned our to be one of the smartest cost saving decision we made on the whiole purchase.

CONTACT US

Mike Candelaria
Founder/CEO
mcandelaria@transitguard.com
970-238-0300

Jennifer Candelaria
President
jcandelaria@transitguard.com
206-915-5350

Tony Cunnane
North American Sales Manager
tony@metrotransllc.com
574-849-8917

Milo Victoria
North American Sales Manager
mvictoria@transitguard.com
626-825-6598

Terrel Smith
North American Sales Manager
terrel@metrotransitsales.com
973-977-5757