



HSE Glass high-strength windows

A safer alternative for stockpile dozing

HSE Glass now offers the world's first heavy duty high-strength cab glass kits for mining dozers working in potentially hazardous applications, including coal stockpiles and areas where there is a risk of falling rocks or other materials.

We have a range of purpose-designed and manufactured high-strength glass kits – available as either framed or fibreglass-banded frameless options.

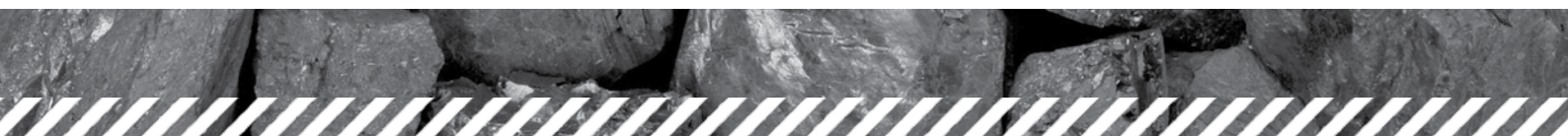
These kits are based on PPG Aerospace's Securitect 40 psi (280 kPa) high-strength glass, which also supplies the global aerospace, aviation and military sectors.

HSE Glass can now supply Securitect 40 psi frameless glass kits for the dozers aftermarket, and will shortly begin offering Securitect 40 psi framed glass kits for Komatsu D275A, D375A and D475A dozers.



HSE Glass has developed and supplies high-strength framed glass kits using PPG's Securitect 40 psi glass for mining dozers.

We can also develop and supply kits to other types of mining equipment – both surface and underground – as well as construction equipment, rail locomotives, heavy transport vehicles, and military vehicles.



Preventing coal stockpile fatalities



The original demand for high-strength glass on mining dozers goes back to the late 1990s, after a number of fatalities occurred in coal stockpiles when dozers fell into large cavities created above feeders.

The pressure of the coal on the falling dozer would break or push in the windows, suffocating the operator.

Investigations and tests carried out by the US Department of Labor's Mine Safety & Health Administration indicated that window glass with a strength of at least 20 psi was required to withstand the pressure imposed on a dozer buried up to 10 m deep in coal.

As a safety factor, the US MSHA doubled this strength requirement, recommending that 40 psi glass be fitted to dozers engaged in coal stockpile work.

Tests have proven that Securitect 40 psi glass is able to withstand not only the pressures imposed by being buried in 10 m of coal, but also the high ambient temperatures experienced in many coal mines around the world, and the impact shocks when a dozer falls into a coal stockpile void.

This glass has been used successfully in mining equipment applications where the failure of standard cabin windows is a high risk. The resulting material intrusion can lead to injury or death.

There have been low incidents of breakage and the glass often remains intact after impact.

As a result, the use of 40 psi glass on all dozers carrying out coal stockpile work where voids may form has been endorsed as a preferred fitment by the MSHA since the late 1990s.



Trade &
Investment
Mine Safety

New Australian regulations

In Australia, NSW Trade & Investment's Mine Safety Operations Branch recently issued MDG 28: Safety requirements for coal stockpiles and reclaim tunnels, which recommends stockpile dozer cabs be designed to "withstand engulfment forces of at least 40 psi (280 kPa)".

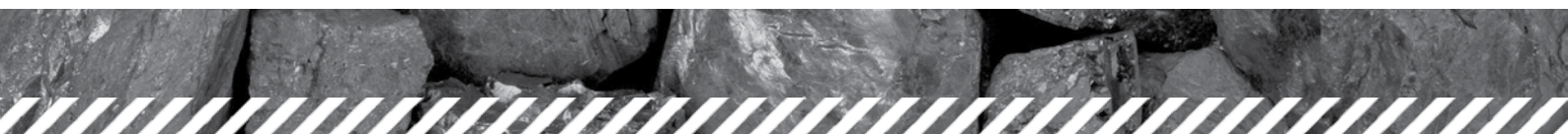
HSE Glass's experience and expertise

Over the past 10 years, HSE Glass has developed considerable experience and expertise in fitting high-strength glass windows to stockpile dozers, draglines and other types of mining equipment. We have worked with many mining operators from the NSW Hunter region to Queensland's Bowen Basin, developing a network of maintenance crews, spare parts and glazing suppliers to service the demand.

We were the first to market with an internationally certified, laboratory-tested glazing solution – either framed or fibreglass-banded unframed – able to withstand pressures to 40 psi (275 kPa).

Our framed windscreen solutions have withstood pressures in testing of 40 psi for over two hours. To test robustness the pressure was spiked to 54psi in an attempt to get the system to fail. The framed glass did not fail or crack.

HSE Glass's high-strength windscreens can be retrofitted in hours, rather than days, during scheduled maintenance – without requiring the specialised services of a glazier who has to be inducted onto a minesite. Instead, any in-house mechanic or other maintenance personnel can be trained to bolt an HSE high-strength windscreen frame to a dozer cab chassis. This minimises downtime, allowing replacement windscreens to be fitted during scheduled maintenance periods, or even in the field.





Caterpillar Custom Kits

HSE Glass is currently able to offer custom-designed aftermarket kits to fit Securitect 40 psi glass to Cat mining dozers.

Cab windows for Cat mining dozers are primarily glued to the cabin frame; we have engineered a distinctively coloured fibreglass-banded frameless solution that presents a significantly greater surface area of glass than the OEM design, for a more secure installation.

We fix these windows using proper surface preparation, and Sikaflex 265, the strongest adhesive on the market.

Komatsu mining dozer kits

Komatsu mining dozers use a frame that is unable in its standard configuration to withstand the very high pressures required.

At HSE Glass, we have developed with a heavy duty frame for Komatsu dozers, covering the D275A, D375A and D475A cabs. This frame has been tested to 3 atmospheres – equivalent to the pressure of 10 m of coal.

We anticipate shortly receiving factory approval for the fitment of these frames as an aftermarket option to Komatsu mining dozers.



Other equipment types

In addition to these mining dozer offerings, HSE Glass is able to supply customised Securitect 40 psi glass for other types of mining, construction, transport and military equipment applications. Our applications for high-strength glass cover any type of manually operated equipment where there is a risk of cabin penetration due to glass implosion resulting in injury or even operator fatality.

These include:

- Operations in areas prone to rock falls or landslips, whether in surface or underground mining, construction, quarrying and tunnelling;
- High-speed transport, including trucks and trains exposed to high risk environments;
- Military naval & army mobile equipment.



About HSE Glass

The principals of Brisbane-based HSE Glass have been providing specialist glazing services for over 30 years, supplying and fitting replacement OEM windscreens for dozers, draglines and other mining equipment.

HSE Glass's initial products have been primarily developed to meet Australia's MDG 28 (Mine Design Guidelines) Safety Requirements to protect operators of dozers and other large machinery working in coal stockpiles and reclaim tunnels.

We can now offer a custom solution to suit all windscreen requirements for high-risk applications.

HSE Glass is now seeking investor interest to further develop its suite of products for markets in South America, Asia and South Africa markets with the support of PPG Aerospace.

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Please note that inventory management can be arranged. With custom solutions required for most applications, there is a 90-120 day lead-time between an order and on-site delivery and fitment.



PPG Specialty Transparencies

About Securitect® 40psi glass

Securitect® 40 psi glass laminate is constructed using Herculite® II chemically strengthened glass by PPG Aerospace in the USA.

Herculite® II glass is a proprietary glass developed for aerospace applications, having a high strength-to-weight ratio while affording excellent optical qualities.

Securitect® resists impact and burial pressure up to 40 psi, twice that required to meet MSHA standards, and it is the only commercial product to achieve this at a thickness of just 14 mm.

PPG Aerospace manufactures Securitect® and Herculite® II in state-of-the-art aerospace products factories in Huntsville, Alabama, and Sylmar, California, in the USA, using aerospace-grade materials.

Key features and benefits of Securitect® 40psi glass include:

- Superior optics to standard heavy equipment cabin glass
- High visible light transmission
- Superior UV resistance
- Proven service life performance in all environments
- Only safety glass product tested in accordance with US Department of Labor's Mine Safety & Health Administration's surge-pile burial test protocol
- Weighs only 38-39 kg/sq m



PPG Aerospace

About PPG Aerospace

PPG Aerospace is part of PPG Industries, a global supplier of glass, fibreglass, optical products and specialty products, and a leading manufacturer of paint and coatings.

PPG Aerospace Specialty Transparencies has produced transparent armour for half a century, and is one of the world's largest manufacturers of ballistic and impact-resistant windows.