Durolite

Dimond introduced Durolite gel coated (GC) sheeting to New Zealand expressly to combat our very harsh environments. Durolite continues to be a preferred solution for commercial buildings throughout the country. Durolite is recommended for commercial and retail applications where excellent long term light transmission is required.

Proven

Superior Silmar S-996 was specifically designed as a clear Gel coat for roofing. This highly UV resistant Gel coat provides Durolite with the ultimate impenetrable barrier that reduces surface erosion and loss of light transmission to negligible proportions. Durolite has been proven on thousands of installations throughout New Zealand.

Tested

Durolite GC has been tested at the Allunga Exposure Laboratory in Allunga QLD, a world renowned testing facility. The Durolite GC result was a light loss of 22% over a period equivalent to 20 years exposure. The test samples still displayed a very smooth, glossy surface with no fibre show.

Product installed by Kiwi Roofing

- Surface erosion (fibre show) is eliminated.
- Superior resistance to yellowing and hazing.
- Minimal loss of light transmission over life.
- 99% protection from UV rays.
- More cost effective over the life of the building
- Premium grade glass reinforced gel coated polyester
- 25 year warranty under conditions

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Durolite has excellent stability

Materials Expansion Comparison. 0ºC to 40ºC temperature variation. Sheet length 12 metres.				
	Fibreglass	Polycarbonate	Steel	Aluminium
Thermal expansion	14.4 mm	32.4 mm	5.8 mm	11.5 mm
Thermal co-efficient	3.0 x 10^{-5} cm/cm ºC	6.75 x 10 cm/cm ºC	1.2 x 10^{-5} cm/cm ºC	2.4 x 10^{-5} cm/cm ºC

Internal purlin span for 1.5 kPa U.L.S (mm)

Series	1.1mm (1800 g/m²)	1.4mm (2400 g/m²)	1.7mm (3050 g/m²)
Corrugate	1000	1200	1300
LT7	1400	1700	1800
Brownbuilt 900	1400	1700	1900
Styleline/Veedek	1200	1500	1700
DP955	1000	1300	1600
Dimondek 400	1200	1400	N/A

U.L.S = Ultimate limit state capacity

Physical Properties

Tensile strength	80 MPa (Min. requirement 50 MPa)	Thermal expansion	3.0 x 10^{-5} cm/ºC
Impact strength	8 Joules	Thermal conductivity	158 watt/mºC
Shear strength	90 MPa	Water absorption	.2% in 24 hours/26ºC
Modulus of elasticity	5500 MPa	Curved roof radius - Corrugated & Styleline	
Compressive strength	135 MPa	1.4mm(2400 g/m²) minimum radius: 4.0 metres	
Flexural strength	150 MPa	Recommended service temperature: range -20ºC to + 95ºC	
Specific gravity	1.45		

Light series 1800 (1.1mm)

Colour	Light Transmission (typical)	Opal	60%
Clear	80%	Grey	33%

Specification

Durolite reinforced polyester with 100 micron thick gel coat as manufactured to comply with AS/NZ 4256 parts 1 & 3: 1994. The weight of the sheet shall be *.....mm/gsm and be manufactured to conform with the nominated profile and colour. Sheeting shall be installed in accordance with Durolite fixing instructions and comply with the design loading requirements of NZ4703-1992 and NZ3604-1990. *Insert actual sheet weights required.

Our supplier for Durolite is a Quality Endorsed Company complying with AS/NZS ISO 9000-2000, Licence SMKB20116.

Installation

1. Pre-drill oversize fixing holes to allow for expansion and contraction of sheet.
2. Apply the Durolite purlin protection strip between the safety mesh and Fiberglass sheet at each purlin.
3. For endlaps, apply a self adhesive closed cell foam strip directly over the purlin between the overlapping sheets.
4. Store sheets in a dry and fire safe area. Do not store heavy materials on sheets as they may fracture.
5. Pan fixing is recommended for cladding. Fixing shall occur in every pan at ends and every other at intermediate.

Durolite sheeting matching clip-fixed deck profiles should be side lapped with overlaps on both sides. Refer to Dimond's website for more fixing information.

Important: Durolite sheeting is installed by pre-drilling over size holes to allow for expansion and contraction. The basic calculation shall be 0.75mm per lineal metre, plus the shank diameter of the fastener. Example: 10 mt sheet - 10 x 0.75 + 4mm (fastener) = 11.5mm per drilled hole. Note: All installation should comply with the design loading requirements of NZ4203-1992 and NZ3604-1990.

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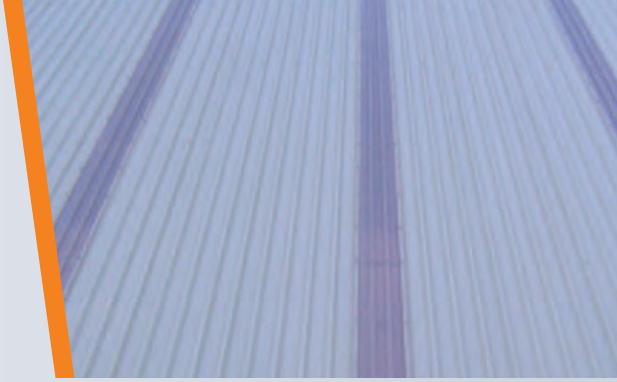
Durolite HEATGUARD



Durolite HeatGuard (available in two levels: HeatGuard 4 and HeatGuard 8) reduces interior heat build up while maintaining the highest level of light transmission, controlling heat and allowing for a high level of light to help save on energy costs.

Durolite HeatGuard is premium grade sheeting with the highly UV resistant gel coated surface. Now you can control the most powerful light source in the universe providing the most effective, low cost, low temperature workplace lighting.

What you need to know about light

The three parts of electromagnetic spectrum that are of interest to us are the ultra violet rays that are harmful to our skin, the visible light waves, the light we use to see with and the infra-red waves or thermal waves that carry a large percentage of the sun's heat.

How Durolite HeatGuard works

Current glazing systems generally cannot select between light and heat, allowing nearly the same amount of heat into a building as light. Durolite HeatGuard filters out 99% of the harmful ultra violet radiation and allows a high level of the visible light spectrum to be transmitted into your building so colours appear brighter and clearer, while at the same time reflecting out a large percentage of the infra-red waves reducing heat so your building stays cooler.

Selectivity index

	Visible Light	Total Solar Transmission	Selectivity Index
Durolite Clear	63%	63%	1.00
Durolite HeatGuard 4	64%	50%	1.28
Durolite HeatGuard 8	49%	36%	1.36
Durolite Opal	36%	40%	0.90

Durolite HeatGuard 4 is recommended for factories and warehouses where a high level of light transmission is required and would be used instead of clear sheeting, whereas Durolite HeatGuard 8 is recommended for distribution and retail outlets where high heat levels are an issue and would replace opal sheeting.

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Energy savings benefit

	Solar Heat Gain Total Heat in (W/m2)	Total Heat in (%)	Shading Coefficient
Durolite HeatGuard 4	419	53.58	0.64
Durolite HeatGuard 8	316	40.40	0.46

Note 1. Solar heat gain (ASHRAE F27.17) is the total admission of incoming solar radiation, including heat, ultra-violet, visible and infra-red components (based on an average summer day solar radiation of 782 w/m2).

Note 2. The shading co-efficient is the ratio of solar heat gain of test sample to standard 3 mm thick glass.

Physical properties

Tensile strength	80MPa (min requirements 55 MPa)
Impact strength	8 joules
Shear strength	90 MPa
Modulus of elasticity	5500 MPa
Compressive strength	135 MPa
Flexural strength	150 MPa
Specific gravity	1.45
Thermal expansion	3.0 x 10^{-5} cm/ºC
Thermal conductivity	158 watt/mºC
Water absorption	.2% in 24 hrs/26ºC
Service temperature	range -20ºC to +95ºC

Specification

Easy to specify - callup Durolite HG4, HG8 manufactured to comply with AS/NZS4256.3-1994, part 2. The gauge/weight of the sheet shall be ____mm/gsm and shall be manufactured to conform with the nominated profile and colour. The sheeting shall be installed in accordance with Dimond fixing instructions, NZMRM Code of Practice and comply with NZS1562.3.

Internal purlin span for 1.5 kPa U.L.S (mm)

Series	1.1mm (1800 g/m²)	1.4mm (2400 g/m²)	1.7mm (3050 g/m²)
Corrugate	1000	1200	1300
LT7	1400	1700	1800
Brownbuilt 900	1400	1700	1900
Styleline/Veedek	1200	1500	1700
DP955	1000	1300	1600
Dimondek 400	1200	1400	N/A

U.L.S = Ultimate limit state capacity

Durolite HeatGuard is available to suit the commonly manufactured profiles in New Zealand and is manufactured to comply with AS/NZS4256.3-1994, part 2. Durolite HeatGuard is suitable for curved roof applications. Curved roof radius to suit 1800g/m2 corrugated and Styleline minimum radius 3.8 m. 2400 g/m2 corrugated and Styleline minimum radius 4.0 m.

Warranty

25 year warranty under conditions. For further information, please refer to Dimond's website or give us a call.

Installation

1. Pre-drill oversize fixing holes to allow for expansion and contraction of sheet.
2. Apply the Durolite purlin protection strip between the safety mesh and Fiberglass sheet at each purlin.
3. For endlaps, apply a self adhesive closed cell foam strip directly over the purlin between the overlapping sheets.
4. Store sheets in a dry and fire safe area. Do not store heavy materials on sheets as they may fracture.
5. Pan fixing is recommended for cladding. Fixing shall occur in every pan at ends and every other at intermediate.

Durolite sheeting matching clip-fixed deck profiles should be side lapped with overlaps on both sides. Refer to Dimond's website for more fixing information.

Important: Durolite sheeting should be installed by pre-drilling over size holes to allow for expansion and contraction. The basic calculation shall be 0.75mm per lineal metre, plus the shank diameter of the fastener. Example: 10 mt sheet - 10 x 0.75 + 4mm (fastener) = 11.5mm per drilled hole. Note: All installation should comply with the design loading requirements of NZ4203-1992 and NZ3604-1990.

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Durolite FIREGUARD

Durolite FireGuard 2 (FG2) and FireGuard 3 (FG3) sheeting has been specifically developed for Commercial and Industrial Structures requiring spread of flame group numbers to meet the NZBC and provide good natural lighting, combined with the need for fire retardant roofing and building materials.

- Premium Industrial fiberglass sheeting with the same UV resistant gel coated surface as Durolite. Eliminates 99% of harmful ultra violet rays.
- FG3 uses a bromine free formulation.
- Excellent clarity and long term long-term light transmission.
- 25 year warranty protection for both water penetration and light transmission.
- Surface Finish Properties have been tested to ISO 5660 and achieved a group number 2 for FireGuard 2, and group number 3 for FireGuard 3 performance in accordance with NZBC Verification Method C/VM2 Appendix A.
- Available in range of options including clear or HG heat reducing sheeting and also as a solid colour sheet for corrosive environments.

Product installed by Kiwi Roofing

Like Durolite, Durolite FireGuard sheeting is protected by the same highly UV resistant Silmar 996 gel coat which is integral with the sheet and does not delaminate. Durolite was tested at Allunga Queensland, through the Allunga Exposure Laboratory.

Allunga is an independent laboratory that specializes in natural weather testing, and is well known in Australasia and overseas. All methods of testing are performed to strict Australian Standards. The Durolite technology was developed in the United States through BP Chemicals, and has been in the American market for in excess of 25 years and widely used throughout New Zealand since 1995.

Durolite FireGuard 2 and FireGuard 3 are available in all commonly manufactured profiles. They are suitable for curved roof applications. Curved roof radius to suite 1.4mm (2400g/m2) Corrugated and Styleline - minimum radius 4.0 metres.

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Specification

Easy to specify - callup Durolite FG2 or FG3 manufactured to comply with AS/NZ54256.319947, part 2. The gauge/weight of the sheet shall be *.....mm/gsm and shall be Dimond fixing instructions and with AS/NZS 1562.3:1996, Design and installation of sheet roof and wall cladding, Part 3: Plastic, the requirements of the NZ building code and the NZ Metal Roofing Manufactures Association Code of Practice. *Insert actual sheet weights required.

Our supplier for Durolite is a Quality Endorsed Company complying with AS/NZS ISO 9000-2000, Licence SMKB20116.

Installation

1. Pre-drill oversize fixing holes to allow for expansion and contraction of sheet.
2. Apply the Durolite purlin protection strip between the safety mesh and Fiberglass sheet at each purlin.
3. For endlaps, apply a self adhesive closed cell foam strip directly over the purlin between the overlapping sheets.
4. Store sheets in a dry and fire safe area. Do not store heavy materials on sheets as they may fracture.
5. Pan fixing is recommended for cladding. Fixing shall occur in every pan at ends and every other at intermediate.

Durolite sheeting matching clip-fixed deck profiles should be side lapped with overlaps on both sides. Refer to Dimond's website for more fixing information.

Important: Durolite sheeting is installed by pre-drilling over size holes to allow for expansion and contraction. The basic calculation shall be 0.75mm per lineal metre, plus the shank diameter of the fastener. Example: 10 mtr sheet - 10 x 0.75 + 4mm (fastener) = 11.5mm per drilled hole. Note: All installation should comply with the design loading requirements of NZ4203-1992 and NZ3604-1990.

Note: Dimond FireGuard sheeting shall be installed in accordance with Dimond fixing instructions and with AS/NZS 1562.3:1996, Design and installation of sheet roof and wall cladding, Part 3: Plastic, the requirements of the NZ building code and the NZ Metal Roofing Manufactures Association Code of Practice.

Internal purlin span for 1.5 kPa U.L.S (mm)

Series	1.1mm (1800 g/m²)	1.4mm (2400 g/m²)	1.7mm (3050 g/m²)
Corrugate	1000	1200	1300
LT7	1400	1700	1800
Brownbuilt 900	1400	1700	1900
Styleline/Veedek	1200	1500	1700
DP955	1000	1300	1600
Dimondek 400	1200	1400	N/A

U.L.S = Ultimate limit state capacity

Typical transmission levels (for series 1800/1.1mm)

FireGuard 2	
Sheet Colour	Light Transmission
Light Bronze	60%
FireGuard 3	
Sheet Colour	Light Transmission
Clear	84%
Mist	78%
Opal	70%
Green	74%
Blue	60%
Grey	35%

Physical properties

Tensile strength	80MPa (min requirements 55 MPa)
Impact strength	8 Joules
Shear strength	90 MPa
Modulus of elasticity	5500 MPa
Compressive strength	135 MPa
Flexural strength	150 MPa
Specific gravity	1.45
Thermal expansion	3.0 x 10^{-5} cm/ºC
Thermal conductivity	158 watt/mºC
Water absorption	.2% in 24 hrs/26ºC
Service temperature Range	-20ºC to +95ºC

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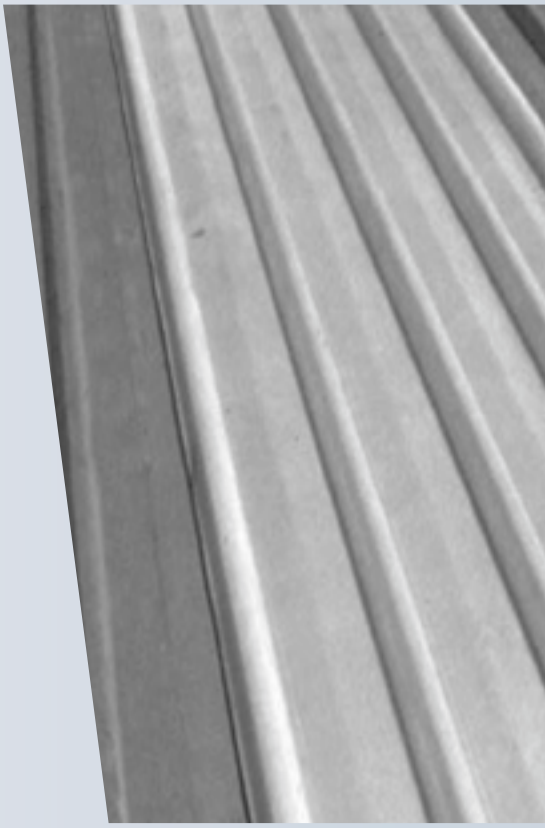
Duraclad

Duraclad solid colour fiberglass cladding specially designed for areas where corrosion resistance is vital and long term sheet durability is essential.



Superior features of Duraclad

- Available in a range of colours
- Available in a range of standard thicknesses from 1.7mm to 2.6mm
- Premium grade glass reinforced gel coated polyester
- Gel coated surface warranted for 25 year
- Good resistance to a range of commonly used chemicals

Applications

- Fertilizer and Agricultural Chemical Plants
- Corrosive Chemical processing
- Petrochemical environments
- Wastewater Treatment
- Marine Environments
- Mining Industry
- Paper and pulp manufacturing
- Salt extraction and desalination plants

Duraclad is available in all commonly manufactured roof profiles. It is suitable for curved roof applications. Curved roof radius to suite. 1.4mm (2400g/m^2) corrugate and Styleline minimum radius 4.0 metres.

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Specification

Easy to specify - callup Duraclad manufactured to comply with AS/NZS to comply with AS/NZS4265.3.1994.

The gauge/weight of the sheet shall be _____mm/gsm and shall be manufactured to conform with the nominated profile and _____ colour. The sheeting shall be installed in accordance with Ampelite's fixing instruction or comply with the design loading requirements of NZ4703-1992 and NZ36041-1990.

Installation

1. Pre-drill oversize fixing holes to allow for expansion and contraction of sheet.
2. Apply the Durolite purlin protection strip between the safety mesh and Fiberglass sheet at each purlin.
3. For endlaps, apply a self adhesive closed cell foam strip directly over the purlin between the overlapping sheets.
4. Store sheets in a dry and fire safe area. Do not store heavy materials on sheets as they may fracture.
5. Pan fixing is recommended for cladding. Fixing shall occur in every pan at ends and every other at intermediate.

Durolite sheeting matching clip-fixed deck profiles should be side lapped with overlaps on both sides. Refer to Dimond's website for more fixing information.

Important: Durolite sheeting should be installed by pre-drilling over size holes to allow for expansion and contraction. The basic calculation shall be 0.75mm per lineal metre, plus the shank diameter of the fastener. Example: 10 mt sheet - 10 x 0.75 + 4mm (fastener) = 11.5mm per drilled hole. Note: All installation should comply with the design loading requirements of NZ4203-1992 and NZ3604-1990.

Note: All installation should comply with the design loading requirements of NZ4203-1992 and NZ3604-1990.

Internal purlin span for 1.5 kPa U.L.S (mm)

Series	1.7mm (3050 g/m²)
Corrugate	1300
LT7	1800
Brownbuilt 900	1900
Styleline/Veedek	1700
DP955	1600
Dimondek 400	N/A

U.L.S = Ultimate limit state capacity

Physical properties

Tensile strength	80MPa (min requirements 55 MPa)
Impact strength	8 Joules
Shear strength	90 MPa
Modulus of elasticity	5500 MPa
Compressive strength	135 MPa
Flexural strength	150 MPa
Specific gravity	1.45
Thermal expansion	3.0 x 10^{-5} cm/ºC
Thermal conductivity	158 watt/mºC
Water absorption	.2% in 24 hrs/26ºC
Service temperature Range	-20C to +95ºC

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Durolite WEBGLASS

Revolutionary Durolite Webglass solves roofing problems in highly corrosive environments! Its polyester sheeting is reinforced with heavy gauge woven web matting that acts as a built-in safety mesh. Durolite Webglass fully complies, without restriction, to the requirements of the New Zealand Building Code clauses B1, B2, E2, F2 and G7.

Key Features

- Provides continuous reinforcement in every direction.
- Safety mesh is not required
- Corrosion resistance
- Webglass can be 100% opaque, or translucent to transmit natural light
- Webglass plus incorporates vinyl ester resins, which will provide addtional protection
- Combination of strength, resistance to a wide range of chemicals and low surface erosion
- 20 year warranty for surface erosion

Stability

Material Comparisons

	Durolite Webglass	Fibreglass	Polycarbonate
Thermal Expansion	9.1mm	14.4mm	32.4mm
	0ºC to 40ºC temperature variation. Based on a sheet length of 12 metres.		
Thermal Co-efficient 2.4 x 10 -5	1.9 x 10^{-5} cm/cm ºC	3.0 x 10^{-5} cm/cm ºC	6.75 x 10^{-5} cm/cm ºC
Thermal conductivity	0.096 W/m.K	0.158 W/m.K	0.21 W/m.K
Density	1685 kg/m^3	1400 kg/m^3	1200 kg/m^3

Internal Span and Fastener Table for 2.0mm Thick Sheet or 3660 g/m^2

Sheet application		Skylight strip		*Complete roof
Profile	**Fastener Spacing**	**1.0 kPa**	**2.0 kPa**	**Maximum**
Corrugate	every 2nd crest	1.9m	1.5m	1.5m
Styleline/Veedek	every crest	2.1m	1.6m	1.7m
Super 6	every 2nd crest	2.6m	2.0m	2.1m
LT7	every 2nd crest	2.1m	1.6m	1.7m
*Maximum span for complete Durolite Webglass roof, allowing for 1.1kN concentrated load as per AS1170.2				

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Standards

Webglass and Webglass Plus fully comply with the New Zealand Building Code of B1, B2, E2, F2 and G7 which takes into account Australian and New Zealand Standards AS1170.2:1989, AS/NZS 4256.3:1994,AS/NZS 1562.3:1996,AS4040.1:1992.

Fire retardant properties

Webglass and Webglass Plus are available in the FireGuard (FG2 or FG3) range.

Physical properties

Tensile strength	111MPA (min requirements 50 MPA)
Impact strength	10 Joules
Shear strength	90 MPa
Modulus of elasticity	5500 MPa
Compressive strength	151 MPa
Flexural strength	181 MPa
Specific gravity	1.6
Water absorption	.2% in 24 hrs/26ºC

Specification

Easy to specify - callup Durolite Webglass manufactured to comply with AS/NZS4256.3: 1994.The weight of the sheet shall be 3660 g/m^2 and be manufactured to conform with the nominated profile and colour. Sheeting shall be installed in accordance with Durolite fixing instructions and with AS/NZS 1562.3:1996 Design and installation of sheet roof and wall cladding Part 3: Plastic."

Light/shade factors

	Light transmission	Shading co-efficient
Ice Clear	60%	0.69
Opal	56%	0.46
Opaque	0%	0.12

Chemical Group

	Webglass	Webglass Plus	Polycarbonate	P.V.C.
Organics				
Acetic Acid 25%	LS	R	LS	NR
Ethanol	R	R	NR	LS
Heptane	R	R	R	LS
Kerosene	R	R	R	LS
Turpentine	R	R	LS	LS
Urea	R	R	LS	LS
Acids				
Hydrochloric Acid Conc.	LS	R	NR	LS
Hydrochloric Acid 10%	R	R	R	R
Hydrochloric Acid 40%	NR	R	NR	LS
Nitric Acid	R	R	R	LS
OLeic Acid Concentrate	R	R	R	NR
Phosphoric Acid Conc.	LS	R	NR	R
Phosphoric Acid 30%	LS	R	NR	R
Sulphuric Acid 30%	LS	R	R	R
Sulfurous Acid	NR	R	NR	LS
Sulphuric Acid 3%	R	R	LS	LS
Alkalines				
Amonium Hydroxide 10%	LS	R	NR	R
Amonium Sulphate	LS	R	LS	R
Sodium Hypochlorite (Chlorine)	LS	R	R	NR
Sodium Hydroxide 10% (Caustic)	LS	R	NR	R
Sodium Hydroxide 25% (Caustic)	LS	R	NR	R
Salts				
Ammonium Carbonate	R	R	NR	NR
Copper Chloride	R	R	R	R
Nickel Chloride	R	R	R	R
Pottasium Carbonate	R	R	R	LS
Sodium Carbonate	R	R	R	LS
Zinc Sulphate	R	R	R	R

KEY: R = Recommended LS = Limited Service NR = Not Recommended. Recommendations are based on total immersion at 40ºC and therefore may be conservative

Warranty

The following benefits are in addition to any rights conveyed by Government regulations and the Trade Practices Act. Durolite warrant 'Webglass' and 'Webglass Plus' glass reinforced polyester sheeting over:

(A) A period of 20 years (pro-rata cover) for the following:

I. The product will not allow water penetration through the actual sheet.

2. The product will not de-laminate or allow protrusion of reinforcing fibres through the surface of the sheet.

(B) A period of 10 years (pro-rata cover) for the following:

I. Remain structurally sound and shatter resistant under normal conditions. This includes fracturing of sheet by hailstones up to 25 mm in diameter accompanied by winds up to 100 km/hr.

2. Excessive yellowing of sheets leading to loss of light transmission exceeding 10% of the original light value. Installations above this latitude will be covered by individual warranty based on known climatic conditions.

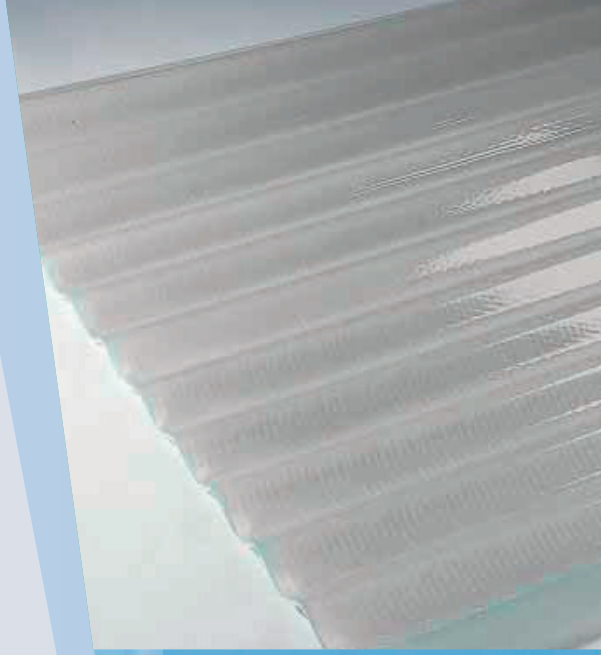
For further information, please refer to Dimond's website or contact your local branch.

Fire retardant properties

Webglass and Webglass Plus fully comply with the New Zealand Building Code clauses B1, B2, E2, F2 and G7.

Applications

- Fertilizer and Agricultural Chemical Plants
- Corrosive Chemical processing
- Petrochemical environments
- Wastewater Treatment
- Marine environments
- Mining Industry
- Paper and pulp manufacturing
- Salt extraction and desalination plants.
- Power Stations
- Skylighting where safety mesh is not desirable.



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