



Pultruded Fibreglass Windows & the Environment

Pultruded Fibreglass:

Pultruded fibreglass has been incorporated in window design for over 20 years and the full impact of the significance of this leading edge material is now recognized around the world. With the best thermal performance of all window & door frame material compared to traditionally used materials, many design and energy saving options are now available.

The increasing trend to apply the Building Code of Australia as the template for differing state building code applications positions Sovereign windows in the forefront of design considerations.

Environmentally Friendly: Fibreglass composites feature a very low embodied energy of the frame (low energy consumption in profile production) when compared to other common profile materials, while providing the longest life cycle expectancy. This has led international experts to recognize it as the most environmentally friendly production method.

Windows are one of the major cost items in your home at construction.

The cost of windows and the cost of heating and cooling your home are closely related. Generally, the more you spend on good quality windows the less you will pay in heating and cooling bills.

An initial investment in energy-efficient windows can greatly reduce your annual heating and cooling bill. Energy-efficient windows also reduce the peak heating and cooling load, which can reduce the size of an air-conditioning system by 30 percent, leading to further cost savings.

The real costs: The additional loan repayments for purchase of energy efficient windows at time of construction or renovation are usually less than the additional energy bills resulting from inefficient windows.

Property values: Homes with higher energy ratings are already fetching premium prices in many areas (eg. the ACT). This trend is expected to continue if energy costs rise and environmental problems associated with energy consumption manifest.

Minimum Energy Performance Codes for the Building Code of Australia; WERS and other State and Local Council specific regulatory measures are likely to accelerate awareness of and demand for energy efficient housing.

Exceptional Durability:

Fibreglass has proven to be vastly more **DURABLE** than timber, vinyl, steel and aluminum.

Excellent Insulation

Fibreglass is a natural insulator, it requires NO thermal break.

Maintenance free

Fibreglass will NOT rot, oxidize, rust or decay. The hardware & colours are also of a high Quality to further enhance the maintenance free aspect of the Windows and Doors.

Outstanding Rigidity

Fibreglass **strength** insures jam-free operation indefinitely in any weather.

Outstanding Performance

Fibreglass windows made by Sovereign Windows & Doors pass the most demanding conditions. AND, with a full range of **high performance glass** options ensure less heat loss, with greater control over heat gain.

Aesthetics

Fibreglass **strength** allows larger windows with **attractive frames**.

Acoustics

Fibreglass windows made by Sovereign Windows & Doors RATED highest in **sound deadening** because of the fibreglass frames and airtight seals.

Flexibility

Fibreglass windows & patio doors are designed and can be **made to measure** in any Configuration



Harmony Dawn

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Sovereign Series Windows Receive US Department of Energy Recognition in Award Winning Design

Sovereign is proud to announce that its high-performance windows were recognized for their superior performance in the 2005 Solar Decathlon, a solar-powered home competition primarily sponsored by the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory. The event was held in Washington, D.C. and international in focus given the participation of university design teams from Canada and Spain as well as the United States.

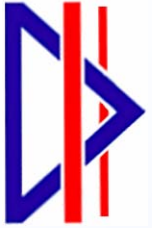
The Decathlon project featured distinctive yellow frames, emphasizing the colour-design freedom represented by fibreglass. Very low thermal conductivity, dimensional stability under temperature cycling and longevity are also characteristics of Sovereign Series Windows.

The Solar Decathlon project featured distinctive yellow frames, emphasizing the colour-design freedom represented by fibreglass. Very low thermal conductivity, dimensional stability under temperature cycling and longevity are also characteristics of Inline Windows.



Source: US Department of Energy

The glass for these Decathlon Windows was provided by Alpen, Inc. in Boulder, Colorado. It is believed to represent the highest in insulating value ever produced. At an "R-value" of 15 and with the weight of only double glazing, it would take fifteen panes of standard glass to achieve this insulating value. The performance of Alpen glass is achieved through a combination of suspended coated films and krypton gas-filling.



SOVEREIGN WINDOWS & DOORS

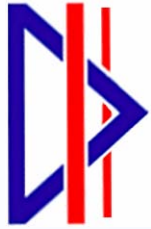
PETERSBOROUGH, ONTARIO

CANADA



- *Project:* Harmony Dawn





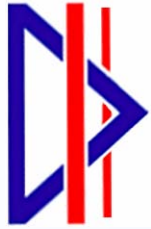
SOVEREIGN WINDOWS & DOORS



MONO MILLS, ONTARIO
CANADA



- **Project:** Wilson Natural House
- **Architect:** Martin Liefhebber
- **Structural Engineering:** Read Jones
Christofferson Ltd.
- **Builder:** Colin Richards C&R Contracting
- **Product:** Inline Fiberglass Windows,
double glazed, low-E, krypton gas filled.



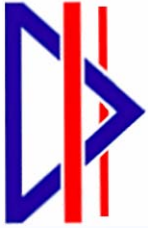
SOVEREIGN WINDOWS & DOORS

CLARKSON, ONTARIO

CANADA



- **Project:** Straw Bale Residence
- **Architect:** Martin Liefhebber
- **Builder:** Brian Lenehan
- **Structural Engineering:** Read Jones
Chistofferson Ltd.
- **Product:** Inline Fiberglass Windows,
high energy performance



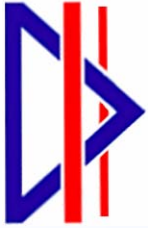
SOVEREIGN WINDOWS & DOORS

UXBRIDGE, ONTARIO

CANADA

- **Project:** Chalk House
- **Builder:** Owner Builder
- **Contractor:** Inline Fiberglass Ltd.
- **Architect:** Martin Leifhebber Architect Inc.
- **Product:** Series 325 casement and fixed Triple glazed high performance glazing combination, colours – red exterior
- **Description:** new construction, energy efficient, green construction design



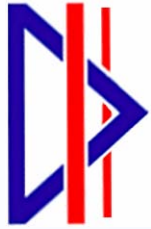


SOVEREIGN WINDOWS & DOORS



**PORT CREDIT,
ONTARIO
CANADA**

- ***Project:*** Port Credit Lighthouse
- ***Product:*** Series 325 Fixed Windows.



SOVEREIGN WINDOWS & DOORS

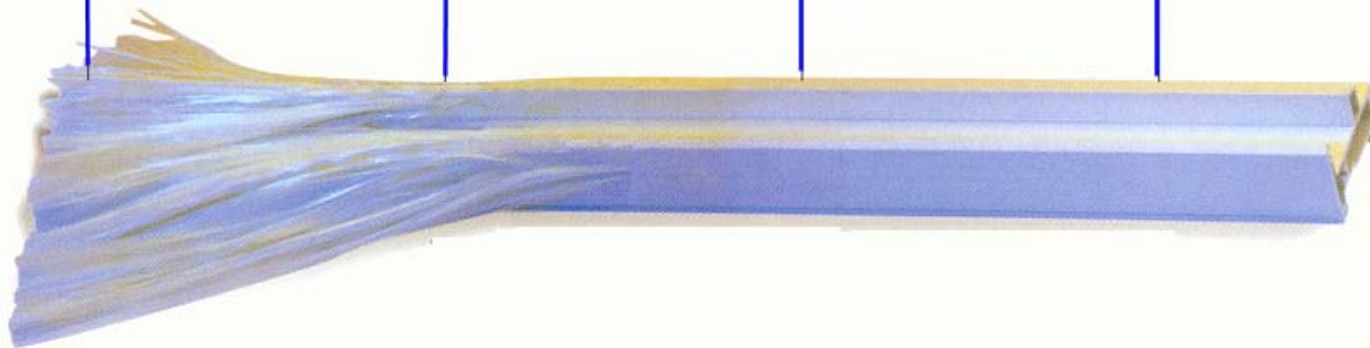
Tri-Directional Composites- Pultrusion The Basics

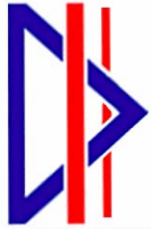
The process begins with glass roving & mat

This resin-soaked glass matrix is pulled through heated dies

The profiles are made to specific window & door profiles

Your choice of colour is then applied





SOVEREIGN WINDOWS & DOORS

Pultruded Thermoset Fibre-reinforced Composite

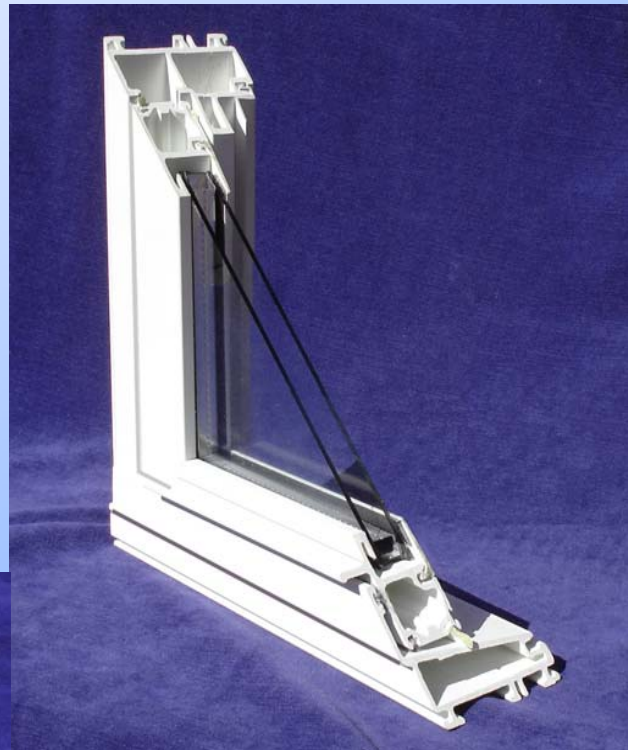
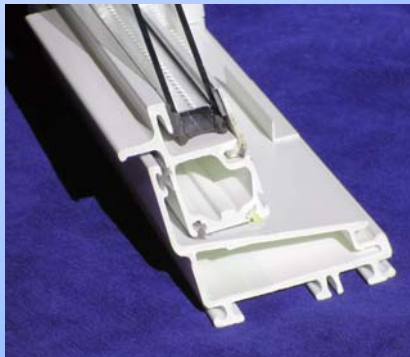
Engineered Profiles

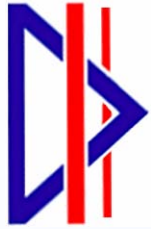
Highest performance available

for any window & door

For:

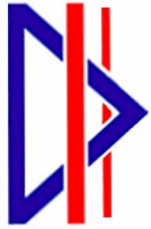
- Air tightness
- Corrosion resistance
- Water tightness
- Insulating Performance
- Wind load
- Distortion





SOVEREIGN WINDOWS & DOORS

ComparisonChart	Sovereign	Timber	Aluminium
WIDE COLOUR RANGE	Y	Y	Y
NEEDS RE-ENFORCEMENT	N	Y	Y
ENVIRONMENTALLY FRIENDLY IN MANUFACTURE	Y		
ENVIRONMENTALLY FRIENDLY IN DISPOSAL	Y		Y
NON CORROSIVE IN SEA AIR	Y	Y	
GOOD NATURAL INSULATION	Y		
GUARANTEE PERIOD (TYPICAL)	15	7	7
LIFE EXPECTANCY (TYPICAL)	50	20	20
EXPANSION / CONTRACTION PROBLEMS	N		
DAMAGE CAN BE EASILY REPAIRED	Y	Y	
GOOD STRENGTH TO WEIGHT RATIO	Y		Y
DISTORTION UNDER EXTREME HEAT / FIRE	N		
RIGIDITY UNDER WIND PRESSURE	Y		Y
REDECORATION POSSIBLE ON SITE	Y	Y	



SOVEREIGN WINDOWS & DOORS



Single Glazed

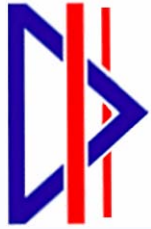
Single and split colours



Insulated Glass Units



High strength to weight ratio



SOVEREIGN WINDOWS & DOORS

Single Hung



Awning

Single or Double Hung

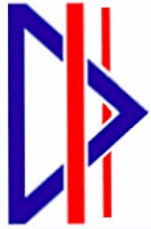
Casement & Fixed

Sliding Door



Inward tilt as standard

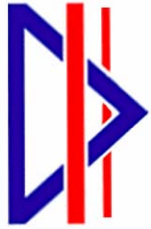
Insulated Glass Units



SOVEREIGN WINDOWS & DOORS

State Of The Art - Materials & Performance

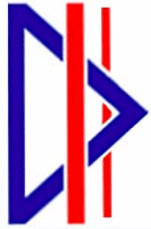
- PULTRUSION BRINGS HIGH PERFORMANCE SPACE-AGE COMPOSITES WITHIN THE REACH OF WINDOW AND DOOR MANUFACTURERS.
- CONTINUOUS FIBREGLASS REINFORCEMENTS, IN ROVING AND MAT FORMS, ARE DRAWN THROUGH RESIN IMPREGNATION STATION TO COAT EACH FIBER WITH A SPECIALLY FORMULATED THERMOSETTING RESIN MIXTURE.
- THE COATED FIBRES ARE ASSEMBLED BY FORMING-SHAPING GUIDES AND DRAWN (PULLED) THROUGH A DIE, WHERE UNDER PRESSURE AND HEAT THE RESINS ARE CURED.



SOVEREIGN WINDOWS & DOORS

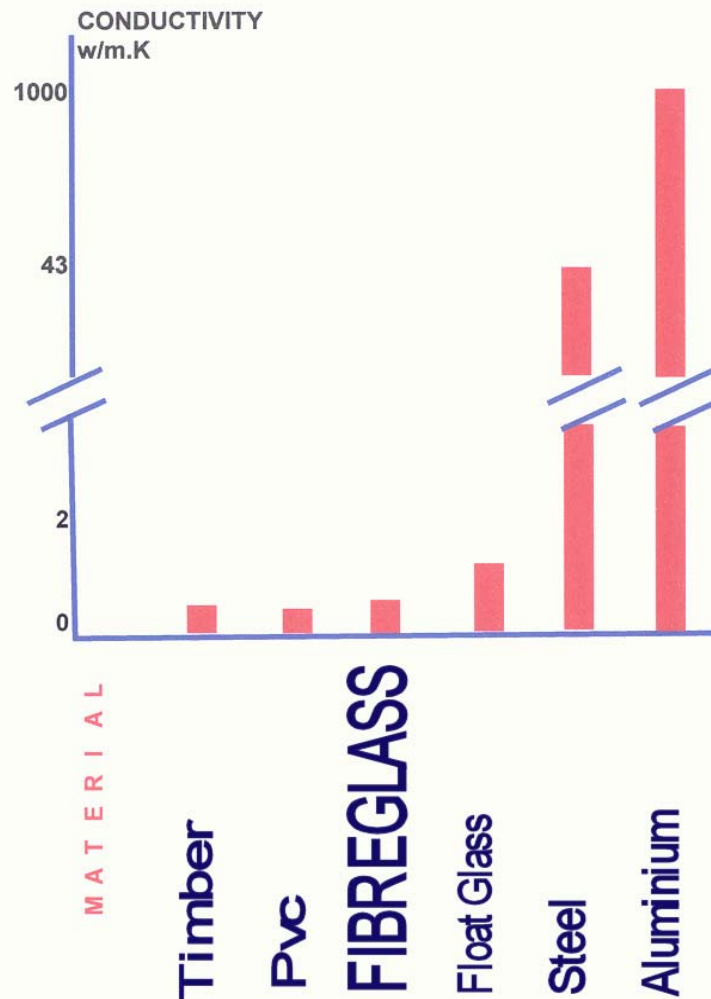
State Of The Art - Materials & Performance

- THE RESULT IS A HIGH STRENGTH PROFILE, READY FOR USE AS IT LEAVES THE PULTRUSION MACHINE. THE PROCESS IS IRREVERSIBLE, IT CAN NOT BE MELTED OR REFORMED.
- THE RESIN USED IN FIBREGLASS PULTRUSIONS IS THERMOSET. IN THE PULTRUSION PROCESS, UNDER HEAT AND PRESSURE, THE THERMOSET RESINS AND FIBREGLASS FORM A NEW INERT MATERIAL THAT IS IMPERVIOUS TO TEMPERATURE.
- PULTRUDED FIBREGLASS PHYSICAL PROPERTIES DO NOT CHANGE THROUGH THE FULL TEMPERATURE CYCLE UP TO 177C.



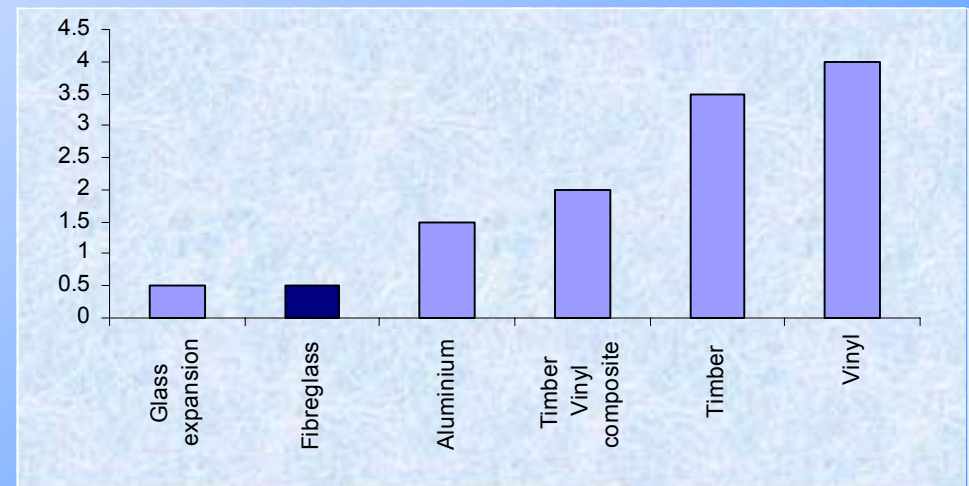
SOVEREIGN WINDOWS & DOORS

Thermal & Dimensional Stability

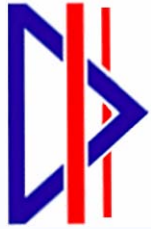


Fibreglass 500 times less conductive than Aluminium

Fibreglass Leads With Lowest Thermal Expansion Co-efficient To Glass



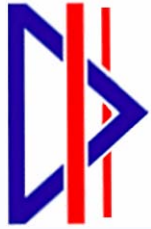
Fibreglass & glass expand at virtually the same rate. No distortion due to temperature changes



SOVEREIGN WINDOWS & DOORS

Physical Characteristics

	Fibreglass	Timber	Aluminium	uPVC	Steel
Tensile Strength Longitudinal (MPa)	414	6.0	138	45	207
Tensile Strength Transvers (MPa)	69	4	138	45	207
Modulus of Elasticity (GPa)	24	0.9	69	0.9	200



SOVEREIGN WINDOWS & DOORS

850 Series – Single Hung Vertical 1121mm x 1593mm

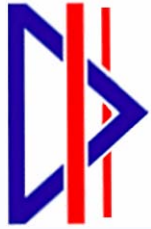
TEST	American Standard ASME-E	Australian Standard AS2047-1999	Results
Air Tightness	@ 75 Pascals	5.0 L/s/m	0.11 L/s/m
Water Tightness	@ 700 Pascals	450 Pa N6, C4	No Leakage
Wind Load Resistance	@ 5000 Pascals	N2, 700 Pa N6, 3000 Pa	No Deformation



SOVEREIGN WINDOWS & DOORS

900 Series – Double Hung 1000mm x 1600mm

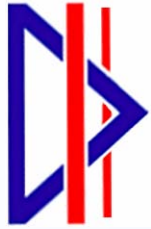
TEST	American Standard ASME-E	Australian Standard AS2047-1999	Results
Air Tightness	@ 75 Pascals	5.0 L/s/m	0.15 L/s/m
Water Tightness	@ 700 Pascals	450 Pa N6, C4	No Leakage
Wind Load Resistance	@ 5000 Pascals	N2, 700 Pa N6, 3000 Pa	No Deformation



SOVEREIGN WINDOWS & DOORS

800 Series – Single sash Slider 1754mm x 1220mm

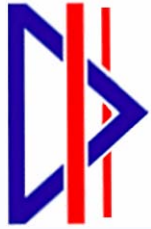
TEST	American Standard ASME-E	Australian Standard AS2047-1999	Results
Air Tightness	@ 75 Pascals	5.0 L/s/m	0.11 L/s/m
Water Tightness	@ 700 Pascals	N2,N3 150 Pa N4, 200 Pa	No Leakage
Wind Load Resistance	@ 5000 Pascals	N2, 700 Pa N3, 1000 Pa N4, 1500 Pa	No Deformation



SOVEREIGN WINDOWS & DOORS

600 Series – Sliding Door 1816mm x 2026mm

TEST	American Standard ASME-E283	Australian Standard AS2047-1999	Results
Air Tightness	@ 75 Pascals	5.0 L/s/m	0.12 L/s/m
Water Tightness	@ 400 Pascals	N2, N3 150 Pa N4, 200 Pa	No Leakage
Wind Load Resistance	@ 2500 Pascals	N2, 700 Pa N3, 1000 Pa N4, 1500 Pa	No Deformation



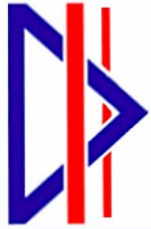
SOVEREIGN WINDOWS & DOORS

**325 Series – Casement,
700mm x 1600mm**

**Awning,
1000mm x 1000mm**

**Fixed
816mm x 2020mm**

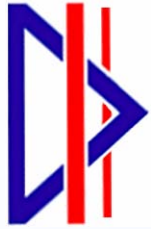
TEST	American Standard ASME-E	Australian Standard AS2047-1999	Results
-Air Tightness Openable	@ 75 Pascals	5.0 L/s/m	0.04 L/s/m
-Fixed Window	@ 75 Pascals		0.006 L/s/m
-Water Tightness Openable	@ 700 Pascals	450 Pa N6, C4	No Leakage
-Fixed Window			No Leakage
-Wind Load Resistance Openable	@ 4000 Pascals	N2, 700 Pa	No Deformation
-Fixed Window	@ 5000 Pascals	N6, 3000 Pa	No Deformation



SOVEREIGN WINDOWS & DOORS

OPERATING FORCE

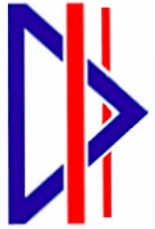
TEST Operating Force (N)	American Standard ASME-E	Australian Standard AS2047-1999	Sovereign Result	Sovereign Performance
Series 600 Sliding door 1816W x 2025H x 146D	Initiate <= 175 Maintain <= 110	180 N 110 N	15 N 48 N	8% of maximum allowed 50% of maximum allowed
Series 900 Double Hung Window 1000W x 1600H x 89D	Initiate <= 200 Maintain <= 100	200 N 160 N	90 N 80N	50% of maximum allowed 50% of maximum allowed
Series 800 Horizontal Sliding Window 1754W x 1220H x 89D	Initiate <= 90 Maintain <= 45	110 N 90 N	45 N 35 N	40% of maximum allowed 60% of maximum allowed
Series 325 Awning Window 1524W x 833H x 82D	Initiate <= 60 Maintain <= 30		24 N 20 N	40% of maximum allowed 60% of maximum allowed



SOVEREIGN WINDOWS & DOORS

▶ **Stronger frames ensure**

- ▶ Ease of installation and that windows remain square, level and plumb.
- ▶ Smooth operation/no stress on hardware mechanisms and prolonged life expectancy.
- ▶ Weather-stripping will engage positively around the entire perimeter for air and water seal.
- ▶ No sash sagging or mullion deflection.
- ▶ Maximizes sunlight and viewing area.
- ▶ No bowing or breakage of large glass panels in high wind load areas.



SOVEREIGN WINDOWS & DOORS

► **Stronger frames ensure**

- Slimmer frames and mullions increase glass to frame ratio.
- The ability to design large window units.
- High levels of wind load resistance to meet extreme weather conditions.
- Greater resistance to forced entry and increased security.

YOUR GUARANTEE OF QUALITY

SOVEREIGN WINDOWS AND DOORS - 15 Year Guarantee

Sovereign frame products are guaranteed against defects arising from faulty workmanship or materials for a period of fifteen (15) years from the date of delivery by Sovereign Windows and Doors subject to the following conditions:

- The product has been installed in accordance with the relevant Australian standards and recognized building practice
- The product has been maintained in accordance with industry recommendations.
- The product has not been subject to misuse, physical abuse or neglect during transport, storage or installation.
- Manufacturing standards and tolerances are not deemed defects, nor are industry variations in the colour of additional componentry.
- Moving parts which wear out as a part of normal use are guaranteed for three (3) years.
- Sovereign Windows and Doors accepts no responsibility for glass breakage (except for faulty workmanship or materials). Wire reinforced glass, toughened glass, float glass, laminated glass and mirror glass is guaranteed against defects and degradation for a period of three (3) years
- This Guarantee is limited to the repair or replacement of the faulty product at the company's discretion but does not extend to the installation or refinishing of a replacement product.
- Only repairs carried out by Sovereign personnel or authorized Sovereign agents are covered by this Guarantee.
- Claims under this Guarantee should be made within one month of the defect arising in the product. Copies of documentation showing the purchase date of the product should be included with your written claim and forwarded to the nearest Sovereign office.

This guarantee is in addition to all other rights and remedies in respect of this product to which you are entitled under the Trade Practices Act and similar State and Territory laws.

Date of Purchase: _____

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