

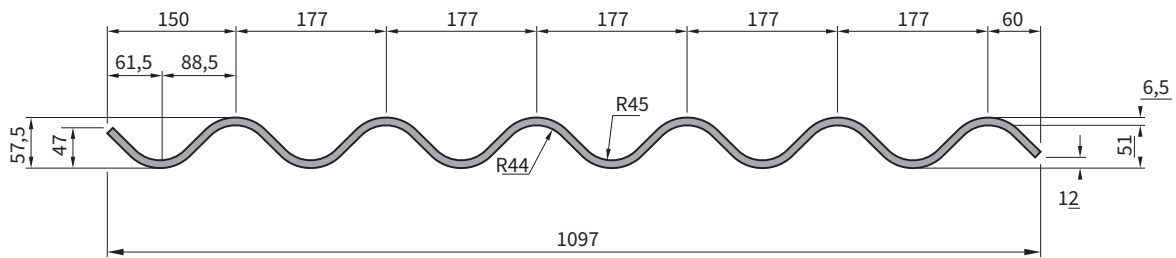
Eternit

FarmTec Corrugated Polycarbonate Rooflight Installation Guide



Introduction

FarmTec polycarbonate roof lights are a high-performance corrugated sheet offering superior light transmission. Suitable for use on agricultural buildings. These are classified non-fragile class C but should be treated as fragile at all times.



Technical data

FarmTec

Description	UV resistant polycarbonate sheet
Thickness	Approx 1.3mm
Weight	1.88 kg/m ²
Fragility rating	Class C
Fire rating	Class 1Y (BS 476 part 7)
Colour	Clear
Light transmission	88%
U Value	5.68 W/m ² K

General information & safety measures

- Roofs should always be designed with a minimum slope of 10° to allow adequate rainwater run-off.
- Ensure that all sealants and tapes are compatible with polycarbonate.
- All accessory products should be light coloured, preferably white.
- Sheets which span up to two purlin spacings are of optimum length to cope with thermal movement
- Maximum recommended sheet length for FarmTec polycarbonate rooflights is 3050mm. Note that sheet lengths have to be limited so that excessive thermal movement does not make end laps unweatherable or hole diameter requirements so large that the sheet is not secure under the washer.
- Ensure that the clearly marked UV protected surface of the sheet is to the outside.
- Sheets must always be installed with the corrugations running vertically or up-slope.
- Cold curving is possible but profile and fixing method dependent. Please contact the Technical Service Department for specific guidance.
- Of all glazing materials polycarbonate exhibits greatest resistance to impact over a temperature range of -20 to +100°C short term = -40 to +120°C). It is approximately 200 times more resistant to impact than glass.
- Eternit polycarbonate roof lights are however still a glazing material and therefore must be always treated with appropriate care.
- Sheets up to 3m long can be safely handled by one person but larger sheets will require two or more persons. When handling and fitting sheets particular care must be taken in windy conditions.
- Abrasion to the top surface of the sheet will damage the UV protective layer leading to discoloration and premature failure of the sheet.
- Do not walk on the sheets at any time.



Warning
NEVER WALK ON ROOF!

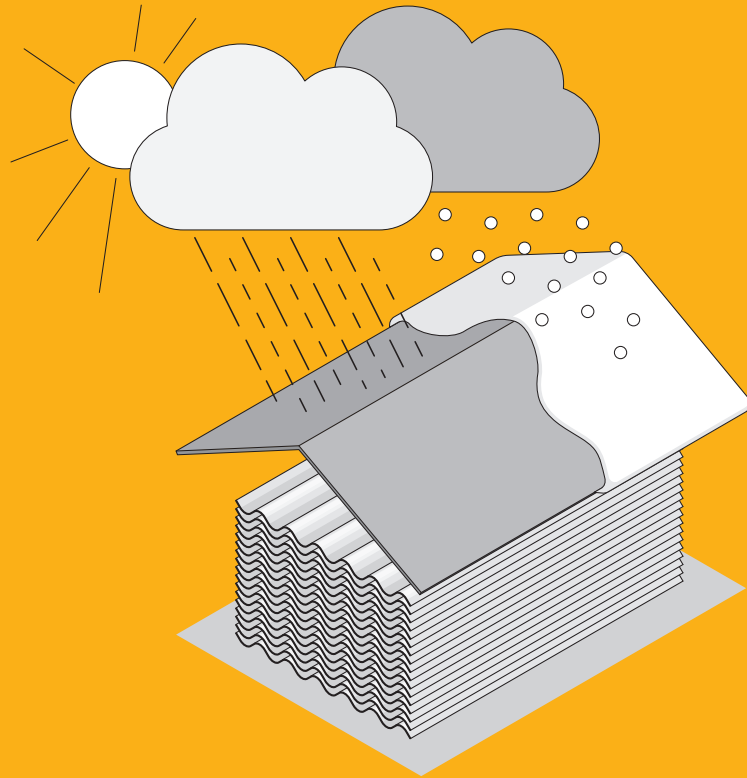


**Crawling boards or
ladders must be used**

Installation

Storage

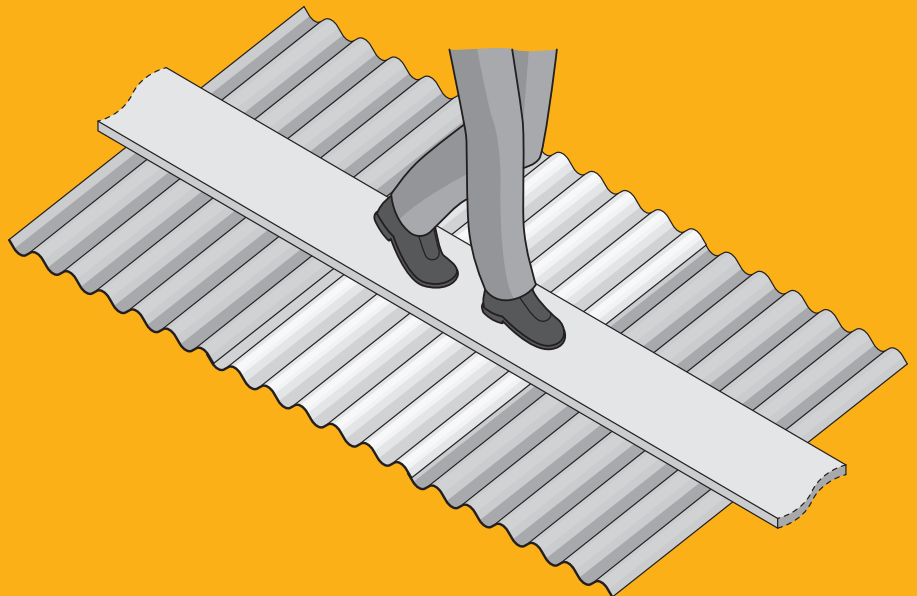
Roof lights should be stored on a flat, horizontal and dry surface. Stack height should not exceed 1m. It is recommended that sheets are stored indoors where possible. If sheets are being stored outdoors, they must be covered with an opaque cover, tightly secured, to protect from wind, rain and sun.



Transport and handling

Rooflights should be transported horizontally on flat, sturdy pallets, equal to or longer than the longest sheet. Short sheets should be stacked on top of the longer ones. All panels should be secured and properly fastened to the pallet during transportation.

Rooflights must be handled with care all times as it is a glazing material. NEVER walk on the rooflights if access to the roof is required, use walking boards placed across at least three purlins to spread the load. Sheets must be lifted cleanly off the stack. Sheets in excess of 3m long should be carried by more than one person.



Installation



Cutting

When cutting the sheets, you must support the sheet to avoid stress and vibration. The blade should only protrude through the sheet by about 10 mm. If the blade is too far through the sheet, the blade 'chips' at the sheet producing a bad cut.

Cutting multiple sheets can be achieved but extra care must be taken. Polycarbonate sheets can be cut with a variety of tools:

- Fine tooth hand saw: hold the saw at a shallow angle and cut with slow steady strokes.
- Jig saw fitted with a metal cutting blade
- Band saw fitted with a high-speed metal cutting blade
- Circular saw fitted with a diamond grit blade.
- Angle grinder with thin metal slitting disc.

The basic blade characteristics which we have used for multiple sheets is:

CIRCUMFERENCE SPEED = 2400 m/min

TOOTH SPACING = 10 mm approx.

DIAMETER = 250 mm approx.

CLEARANCE ANGLE = 20-30°

RAKE ANGLE = 15°

Drilling

Polycarbonate sheets can be drilled by hand or power drills. If using a power drill, set to a slow speed. Support the sheet underneath the hole position to avoid vibration. When drilling holes always allow for thermal movement. Support the rooflight directly under the drill, apply light pressure and avoid creating stress or vibration.

Note: When cutting or drilling fibre cements sheets near polycarbonate rooflights, ensure all dust is removed off the sheet with a dry cloth.

Filler Blocks

Polycarbonate sheets must be supported at each purlin position, using profile filler blocks or the FarmTec Fibre Cement sheet.

Installation

Sealant

Polycarbonate sheets must be sealed using a 10mm diameter butyl strip sealant. Place a row of sealing strip either side of the purlin centre line, separated by about 10mm at the end laps and top of the polycarbonate sheets (so the fixing is in between the 2 strips of butyl). Side laps are single sealed, with the butyl strip positioned outside the line of side lap laploxx fixings. (Ensure that butyl strip being used is compatible with polycarbonate.)

Mitring

The polycarbonate sheets do not require mitres, and the corresponding corner of the FarmTec sheet should also be unmitred. Since the build up of compound layers at end lap situations does not occur.

Fixing positions

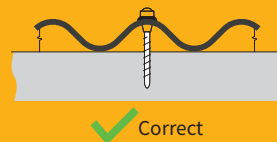
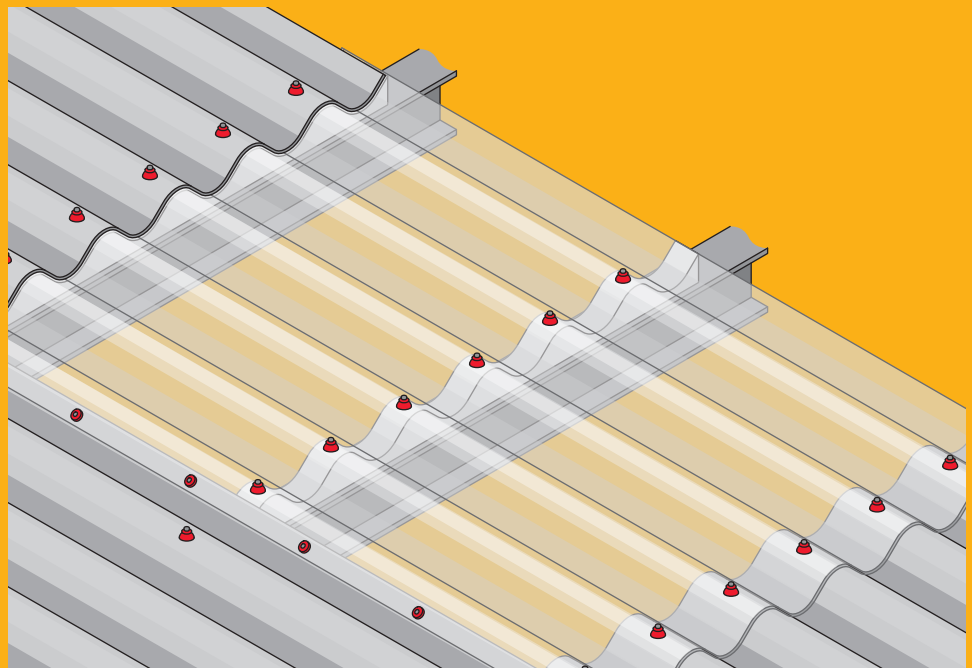
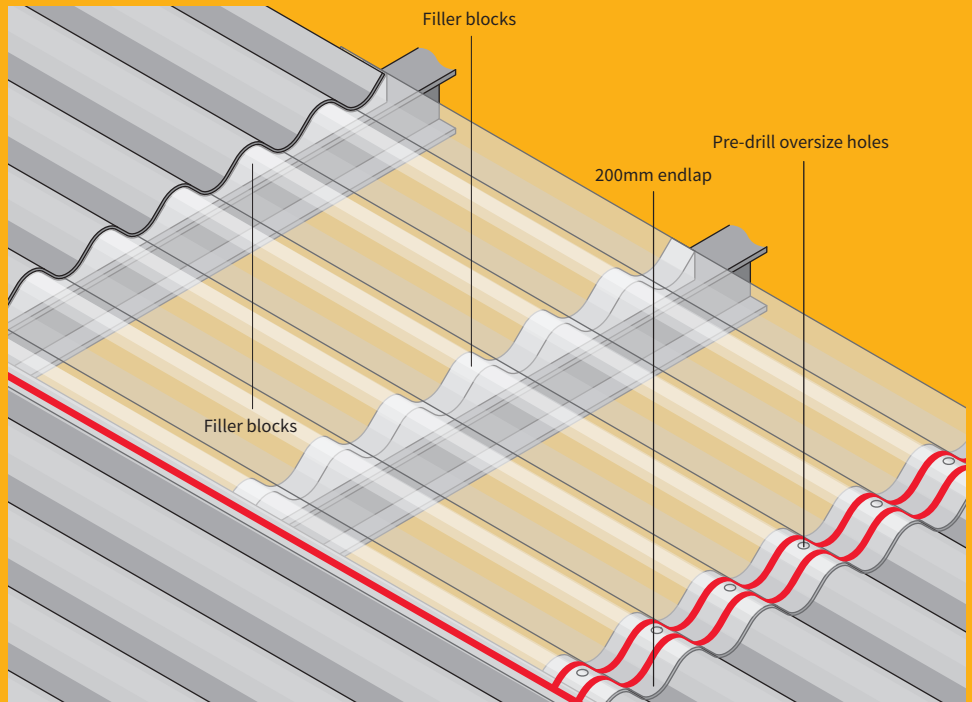
Polycarbonate rooflights should be fixed through every corrugation at the end lap and intermediate purlin using the same fasteners for the FarmTec sheets, apart from the side lap corrugations.

Holes should be pre-drilled with a 6mm oversized hole for sheet lengths up to 2m, otherwise 9mm oversized for anything over 2m. (This is for polycarbonate sheets only and not the fibre cement sheets).

In addition, self-sealing fasteners with a synthetic rubber shank (laploxx) or seam bolts and washers with a wide bearing, should be used at 300-400mm centres for side stitching to the adjacent sheet.

It is advisable to use weatherproof caps, and washers where possible, that are a distinctly different colour to the fixings for the rest of the roof. The rooflight fixings act as a warning that this location is always fragile and should be avoided.

Conventionally, poppy red caps are used for rooflights.

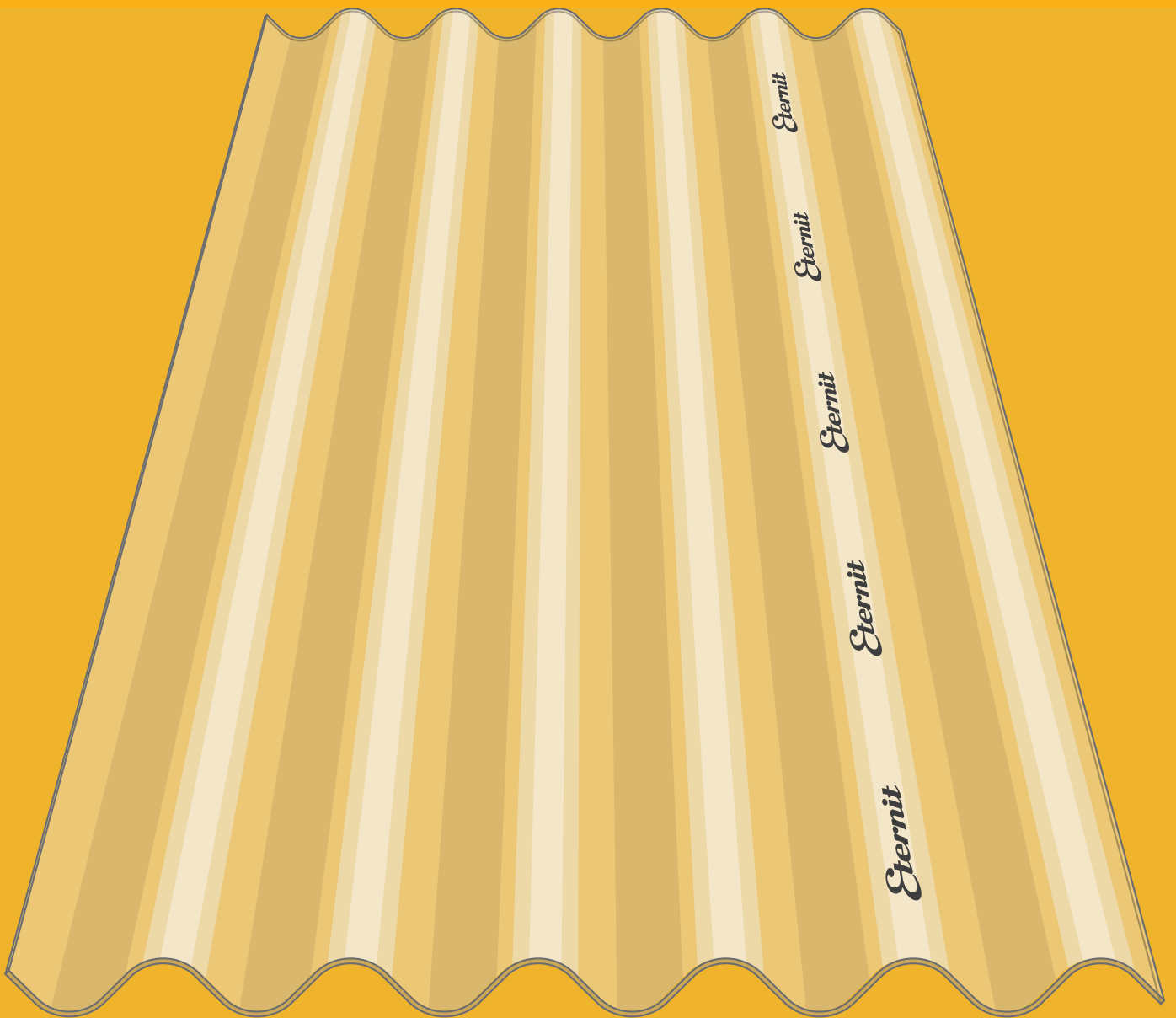


Installation

Panel orientation

When installing Eternit polycarbonate rooflights, you must ensure the clearly marked UV protected surface is on the outside, this is identified with a removal strip along one of the corrugations.

Polycarbonate rooflights must always be installed with the corrugation running vertically, or up slope.



Chemical resistance & fire hazard

FarmTec polycarbonate rooflights, in general, have excellent resistance to most chemicals; resistance to specific compounds depends on concentration and temperature, duration of exposure and stress within the sheet.

Contact with plastisol coated metal sheets, wet wood preservatives, solvents and alkali cleaners should be avoided. However, FarmTec polycarbonate rooflights have good resistance to acids, aliphatic hydrocarbons and alcohols; common environmental pollutants and marine environments do not have a detrimental effect.

For details on the chemical resistance chemicals please refer to the tables below.

An important feature of FarmTec polycarbonate sheets is that its softening point is below 200°C. When a fire in a building is underneath a FarmTec polycarbonate rooflight it will soften and open allowing smoke, heat and gases produced by the fire to escape. This 'venting' property means that damage within the building can be reduced.

Thermal Movement

Accommodating the thermal expansion of a FarmTec polycarbonate rooflight cannot be over emphasized as this is generally greater than that of other popular glazing materials and affects both length and width.

Generally, this is approx. 3.5mm per metre. It is always best practice to either consult the profile data sheet or contact the Technical Service Department.

IMPORTANT:

Polycarbonate sheet expands with heat and contracts with cold.

Holes must be oversized to allow for thermal movement. Failure to accommodate for thermal movement will cause buckling of the sheet or tearing around the fixing.

Chemical resistance

Good

Little or no reduction in physical properties.

Fair

Some reduction in physical properties after long exposure.

Poor

Significant change in physical properties after short exposure.

n.d.

Not determined.

Note: Values are only indications and should not be interpreted as absolute proof of resistance of any part against a certain substance. Testing under actual exposure conditions will provide a better indication of performance.

	Concentration	Room Temperature 23°C	Elevated Temperature 73°C
Acids			
Acetic (CH ₃ COOH)	Up to 50% 70%	Good Poor	Poor Poor
Benzoic (C ₆ H ₅ COOH)	10%	Fair/Poor	n.d.
Borium (H ₃ BO ₃)	n.d.	Good	n.d.
Chromic (CrO ₃)	20% 50%	Good Fair	n.d. n.d.
Citric (HOOC) ₃ (CH ₂) ₂ COH	10%	Good	n.d.
Formic (HCOOH)	40% 70% 97%	Good Fair Poor	Poor Poor Poor
Hydrochloric (HCl)	10% 20% 30%	Good Fair Poor	n.d. n.d. n.d.
Hydrogen flouride (HF)	Conc.	Good/Fair	n.d.
Lactic (CH ₃ CHOHCOOH)	85%	Good	Fair/Poor
Nitric (HNO ₃)	10% 50% 70%	Good Fair/Poor Poor	Good Poor Poor
Oleic		Good	n.d.
Orthophosphoric (H ₃ PO ₄)	10% 100%	Good Good	Fair Good
Oxalic (HOCCOOH.2H ₂ O)	10% 30%	Good Good	Fair Good
Picric	2%	Fair	n.d.
Phosphoric	85%	Good	Good
Sulphuric (H ² SO ⁴)	70% 90%	Good Fair	Good

	Concentration	Room Temperature 23°C	Elevated Temperature 73°C
Alcohols			
Allyl alcohol (CH ₂ =CHCH ₂ OH)	-	Fair	n.d.
Amyl alcohol (CH ₃ (CH ₂) ₃ CH ₂ OH)	-	Good	Fair
Benzyl alcohol (C ₆ H ₅ CH ₂ OH)	-	Poor	n.d.
Butyl alcohol (CH ₃ (CH ₂) ₃ OH)	-	Good	Good
Iso-octyl alcohol	-	Fair	n.d.
Isopropyl alcohol (CH ₃ CHOHCH ₃)	-	Fair	Fair
Phenyl-ethyl alcohol	-	Poor	n.d.
Propargyl alcohol	-	Good	n.d.
Dowanol PM	-	Poor	n.d.
Ethanol (C ₂ H ₅ OH)	90% 100%	Good Poor	Good Poor
2-amino-ethanol (H ₂ NC ₂ H ₄ OH)	-	Good	Poor
Methanol (CH ₃ OH)	-	Poor	Poor
Cyclohexanol (C ₆ H ₁₁ OH)	-	Fair	Fair
Glycerine (HOCH ₂ HOCH ₂ CH ₂ OH)	-	Fair	n.d.
(di) Ethylene glycol O(CH ₂ CH ₂ OH) ₂	-	Good	Good
Butylene glycol	-	Good	Good
Alkalis			
Ammonium hydroxide (NH ₄ OH)	5% 30%	Fair (crazing) Poor	n.d. Poor
Potassium hydroxide (KOH)	1% conc.	Fair (crazing) Poor	n.d. Poor
Sodium carbonate (Na ₂ CO ₃)	15%	Good	Fair
Sodium hydroxide (NaOH)	1% conc.	Fair (crazing) Poor	n.d. Poor

	Concentration	Room Temperature 23°C	Elevated Temperature 73°C
Salts			
Ammonium			
fluoride (NH ₄ F)	sat.	Poor	Poor
chloride (NH ₄ Cl)	10%	Good	n.d.
sulphate ((NH ₄) ₂ SO ₄)	10%	Good	Good
sulphite ((NH ₄) ₂ SO ₃)	10%	Poor	n.d.
nitrate (NH ₄ NO ₃)	10%	n.d.	Good
Aluminium			
chloride (AlCl ₃) oxalate	sat.	Good	Poor
sulphate(Al ₂ (SO ₄) ₃)	10%	Good	n.d.
		Good	Good
Barium			
chloride (BaCl ₂)	10%	Good	Good
bromide (BaBr ₂)	10%	n.d.	Fair
Calcium			
chloride (CaCl ₂)	10%	Good	Good
nitrate (Ca(NO ₃) ₂)	10%	Good	Good
hypochlorite (Ca(OCl) ₂)		Good	n.d.
Copper			
chloride (CuCl ₂)	sat.	Good	n.d.
sulphate (CuSO ₄)	sat.	Good	n.d.
Iron			
chloride (FeCl ₃)	sat.	Good	Good
sulphate (FeSO ₄)	sat.	Good	n.d.
Magnesium			
chloride (MgCl ₂)	10%	Good	Good
sulphate (MgSO ₄)	sat.	Good	n.d.
Nickel/Zinc sulphate (NiSO₄/ZnSO₄)	sat.	Good	n.d.
Potassium			
bromide (KBr)	sat.	Good	n.d.
carbonate (K ₂ CO ₃)	sat.	Good	n.d.
cynite (KCN)	sat.	Poor	n.d.
chloride (KCl)	sat.	Good	n.d.
chromate (K ₂ CrO ₄)	sat.	Good	n.d.
manganate (KMnO ₄)	10%	Good	Good
nitrate (KNO ₃)	sat.	Good	n.d.
sulphate (K ₂ SO ₄)	sat.	Good	n.d.
Sodium			
chloride (NaCl)	10%	Good	Good
chlorate (NaClO ₃)	10%	Good	n.d.
chromate (Na ₂ Cr ₂ O ₇)	10%	Good	Good
carbonate (Na ₂ CO ₃)	10%	Good	n.d.
nitrate (NaNO ₃)	10%	Good	n.d.
sulphide (Na ₂ S)	10%	Good	Good
sulphate (Na ₂ SO ₄)	10%	Good	Good

	Concentration	Room Temperature 23°C	Elevated Temperature 73°C
Food Stuffs			
Fruit & vegetable juice	Normal use	Good	Good
Beer, cognac, whisky, gin, vodka, wine, rum	Normal use	Good	n.d.
Milk, coffee, chocolate	Normal use	Good	Good
Black tea	Normal use	n.d.	Fair/poor
Mineral water	Normal use	Good	Good
Butter, margarine, sauces & vinegar	Normal use	Good	Good/fair
Cooking oils	Normal use	Good	Good
Vegetables	Normal use	Good	Good
All spices except: Nutmeg Clove oil	Normal use	Good Poor Poor	Good n.d. n.d.
Salt, sugar	Normal use	Good	n.d.
Tobacco	Normal use	Good	Good
Ketchup, tomato puree	Normal use	Good	n.d.
Fish, meat	Normal use	Good	Good

Oils			
Mobil 10 W 40	Normal use	Good	n.d.
Skydrol 500 A	Normal use	Poor	n.d.
Jet fuel JP-4	Normal use	Fair	n.d.
Drill Oil Brake Fluid (ATE)	Normal use	Poor	n.d. n.d.
Diesel oil Terpene oil Gasoline Super Test Gasoline Refined oil Gasoline normal	Normal use	Fair Fair Poor Poor Good Poor	n.d. n.d. n.d. n.d. n.d. n.d.
Soy bean oil, peanut oil, castor oil	Normal use	Fair/good	n.d.
Spindle oil, dynamo oil, turbine oil, machine oil Refrigerator oil Cylinder oil Cable insulation oil Other lubricant oils	Normal use	Fair Fair Good Good Good Good Good	n.d. n.d. n.d. n.d. n.d. n.d. n.d.
Silicon oil	Normal use	Good	Poor
Whale grease, soap grease, lubrication greases	Normal use	Good	n.d.
Molikote paste or powder	Normal use	Good	n.d.
Camhor oil	Normal use	Good	Fair
Vaseline	Normal use	Good	n.d.
Fish oil	Normal use	Good	n.d.

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Beer, cognac, whisky, gin, vodka, wine, rum	Normal use	Good	n.d.
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Salt, sugar	Normal use	Good	n.d.
Tobacco	Normal use	Good	Good
Ketchup, tomato puree	Normal use	Good	n.d.
Fish, meat	Normal use	Good	Good



Aftercare

In order to maintain FarmTec polycarbonate rooflights in a good condition it is recommended that the sheet be cleaned periodically using suitable detergent cleaning agents. Cleaning period will depend on local environment but should be at least once a year. The condition of the fasteners should also be inspected and replaced as necessary.

The recommended cleaning instructions are as follows:

- use lukewarm water to rinse and soften dirt
- make up a solution of lukewarm water and ordinary household cleaner or mild soap and use this to wash the sheet
- a sponge or soft cloth should then be used to gently remove dirt and grime
- for large areas a pressure washer may be used. Do not apply directly on laps and sealants as failure may occur
- ethyl alcohol or white kerosene used sparingly can be used to remove paint and other such substances
- the cleaning process should then be repeated, and the sheet rinsed with clean water and dried with a soft cloth.

Warning

The following precautions should be observed:

- do not scrub the sheet with brushes or sharp implements
- do not use squeegees
- avoid solvents, other than those listed, or any abrasive cleaners
- avoid cleaners of a highly alkaline composition
- avoid cleaning in the hot sun or high temperatures.

It is advisable to test the suitability of any cleaner on a sample piece of sheet first. After installation, labels, glazing compounds etc. can be removed using petroleum spirit, after which wash the sheet as described in the above procedure.