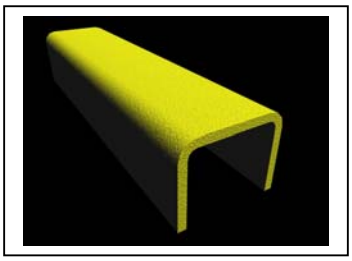
INDUSTRIAL: LADDER RUNG COVERS

SIZES AVAILABLE

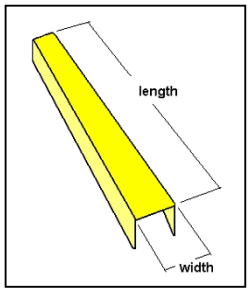
LADDER RUNG COVERS are available in **SQUARE** or "U" section in a series of standard lengths and widths.



This profile ensures a universal fit over either a square section or a round section ladder rung. The square section of the RUNG COVER allows existing round ladder rungs to be converted to a safer and more comfortable square profile that offers a larger flat-top standing surface. The larger standing surface increases the contact area with the foot, adds safety and feels more comfortable.

Ladder rung Covers are measured in two dimensions:

- the LENGTH of the ladder rung cover required
- the WIDTH of the rung cover.



LENGTH (A) – Safety Step have standard off-the-shelf length covers that will fit most applications however special lengths can be produced up to a total length of 3600mm (12'). The length dimension is generally up to 2" shorter than the length of the actual ladder rung. If complete rung coverage is desired, make sure that no obstruction (for example a weld bead) will interfere with the seating of the rung cover.

WIDTH (B) is the internal dimension between the two drops or legs of the rung cover. The internal width of a ladder cover should be 2 –3mm greater than the diameter of the actual ladder rung. This allows for a cushion layer of adhesive to sit between the ladder rung and the rung cover.

Length x Width x Return		PART NUMBER
Metric	**Imperial**	
200 x 23	**8" x 0.9"**	**LR1**
200 x 28	**8" x 1.1"**	**LR2**
200 x 33	**8" x 1.3"**	**LR3**
200 x 38	**8" x 1.5"**	**LR4**
300 x 23	**12" x 0.9"**	**LR5**
300 x 28	**12" x 1.1"**	**LR6**
300 x 33	**12" x 1.3"**	**LR7**
300 x 38	**12" x 1.5"**	**LR8**
450 x 23	**18" x 0.9"**	**LR9**
450 x 28	**18" x 1.1"**	**LR10**
450 x 33	**18" x 1.3"**	**LR11**
450 x 38	**18" x 1.5"**	**LR12**

NOTE: The dimensions of the "width" as stated above is a nominal measurement. Because of the unique one step manufacturing process used by Safety Step to achieve the fully composite finished product, every ladder cover is individually hand made and not extruded from a machine. This makes for small variations in each finished product and sizes may vary slightly.

COLORS AVAILABLE

Industrial LADDER COVERS are available in two 'in stock' standard colours, SAFETY YELLOW and


BLACK

Additionally four other 'on request' colors are available, RED, WHITE, GREEN and BLUE.


Glow in the dark ladder covers are available that look off white to green in daylight and glow bright green/yellow in darkness.

GRADES AVAILABLE

The super tough abrasive grit used to form the high traction surface on LADDER COVERS is one of the hardest compounds known to man. Fused Alumina grit is bound within the glass reinforced body of the stair LADDER COVER and presents a top surface with almost diamond hard characteristics.

MOHS scale comparison

Diamond	10
Silica Carbide	9.7
Fused Alumina	9.4
Hard Quartz	7.0
Steel	6.0

Safety Step offers a range of grit sizes which are categorized as the following six grades, together with typical applications:

- **FINE** - Commercial buildings swimming pools.
- **INDUSTRIAL** - For most industrial applications
- **OFFSHORE** - Oil platforms, heavily soiled and oily areas
- **EXTREME** – for heavy snow and other extreme applications

As different manufacturers have different names for each grade of their anti-slip material, the following comparisons of Safety Step grading may be used.

Grade	**U.S. Grading**	**Microns (average)**
Fine	60 mesh	250
Industrial	16 mesh	356
Offshore	12 mesh	686
Extreme	8 mesh	940

PHYSICAL PROPERTIES - FRP

Safety Step industrial anti-slip products are manufactured entirely by hand in a unique one step manufacturing process then trimmed and cut to size. By incorporating all of the separate elements of the finished product into one seamless fibreglass composite material we are able to build the strongest and most durable product available on today's market. The general term for the way we make our product is **Fibre Reinforced Plastic** or FRP for short, or more commonly called fibreglass.

FRP doesn't dent, corrode, rot, delaminate, support bacteria and has a high strength to weight ratio being several times higher than steel on a weight to weight basis. It demonstrates a very high resistance to UV and other environmental conditions, is highly resistant to chemical attack and has an indefinite lifespan. The particular base resin used by Safety Step also features extremely good fire retardant and low smoke emission characteristics.

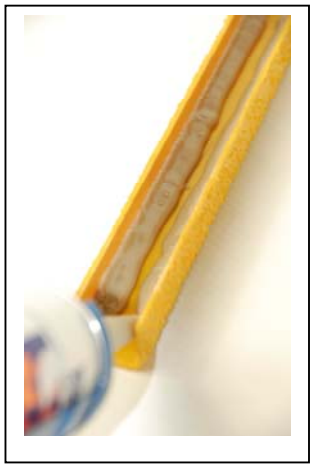
Almost all other stair nosing and floor plate manufacturers adopt a layering or bonding method where an anti-slip coating is bonded to a pre-formed base such as steel or pultruded material. This method invariable sets up a weak point where the two dissimilar components, the top coating and the base material, meet. This weak point will be further strained by stress set up within the product through movement associated with normal use or thermal expansion and contraction. Such a bonding method also has a low tolerance to impact and typically the top coating will peel away from damaged areas.

The products you receive from Safety Step are constructed from a base mix of fire retardant polyester resins interspersed with layers of immensely strong interwoven glass fibre. The color pigmentation is floated right through the full thickness of the material so that it is impossible to wear the color off and become unsightly. The fused alumina anti-slip grain is then forced under pressure into the base mix while it is still wet, followed by a final resin layer laid over the top of it all. This entire composite mix is then cured at optimum temperatures until fully hard.

No layering, no bonding, no weak spots, just one immensely strong composite whole.

With safety Step products the anti-slip material cannot be knocked out as happens with over-coating methods, no peel back or chipping can occur around localised damage points, the colour cannot be worn off, flexing and movement will have no effect on them and with the FRP material, there is a 100% guarantee that it cannot rust or corrode. You simply get the toughest, most durable and longest lasting nosings available anywhere in the world.

INSTALLATION



LADDER COVERS are permanently affixed to existing ladders with a cushion layer of powerful urethane mastic adhesive. The adhesive is dispensed from tubes using a common mastic gun.

Recommended adhesives include:

Sika 11FC
Simson 70-02
Selleys Liquid Nails Direct Stick LF

To achieve a strong, long lasting and effective bond between the ladder cover and the existing ladder rung the following procedure should be followed:

1. Ensure the ladder rungs are clean and free of loose paint, corrosion, oils and grease. Light sanding of the ladder rung is recommended followed by

a wipe with a non greasy solvent such as isopropyl alcohol.
2. Ensure the undersides of the rung covers are clean and dust free, a light solvent wipe is recommended. Light sanding of the underside of the rung cover will enhance the strength of the bond in critical installations.
3. Insert the cartridge of Simson 70-03 urethane adhesive into a cartridge gun and screw the nozle on the cartridge.
4. Cut approximately 25mm (1") from the end of the nozzle leaving a dispensing hole of about 8mm (3/8").
5. Apply generous beads of adhesive along each internal corner of the rung cover and on wider rung covers, a third bead through the centre is recommended. Keep the beads of adhesive 12mm (1/2") from each end of the rung cover. Only apply adhesive to as many rung covers as you can comfortably install in 20 minutes.
6. Starting at the top of the ladder, place a ladder cover centrally over the top of the ladder rung and while gently swivelling it slightly away and toward you, apply downward pressure. You should be 'bedding in' the rung cover so that the beads of adhesive are flattened to a thin gasket layer between the cover and the rung and the adhesive is just starting to ooze out of the end of the cover. A constant layer of adhesive should then separate the rung cover from the rung and these two surfaces should not be in direct contact.
7. Ensure that the rung cover is properly centralised on the rung and move on to repeat the process on the next rung.
8. Any excess mastic adhesive can be cut off when dry with a sharp craft knife.

On-site cutting

Industrial LADDER COVERS are very easily shaped or cut to length should this is required. We recommend using a dry cut diamond blade operated in a hand held 100mm angle grinder.

As dust and loose chips will be generated through the cutting process, eye protection and dust masks should be worn.

No edge sealing is required where the product has been cut.

MAINTENANCE

LADDER COVERS can be easily maintained to preserve the smart appearance and effective non-slip qualities.

Because of the extreme hardness and chemical resistance of Industrial ladder covers, cleaning can be effected with medium pressure steam or water, degreasers and detergents. Stubborn soilage can be removed with a stiff deck broom. Strong solvents should be avoided as they may soften or discolor the FRP material. Do not use scrapers or wire brushes.

TECHNICAL SPECIFICATIONS

SLIP REISTANCE

The coefficient of friction (COF) is a number which represents the friction between two surfaces. Friction is of course the resistance an object encounters in moving over another, so when we quote a COF figure for our anti-slip products we are quoting the measure of our products ability to provide safe traction and thereby prevent slips and falls.

Different countries and indeed different agencies within a country adopt and rely on different testing apparatus to gain COF results. Safety Step have had test results produced from the three internationally most widely accepted slipmeters:

- The Brungraber Mark II
- The English XL VIT
- The British Pendulum Slip Tester

Safety Step FRP industrial safety products have been tested with the above apparatus and found to comply with and exceed the requirements the following Standards:

- ASTM F1677

- ASTM F1679
- NFPA 1901
- DIN 51130
- AS/NZS 4586

RESISTANCE TO FIRE

Independent laboratory testing has confirmed that Safety Step FRP products will exhibit the following flammability characteristics:

- Rated Class 2, when tested according to BS 476, Part 7
- Rated self-extinguishing when tested in accordance to ASTM D 635
- Rated indices when tested according to AS 1530-Part 3, 1976

Ignitability Index	15
Spread of Flame Index	9
Heat Evolved Index	8
Smoke Developed Index	8

LUMINANCE DATA – GLOW PRODUCTS

Blended Strontium Aluminate pigment is the material included within Safety Step FRP products to cause them to glow in the dark. This material is non-toxic and non-radioactive.

The following chart maps the luminance decay of Safety Step glow in the dark industrial safety products. Luminance performance has been measured and charted from initial darkness to a condition of 0.3 mili candellas per square meter, the visibility threshold of the human eye.

The luminance measurements were made on the photoluminescent test samples with the ITS License Plate Test Apparatus.

The center of each test sample was measured initially, after 5 minutes, after 10 minutes, after 30 minutes, after 1 hour and after 2 hours.

The aperture of the Pritchard Telephotometer was adjusted to achieve the proper measuring area (two inches diameter) on the test samples. The ITS License Plate Test Apparatus is traceable to the National Institute of Standards and Technology through the calibration of the Optronic Luminance Standard.

The test samples were exposed to 1,000 lux illumination from a 150 watt Xenon light source for 5 minutes immediately prior to the initial luminance measurements.

	Luminance measured in mcd/m2						
Product	**Initial**	After **5** mins	After **10**mins	After **30**mins	After **60**mins	After **120**mins	Time to 0.3 Mcd/m2
Strontium Aluminate	**2,980**	**550**	**292**	**87**	**40**	**18**	**5,170**