Understanding Why We Slip On Stairs

The First Step to Preventing Accidents.

Most serious injury accidents on stairs occur when we are descending. Certainly accidents do happen when climbing stairs but this incidence is low and the resulting injuries are far less severe than with descending accidents.

We can further analyse the cause of accidents as resulting from two principal causes, both while descending:

1. **Overstepping** – this is when we don’t identify the front of the tread and step into the open space in front of the tread, and
2. **Slipping** – this is when there is simply not enough traction on the contact point of the tread and our foot slips right off the tread.

If we can alleviate the causes of these two problems on the stair then we will very significantly improve the over-all safety of the stairway and prevent almost all of the accidents. Let’s investigate how this can be done.

**OVERSTEPPING**

Overstepping is more common on stairs with shallow stair treads as seen on very steep sets of stairs like the stairs to the right. The foot is forced well forward on the tread and in conditions of low light or if the treads are all painted the same colour, it is very easy to miscalculate and place your foot into open space in front of the next tread and fall forward.

Injuries from this type of fall are commonly severe, causing permanent injury or death.

When looking down a flight of stairs it is very common that all of the treads appear to merge together in the appearance of a ramp. This happens because the treads are typically all painted the same colour, without any definition between them.

This problem is very pronounced in industrial situations where open steel grate treads are widely used and create a see through mosaic with no start or finish.
SLIPPING
Almost all able bodied people walk down stairs the same way, foot well forward on the tread we are landing on, with the ball of our foot striking right at the front edge of the tread and toes hanging over the edge.

We do not land our foot flat on the main part of the tread, that area only ever gets contacted when we go up stairs.

It is so common for people to walk right on the front edge of stair treads that on almost any stairway we can see the wear point where it is highly worn, paint removed, timber worn away, carpet threadbare or steel bright and shiny.

The wear point is quite small, only 20mm – 25mm on the horizontal part of the tread and carrying down the vertical front face about 10mm and is centralised across the width of the tread. Take a look on stairs at your place and you will see it.

This constant wear makes the surface extremely smooth with no traction at all, right at the place where we need the most traction. If the stairs become wet, contaminated with dust, oil or any soiling at all then we have a huge slip risk.

THE SOLUTION
One properly fitted and quality made product can fix both the overstepping and slipping problems – an anti-slip stair nosing.

Placed right over the leading edge of the stair tread a high traction, anti-slip stair nosing will do two things:

- provide a bright and contrasting line to define the edge of every tread to prevent overstepping, and
- create a robust high traction zone exactly where it is needed, over the leading edge of the tread.
WHAT DOESN’T WORK
Any product that does not fit right over the leading edge of the tread is not going to provide the protection needed.

Anti-slip tape is almost always placed at intervals across the stair tread, well away from the critical area we know needs the protection. Tapes are made of a soft material that quickly wears out, clogs up or peels off. While suitable for some light duty applications it is NOT a solution for stair safety.

Paint with sand scattered in is another common application and another useless solution. The paint does not have the strength to hold the grit and the grit falls out. Works OK on a flat surface but when applied to stairs where there is a shearing force as the foot strikes down and forward at the front of the tread, the grit falls out straight away. You are then left with a slick painted leading edge on the tread that is more slippery than ever.

Flat plates fitted on the main body of the tread may do a little to assist when we walk up stairs but nothing when we are descending. They are not placed to highlight the leading edge of the tread to prevent overstepping and they are not providing anti-slip over the leading edge where we need it most. Spending money on this solution is a complete waste as it provides almost no safety improvement.