Selecting flooring materials to avoid falls from vehicles

Information sheet WPT03

If you specify delivery vehicles, oversee their maintenance, or manage operations involving loading/unloading goods, this information may help you select appropriate flooring for your vehicles.

Vehicle load bed

The materials used for vehicle load beds (in rigid, curtain-sided and flatbed vehicles) generally present a low-slip risk when dry, but it is likely that they will become wet during normal use. They may then become slippery. One area of the load bed that can cause concern is the threshold or edge (also known as the side raves or chock rails), which is usually part of the steel structure of the vehicle and has either a smooth metal or paint finish. This area is usually slippery when wet. A slip is more likely to occur where someone moves from an area with one level of slip resistance to one with a different level of slip resistance, such as from the main load bed to the threshold.

Tests have been carried out on a range of materials used on vehicle load areas, looking at the surface or microroughness and slip resistance in both wet and dry conditions.

The materials have been ranked below, from best to worst, in terms of typical slip-resistance values with water contamination:

1. **Resin and aggregate**
2. **Square profile resin plywood**
3. **Durbar profile resin plywood**
4. **Hexagonal profile resin plywood**
5. **Plywood**
6. **Painted plywood**
7. **Wooden planks**
8. **Aluminium chequerplate**
9. **Wide aluminium strip**

The full results are in the HSE Research Report *The underlying causes of falls from vehicles* (see Further information).

Some vehicles have modified surfaces designed to prevent slips. Anti-slip paints and abrasive tapes have been used to give a high surface roughness finish to critical areas of vehicles, such as the threshold around the load area.

Suggestions for improving safety in the load area include:

- apply anti-slip coatings where possible (including tail lifts), eg resins, fibreglass, gritted paint and anti-slip tape, to give a high roughness finish to critical areas such as the threshold or edge of the load area. Some anti-slip tapes require ongoing maintenance to keep them in good condition;
- consider the use of shotblasting or other surface finishes to increase the surface roughness of metallic steps;
- use colour contrast (preferably non-slip) to delineate the load, step and tail lift platform edges. The use of fluorescent markings will be helpful in low light levels.

Tail lifts

This is a high-risk area, where a slip could see the driver falling as much as 1.3 metres and physical effort is involved in moving the roll cage or load.

The materials used for **tail lifts** generally present a high slip potential in at least one direction and the risk of falling is increased due to the circumstances of use, such as the platform not being level, multiple drops, pushing or pulling loads on and off the platform. Tail lift platforms tend to be made from aluminium, often with a ribbed or profiled surface (eg chequerplate).

Tail lifts that lift over 2 metres in height must be supplied with suitable handrails to prevent falls. For other tail lifts, the risk of falls must be assessed and appropriate preventive measures taken. Many manufacturers have handrail options that can be customised to the delivery requirements of the user. When edge protection and load stops are fitted they have the additional benefit of preventing the load from falling off the tail lift during the lifting and lowering of the platform and possibly injuring passers-by. Bolt-on slip-resistant fibreglass sheets can sometimes be used to improve the slip resistance of the tail lift, but be aware that the edges can create a trip hazard.

Fifth wheel catwalk

The surfaces used in covering the **fifth wheel** area (including the battery unit) tend to be profiled metal, such as chequerplate, or plastic surfaces. Often, a mixture of surface materials is used.

Profiled surfaces generally offer less slip resistance in wet or contaminated conditions than expected. Aluminium chequerplate is normally more slippery in the wet than gridded or punched metal surfaces. Where the shoe tread

can lock into the surface pattern, slip resistance is good. Where the shoe treads do not lock into the surface, there is no slip resistance and the surface roughness of the top of the pattern is the only factor which can reduce slipperiness.

Where a mixture of surfaces are present on a load bed, a particular shoe may grip well with one surface and poorly with another, giving the operator an inconsistent level of grip. Slip accidents often occur when there is a significant change in available grip, such as when walking from a good, slip-resistant surface to a slippery surface. Consistency in surfaces used next to one another eliminates this potential hazard.

Cab steps

The slip resistance of the **cab steps** relies on the grip between the driver's shoe sole and the surface of the step. How effectively this works depends on the driver's **footwear**. But, better profiles or increased levels of roughness of the cab step surface would improve the slip resistance in wet conditions, regardless of the driver's footwear.

Refrigerated vehicles

Flooring in refrigerated vehicles can become slippery due to the build up of moisture and ice from condensation. You should choose a slip-resistant flooring, take safety precautions to minimise ice build-up and keep flooring dry to prevent slips and skids. Think about ways to reduce the time that vehicle doors are left open at the distribution depot, to keep warmer air out and stop ice building up on the floor. Before making your final choice, test different combinations of footwear and flooring to find a combination that gives the best slip resistance.

Maintenance of pedestrian surfaces

Remember, anti-slip surfaces can change significantly with wear and need to be replaced periodically – this will need to be considered when specifying your vehicle.

Make sure your maintenance checklists include items that are there to keep the driver safe, as well as those that affect the vehicle running. Some companies have checklists to be signed at the beginning of each day to say that, for example, steps are in good condition and can be used.

Further information

HSE website: www.hse.gov.uk
Workplace transport: www.hse.gov.uk/workplacetransport
Slips and trips: www.hse.gov.uk/slips
Falls from height: www.hse.gov.uk/falls

Preventing slips, trips and falls from vehicles: The basics
WPT01 Information sheet HSE 2007
www.hse.gov.uk/pubns/wpt01.pdf

Safe access to road-going vehicles: Specifying the right equipment: WPT02 Information sheet HSE 2007
www.hse.gov.uk/pubns/wpt02.pdf

Selecting the right footwear to avoid falls from vehicles
WPT04 Information sheet HSE 2007
www.hse.gov.uk/pubns/wpt04.pdf

Managing work to avoid falls from vehicles
WPT05 Information sheet HSE 2007
www.hse.gov.uk/pubns/wpt05.pdf

Delivering safely: Co-operating to prevent workplace vehicle accidents WPT06 Information sheet HSE 2007
www.hse.gov.uk/pubns/wpt06.pdf

The underlying causes of falls from vehicles
HSE Research Report RR437
www.hse.gov.uk/research/rrhtm/rr437.htm

Further slip-resistance testing of footwear for use at work
HSL/07/33
http://www.hse.gov.uk/slips/research/footwear.htm

HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA Tel: 01787 881165 Fax: 01787 313995 Website: www.hsebooks.co.uk (HSE priced publications are also available from bookshops and free leaflets can be downloaded from HSE's website: www.hse.gov.uk.)

For information about health and safety ring HSE's Infoline Tel: 0845 345 0055 Fax: 0845 408 9566 Textphone: 0845 408 9577 e-mail: hse.infoline@natbrit.com or write to HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG.

This leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

Printed and published by the Health and Safety Executive WPT03 09/07 C500