

This guide explains everything you need to know about steel grating products so you can decide which is the right one for your project requirements.

WHAT IS BALL PROOF COMPLIANCE?

Steel flooring for working walkways and platforms must comply with the British Standards (BS) for ball proofing. These regulations are mandatory for all overhead steel flooring in the EU and the UK. The standards state that: "Floorings of working platforms or walkways shall only have such maximum openings that a ball with a diameter of 35mm cannot fall through. Floorings above a place where people are working, as opposed to the occasional passage, shall have such maximum openings that a ball with a diameter of 20mm cannot fall through."

Depending on where the steel grating is being installed, including the height of the grating, whether it will be walked on, and more, all determine the ball proof requirements it must meet in order to be compliant. The smaller the pitch of the flooring (the gaps between the bars in the steel grating), the less risk there is of objects falling through and causing injury to anyone passing underneath.

THE DIFFERENT SIZES OF BALL PROOF GRATING ARE:

- 20mm (20BP) – used for overhead walkways when the risk of falling objects is high. This size is also required for all grating used as fire escape stairs
- 35mm (35BP) – more suitable for walkways where people occasionally pass underneath, shelving, walkways, and fencing

STEEL GRATED FLOORING PRODUCTS

- Sustainable
- Compliant
- High performance-to-weight ratio
- Recyclable

WHY CHOOSE STEEL GRATED FLOORING?

Steel grated flooring offers strength and durability with its high performance-to-weight ratio. Its grated structure makes it exceptionally good at bearing heavy loads with maximum safety. It spreads the weight evenly across the entire grating span, utilising its multiple reinforced points. The steel grids are built to last using quality materials. Our steel flooring products are also corrosion-resistant, making them less susceptible to damage and general wear and tear over time. All of our products comply with British and European safety standards (BS4592-0:2006+A1:2012), ensuring the products you choose have been designed to the highest levels of safety.

STEEL GRATED FLOORING OPTIONS

We recommend 2 variants of steel grated flooring, which comply with the above ball proof sizings:

- 20mm ball proof grating – to be used where; a walkway is in constant use; traffic may pass regularly beneath; or where people work below a walkway. Compliant to BS 4592 – 0:2006 + A1:2012 (British) and BS EN ISO 14122 – 1:2016 (European) Standards. 20mm ball proof flooring should also be used on fire escape stairs
- 35mm ball proof grating – to be used for walkways with infrequent use, occasional traffic passing below or no people are working beneath. Compliant to BS 4592 – 0:2006 + A1:2012 (British) and BS EN ISO 14122 – 1:2016 (European) Standards

STEEL GRATED FLOORING TREADS

Our steel grated flooring treads are our access products designed for stairways. They do exactly as their name implies; they provide a safe walking surface for stairs. The treads are manufactured with integral end plates with drilled holes so they can be bolted to stair stringers.

- Compliant and safe
- Pyramid nosing
- Available in 35mm ball proof configuration
- Can be bolted to stair stringers

WHY CHOOSE STEEL GRATED FLOORING TREADS?

If you want a safe and compliant access solution that is slip resistant, and has loading capacity requirements, then our steel grated flooring treads are the leading product. Available to comply with 35mm ball proofing, which comply with the British and European standards (BS4592-0:2006+A1:2012 and BS EN ISO 14122 – 1:2016 respectively).

COMPLIANCE WITH BRITISH STANDARDS

These products are compliant with British Standard BS EN ISO 14122-2:2016 and BS4592-0 2006+A1 2012 in relation to flooring and treads, but what does that actually mean and cover? The following covers the specific requirements of these standards for all steel grated flooring, and as such details how both steel grated flooring and treads should be used and the quality specifics they meet.

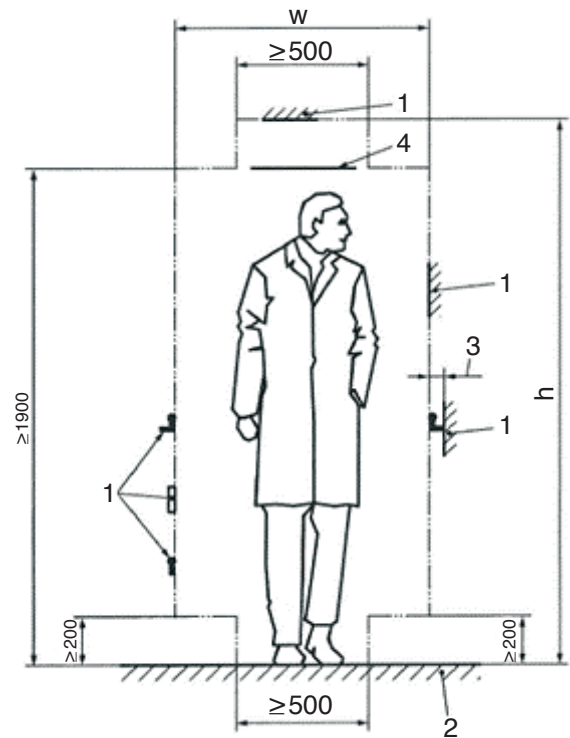
COMPLIANCE WITH BRITISH STANDARDS

When it comes to steel grated flooring, there are strict considerations that should be factored into any design to ensure the safety of those in the area at all times.

Specifically, when it comes to walkways and platforms (the typical applications for steel grated flooring), how the space will be used needs to be taken into account, for example;

- Will tools, spare parts etc be carried across it?
- How quickly will people be passing across the space?
- The position of the walkway or platform?
- The likely load bearing requirements of the space?
- How frequently and for how long will these structures be used for?
- The number of operators that will be using the space and tools they will require or be using?
- What (if any) obstacles may be in the space? Does this affect any of the above factors?
- Where does the walkway or platform lead to, is it a deadend?
- The condition of the surrounding walls (if any)
- The need for any unrestricted or restricted areas on the walkway or platform

BRITISH STANDARDS: ACCESS GAUGES & WALKWAYS



Key:



- Limitation of the access gauge
- 1 Permanent obstruction, such as guard rail, wall, machine, ceiling
- 2 Walkway / platform
- 3 Minimum gap between handrail and obstacle
- 4 Crossing obstacle
- w Clear width
- h Clear height

NOTE:
Obstacles, e.g. pipes crossing the walkway, are omitted.

When it comes to specific measurements, the British standards access gauge for walkways sets out strict requirements for any space that requires a steel grated flooring walkway or platform. These standards are in place to ensure the safety of all involved or using the space at any time.

WALKWAY HEAD HEIGHT

The minimum head height for over working platforms and walkways is 2100mm, unless exceptional circumstances are apparent. If there are any obstacles that are unavoidable, this may drop to a minimum of 1900mm head height and should be fitted out with the relevant padding and warning signs required to warn all who use the space of the limited head height available.

WALKWAY WIDTH

The minimum width of a walkway or platform should be no smaller than 800mm. This allows for safe passage through the area. Where a passageway or walkway is to be used by multiple operators simultaneously, this minimum width increases to 1000mm to allow for the added usage.

If there are extenuating circumstances such as a machine, or the walkway is only in use for a small number of hours for a limited number of days within a 30 day period, then the minimum width can be reduced to just 600mm.

Further reductions can be made, if the walkway or platform is over a shorter distance of less than 2000mm, in this case, the minimum width can be dropped again to just 500mm wide. This minimum width also applies if, at floor level, there are obstructions such as pipes or electric works. Along with the reduced minimum width, in these circumstances, the maximum height can be reduced to just 200mm.

WALKWAY STAIRS OR STEPS

Where the horizontal walkway is interrupted and the vertical height between two walkways or platforms cannot be closed by stairs, a single step can be installed as long as:

- The step is clearly visible through colour, or guard railings to alert operators to its presence
- The height of the step is between 150 and 300mm for safe usage avoiding trip hazards

BRITISH STANDARDS: HAZARDS

When it comes to any flooring, there are strict requirements and safety measures to adhere to, to ensure all parties are safe at all times.

There are an array of instances where a hazard could occur in relation to flooring, we will cover the most common here and specify the British Standards Regulations specific instructions for each one.

TRIP HAZARDS

British Standards stipulate that the height difference between the 2 sections of flooring joined together should be no more than 4mm, or any gap between 2 sections should be no larger than 20mm.

SLIP HAZARDS

Both enhanced slip resistance and ribbed walkways should be installed where needed, particularly on ramps with an angle pitch of between 10 & 20 degrees. The distances between these measures should be between 400 & 500mm. The height of any ribs in the flooring should be between 10 & 20mm.

ACCUMULATION OF LIQUIDS

All flooring should be designed in a way that ensures liquids that accumulate for any reason are able to safely drain away, preventing further hazards or injury from occurring.

FALLING OBJECTS

The British Standards Regulations state that where a risk assessment has identified a hazard as a result of falling objects, is more significant than other hazards such as slipping, then the flooring should be a closed top flooring to eliminate this risk.

However, for grated flooring that is manufactured with gaps, other requirements apply:

- If the gaps are greater than 20mm then; either a toe plate at least 100mm in height should be installed OR the gap should be reduced
- If the gaps are greater than 20mm but less than 120mm, a toe plate of at least 100mm should be fitted. Where a 100mm high toe plate is not possible due to obstructions, this can be reduced to a minimum height of 50mm
- If the gap is greater than 120mm but less than 180mm, a toe plate and a handrail (or equivalent) structure with a height of between 900mm and 1100mm should be installed
- If the gap is greater than 180mm, whole body access is possible, in which case, a guard rail should be fitted to prevent access to the gap
- Where metal treads or landings are used for fire escapes, the gratings shall not allow passage of a 20mm diameter ball

FALLING THROUGH A FLOOR

To avoid any falls through a floor, the British Standards clearly stipulate that any removable elements of the flooring should be secured with fastenings to prevent movement and it should be possible to inspect all fixings to detect any corrosion or hazardous loosening.

BRITISH STANDARDS: DESIGN & CONSTRUCTION

All walkway and platform products are designed in accordance with British Manufacturing standards.

CALCULATING LOAD BEARING WEIGHTS

When looking specifically at the British Standards regulations for walkways and platforms, each of these should be designed with the load bearing requirements in mind. These regulations state that determining these requirements should take into account:

- The number of operators that will be working on each specific location
- The mass of any tools, spare parts and equipment needed at the location
- The strength of impact on the structure due to a drop of tools or machine parts
- Any possible concentration of loads due to weight distribution of parts needed at the location
- Any weight due to environmental causes like water or snow, that can be deposited at the location

There are simple formulas used to calculate the load bearing weight requirements, these are:

- For evenly distributed loads across a structure, it would work out as 2kn/m^2
- For concentrated loads applied to an unfavourable area, it would work out as 1.5kn per $200\text{mm} \times 200\text{mm}$ space

When loaded with the design load, the deflection of the flooring shall not exceed $1/200\text{th}$ of the span.

When we work with a client, we take into account any deflection under the dynamic loading, any possible lateral movements of a platform, ensuring no loss of balance of the user of the platform or walkway.

Where a platform or walkway has an area of load bearing space alongside an area of non-loaded space, any height differences should not exceed 4mm .

Whilst every effort has been made to ensure the accuracy of the information supplied. F.H. Brundle cannot be held responsible for any errors or omissions. This product must only be employed for its original intended use. Any other use is wrong and potentially dangerous. Installation must be carried out in full compliance with current regulations. F.H. Brundle cannot be held liable for any damages resulting from wrongful, erroneous or negligent use.

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