

Of Grate Importance

A Guide to Selecting the Right Drainage
Grates for Your Building Project



INTRODUCTION

A well-designed drainage system is critical to every construction project. It provides effective management and containment of stormwater and wastewater, all while enabling safe and efficient water usage throughout a facility. One of the key components of a drainage system is the grate. The grate is designed to catch larger debris and prevent it from entering the drain without restricting water flow into the channel.

The negative side-effects of a poorly-selected grate are numerous, all of which are costly to remediate. Uncontrolled water can result in leaks and water ingress. Excess moisture within a structure can lead to property damage, including foundational and structural damage, mould growth, wood rot, and damage to concrete and asphalt. Inefficient drainage can also allow water to pool on floors, which creates a safety hazard for trips, slips and falls.

In an industry facing rising costs, tightening schedules and demanding building performance requirements, choosing the right grate and drainage combination is critical. Grates that are hard to work with and install can result in costly project delays. The market is filled with inflexible products that need to be precisely made-to-order without any room for error. Other drainage requirements, such as the type of drain, floor sloping and water proofing all add to time and cost. There is also the cost of maintenance and repairs if the grate is not durable enough for the conditions in which it is installed.

In this whitepaper, we look at the various design considerations when choosing an efficient, durable and aesthetically-pleasing grate for your next project.





Drainage Type Centre vs. Linear Drains

In most building projects, the choice of drain type is usually between a centre or linear drain. A centre drain comprises of a single drainage trap installed over a pipe that is connected to the main waste outlet. Centre drains are typically placed in the middle of floors and requires the floor to slope to the drain from all directions.

The requirement of a 4-point fall is one of the main disadvantages of a centre drain. Installers will have to ensure the floor is built up in a shallow dish shape to allow water to travel efficiently to the drain. The many cuts needed for floor tiles to have a 4-point fall not only requires extra labour and cost, but can disrupt the aesthetic consistency of the floor space. If a centre drain is slow or becomes blocked, there is a risk of water pooling on the floor.

Linear drains have been used in Australia for decades, but recently have gained interest in design and construction circles. Linear drainage systems, also referred to as trough or trench

drains, are comprised of a channel built into the floor that collects water before sending it to the drain outlet.

Linear drainage systems are becoming popular in new builds due to their design versatility and reduced construction requirements. Such systems only require a one-directional slope on the floor to be effective. They can run the entire length of a given space, and be placed against the wall. They allow for the use of large-format tiles, which are becoming popular in interior design. Linear drains sit in-ground, creating an easy and safe transition point from dry areas to wet areas.

When choosing a linear drainage system, the layout of the room will impact floor grading. The installation environment and functionality requirements will determine the appropriate channel type, size and installation. Many linear drain channels come in standard, preset lengths, ready to install, while others are made to order.

“Linear drainage systems are becoming popular in new builds due to their design versatility and reduced construction requirements.”

Drain Cover Selection

The drain cover or grate is the next major component of the drainage system to be selected. As with drainage type, functionality requirements such as the required water flow rate will help determine product selection. Some grate designs limit the flow of water or are not suited for certain conditions such as heavy stormwater, so it is imperative to ensure that the grate type is suitable for the installation environment.

Tiled insert cover channels, an inset shelf to install tile patterns on, are available for linear drains. This cover type allows the drain to be hidden by the surrounding tile while allowing water to drain into the channel. The drain disappears from view, enabling designers to create a seamless aesthetic and finish.

The more traditional drain cover for a linear drain is a grated channel cover. When evenly installed with the surrounding tile, the grate itself is safe for walking on. While not as subtle as a tiled insert cover, manufacturers offer a range of decorative grates and different patterns and finishes, including traditional grid patterns, perforated patterns, coloured finishes, and silver and gold-plated grates.

Material Selection

Stainless Steel vs Anodised Aluminium

Grating is typically made of anodised aluminium or stainless steel, though alloys and plastic composites are sometimes used. The choice between stainless steel or anodised aluminium grates is an important one, as it can impact the cost, longevity and performance of the entire drainage system.

Anodised aluminium grates are sometimes avoided because of some common misconceptions, such as not being compliant with the National Construction Code or being too expensive relative to other options. A close examination of the respective benefits and disadvantages of stainless steel and anodised aluminium provides a more accurate picture.

Strength

Anodised aluminium has a solid strength-to-weight ratio – it is one-third the weight of steel and can be forged to be just as strong or stronger than some steel.¹ Stainless steel has slightly tougher mechanical properties, but its increased hardness and heavier weight mean it is more difficult to work with.

Malleability

Anodised aluminium is more flexible than steel, and is easier to work and manipulate into a specified shape. This means anodised aluminium is easier to customise to a required length, which is a significant benefit for installs.

Resistance to corrosion

Stainless steel grates are often chosen for their ability to resist corrosion. This resistance is obtained through a process called passivation. Passivation is a surface treatment for stainless steels, often using acid solutions or pastes, to remove contaminants and promote the formation of a passive film on the material's surface. The result is a material that is more resistant to corrosion in environmental conditions.² However, while it is commonly thought that stainless steel does not rust, it will do so when exposed to continuously wet conditions as it contains iron.

Anodised aluminium is also very resistant to corrosion and essentially rust proof due to a self-repairing oxide layer that protects the metal inside. When oxygen is present, aluminium reacts quickly to form an oxide layer. The oxide layer binds to the material's surface, protecting the core from further reactions. Anodising is the electromechanical process applied to aluminium to convert its surface into a decorative, durable, and corrosion-resistant anodic oxide finish.³

Initial outlay and installation cost

The common misconception is that anodised aluminium is more expensive than stainless steel. While this can be the case in some instances, the converse can also be true – anodised aluminium can be cheaper than stainless steel depending on stainless steel grading and other commodity value factors.

Stainless steel can also be more expensive if we consider the potential issues that can arise during installation. Stainless steel is heavy and difficult to work with (such as to cut or customise), so it requires extra labour and special machinery, which adds to its true cost. Precise prior measurements are needed for made-to-order stainless steel components, which also adds cost and slows turnaround times.

On the other hand, anodised aluminium is lightweight and easy to handle, cut and customise onsite, and high in corrosion resistance with an excellent strength-to-weight ratio. These characteristics make installing anodised aluminium systems easier and faster than stainless steel equivalents. Anodised aluminium grates can be cut to fit the layout onsite, eliminating the time and effort required for prior measurement. When all the relevant factors are considered, anodised aluminium ends up being cheaper than stainless steel for drainage grate applications.

Consider the following scenarios: something has been changed on site or a contractor provides incorrect measurements for stainless steel linear grates that are off by only millimetres. Realising the mistake when the grates arrive onsite, the contractor must then send the linear grates back to the factory to be remade resulting in significant time delays and extra cost.



Waterproofing

Builders and designers must adhere to strict waterproofing compliance requirements to ensure interior environments are protected from unwanted water incursions. The relevant standard in this regard is AS-3740:2010 Waterproofing of Domestic Wet Areas.

Some drainage products are required to form part of the waterproofing, which creates extra work and more room for error. Some manufacturers ensure their products are not part of the waterproofing, minimising the risk of mistakes onsite.

Maintenance

Choose a grate that is easily lifted out to provide access to the drain and remove debris. A removable top tray can also make cleaning and maintenance easier, ensuring a longer life for the drainage system. Some grates require special tools to prop out or remove the grate for cleaning once installed, which can cause inconvenience if such tools are lost.

Aesthetics

Drainage is ubiquitous in the building environment, but not always considered a design priority in terms of aesthetics. This is partly because of the design limitations of traditional drainage and the common perception that drains only fulfil a purely functional role in a build.

There is opportunity to harness drains as a design element to improve the overall style and aesthetics of an interior space. Designers can use the long clean lines characteristic of linear drainage to complete a modern look and feel. Linear drains enable seamless integration of grates and flooring, with a wide range of installation choices and freedom in tile choice.

Material choice is important aesthetically. If the grating material is prone to rust and discolouration, or easily damaged, the grate will look worse over time. Anodised aluminium grates are rustproof so the premium look of the grate is maintained over the product's service life.

“When all the relevant factors are considered, aluminium ends up being cheaper than stainless steel for drainage grate applications.”

The Next Generation of Anodised Aluminium Drainage Grates Lauxes Grates

Lauxes Grates are an elegant solution for water waste drainage. Coming in different depths and widths with an option of standard grate or tile insert, these grates are ideal for showers and bathrooms, balconies, swimming pools and many more applications.

All Lauxes grates and components made from anodised aluminium, greatly increasing their durability. The anodising process results in a superior finish and aesthetic look that enables a wide variety of contemporary designs. The anodising protects the underlying material with a protective coat almost as strong as diamond. All grates come with a lifetime rustproof warranty.

The corrosion-free nature of Lauxes grates means they are ideal for almost any usage, including balconies that require drainage from showers to swimming pool overflows from kids or storms. There is a Lauxes grate for any type of job.

Lauxes grates are lightweight and easy to handle, ensuring quick and efficient installation. All grates are customisable onsite saving time, money and preventing project delays. Lauxes grates are available in longer lengths (up to 5.6m), making them ideal for larger jobs unlike stainless steel grates that come in shorter lengths and have to be joined to produce a longer one. These qualities make these grates ideal for every project, from small residential builds to large volume industrial developments.

Lauxes grates are not part of waterproofing, which saves on time and costs, as well as minimises the opportunities for mistakes on-site.

Lauxes grates stands apart from the rest of the brands in this category due to their unique designs. The company has spent years in development to arrive at the best material and channel structure for the job. A Lauxes grate will not only look good, but last a lifetime doing the job it was designed for.

About Lauxes Grates

Lauxes Grates is one of Australia and New Zealand's most exclusive designers and manufacturers of versatile indoor and outdoor drainage solutions. Their award-winning products are innovative, cost-effective, stylish, and certified under the WaterMark Certification Scheme.

The company prides itself on providing exceptional customer services, as well as regularly looking at ways of educating and providing resources and training to trades and distributors, so they can understand the product features and minimise any potential mistakes while installing their grates.

References

- ¹ The Aluminium Association. "The Strength of Aluminium." TAA. <https://www.aluminum.org/strength-aluminum> (accessed 11 May 2021).
- ² Australian Stainless Steel Development Association. "Pickling and Passivation." ASSDA. <https://www.assda.asn.au/technical-info/surface-finishes/pickling-and-passivation> (accessed 11 May 2021).
- ³ Aluminium Anodizers Council. "What is Anodizing?" AAC. <https://www.anodizing.org/page/what-is-anodizing> (accessed 11 May 2021).

All information provided correct as of May 2021