

How to Choose the Right Padlock



There are only two reasons you're going to need a padlock;

- to prevent theft, *or*
- to prevent unauthorised access to an area or item

So when choosing your padlock, make sure it'll do the job, or you may as well not bother.

Here're a few quick pointers to help you make the right choice;

1. Think - how valuable is the item you want to secure?

If it's valuable, the chances are thieves or intruders will be more determined - so buy an expensive High Security Padlock. Think of it as insurance that you pay for only once (not every year!)

If it's not so valuable, the probability of theft is lower, so use a lower grade 'cheaper' padlock.

2. Don't think of the padlock alone - think about what it will be working with.

Is the chain or hasp strong enough? Is the door and door frame robust enough for the hasp? ...and do the surrounding structures and components match the security rating of the padlock you want to use?

Again, take into account the perceived value of the item you want to secure. There's no point buying a military grade 'Rotalok' to use with a garden shed grade hasp or a chain from B&Q.

Always think - what's the weakest link?

3. Does the padlock have to meet a Specific Insurance Rating?

Insurers sometimes specify that a padlock must be security rated to either 'Sold Secure' or 'CEN' standards. Where your insurers specify this, they will normally also specify the level of rating required, i.e. Sold Secure Gold, Silver or Bronze (equates to the European CEN ratings; 5, 4 or 3 respectively). A padlock with shackle thickness of less than 11mm is unlikely to meet even the lowest of these ratings.

4. Does the padlock look right for the job?

Size alone is not a reliable indicator when it comes to a padlocks performance or effectiveness, but obviously using a flimsy 40mm padlock with a chunky hasp or vice versa, would not look right.

5. Do you need special keying options?

If you have a lot of padlocks to manage, consider 'Master Keying' or 'Keyed Alike' options.

A 'Restricted Key' option reduces the risk of unauthorised key duplication (cutting).

If many people need to be able to operate a padlock, a combination padlock may be a better choice than a key locking padlock - where you would for example, have to issue keys to lots of people. Bear in mind however that combination padlocks are only suitable for low level security applications.

...still not sure which padlock to choose?

- there's more helpful and detailed information on the following pages

- alternatively, call our friendly experts on; 01273 475500 - we'll be pleased to help



Padlocks - their components and 10 aspects to consider

...a little more detail



The origin of the padlock dates back to the time of ancient Greece & Egypt, however we have come a long way since those early days.

Modern padlocks come in many shapes and sizes and offer a wide range of security levels. With prices ranging from just a couple of pounds to well over £200.00 for a top security unit, choosing the wrong type of padlock could be a costly mistake. The information below prepared by Insight Security (www.insight-security.com) should help you to make the right choice when buying.

In simple terms, a padlock has three major components; the **Body**, the **Shackle** and the **Locking Mechanism**, ...it may also incorporate features such as a weatherproof casing, anti drill or anti cropping protection, etc.

The overall level of security that your padlock will provide, depends on the quality and features of each of the components and how they work together as a whole, so lets have a look at the main things you should consider when choosing a padlock for your application;

1. How can you tell what level of security a padlock offers?

Many manufacturers offer a "Security Rating" guide for their general purpose padlocks (this is often printed on the retail packaging). The problem is that there's no single industry standard for such ratings, so manufacturer "A" may for instance rate their padlocks from 1-20, while manufacturer "B" may rate theirs from 1-10. At best it's a somewhat arbitrary type of rating, which should only be considered for what it is.

For general use padlocks therefore, there is no easy way to compare different manufacturers products and there is for instance, no guarantee that a padlock with a security level "15" rating from one manufacturer is any stronger or more secure than a padlock with a rating of "5" from another manufacturer.

When it comes to higher security padlocks however, there are two reliable industry standard ratings which offer a good guide to the security level of a padlock: "**Sold Secure**" and "**CEN**" (a European standard) ratings.

"**Sold Secure**" security ratings - fall into three categories; Gold, Silver and Bronze, with each category being subject to and proven to withstand increasingly harsh levels of attack test. ("Gold" being the highest rating).

"**CEN**" security ratings - are similarly categorised from CEN 3 to CEN 6, each category having withstood the associated attack test. (CEN 6 being the highest).

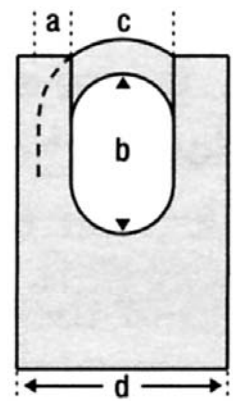


2. What's the right size padlock body?

What size you need, will often be determined by the use your padlock will be put to. You obviously wouldn't want to use a big chunky padlock to lock your suitcase, conversely a flimsy luggage lock would look ridiculous for securing your factory gates.

So the first consideration is; the size you choose should "look right" for the application it's used for. There are however other factors to consider, such as; what size shackle do you need to provide the right level of strength, is the body suitable (big enough / small enough) to use with your security hasp and staple, chain, etc, or has it got to fit into a restricted space where it will be used.

When choosing your padlock however, it's important to realise that **size alone is no guarantee of strength**. Buying a big chunky padlock at your local market for a few pounds will invariably turn out to be a mistake and a poor investment - the old adage "You get what you pay for", definitely applies to security and safety products in general, and to padlocks especially!



a padlocks size is normally expressed as the width of the body (dimension "d")

3. What shape padlock body should you choose?

In simple terms, padlocks fall into 4 broad categories or shapes; Discus, Shutter-lock or Anvil lock (rectangular), Conventional and Shackleless .

Conventional style padlocks can be further categorised as; Open, Close, or Semi Enclosed Shackle types (see; item 5. What do I need to know about the Shackle below).

- **Discus style** padlocks - have no angular corners, so are often used with cycle security chains and cables, as well as being a popular choice for securing doors on sheds and beach huts, etc. When used as a door lock, they will typically be used in conjunction with the special shrouded discus hasp and staple set, which offers extra protection to the padlock shackle.

- **Shutter Locks / Anvil Locks** - are typically used to secure the external (or internal) security roller shutters fitted to shop fronts. They are also popular for use with parking posts, motorcycle security chains, etc.

- **Conventional Style padlocks** have a wide range of applications from low security applications like locking your toolbox, to high security uses such as securing factory gates or protecting motorcycles. They are typically available as; Open, Close, or Semi Enclosed Shackle types (see; item 5. What do I need to know about the Shackle below).

- **Shackleless Padlocks** - this is a bit of a misnomer as the padlock does of course have a shackle, it's just that it's on the underside of the lock body and therefore unseen. This type of padlock can be round (like the one pictured) or rectangular, but typically, they are designed to be used with a special matching security hasp. Because of their design, these units are difficult to attack and over recent years, as well as being used on warehouse doors, etc, they have also become very popular for use on vans and other vehicles where they are used to secure opening double doors.



Discus type padlock



Shutter-lock type padlock



conventional style padlocks



Shackleless type padlock (shown with special hasp)



4. What type of body construction should you choose?

The purpose of the padlock Body is to protect the internal lock mechanism against attack, to which end, it must feature cavities to house the actually lock cylinder and mechanism, along with channels to accommodate the Shackle when in the locked position.

The main body type options available are;

- **Pressed Steel,**
- **Solid Brass,**
- **Laminated Steel,**
- **Armour Encased Brass, or**
- **Solid Steel Alloy.**

Pressed steel - ignoring the type of toy locks supplied free with luggage, when we talk about pressed steel body, we mean the type of body construction typical of the discus style lock. These are generally formed from two heavy duty stainless steel shells (front and back), welded together around the whole circumference of the lock. Such locks can offer a good level of security for general applications, especially as the shackle in this type of padlock is normally secured in the locked position at 2 internal security points.

Solid Brass - brass is a relatively soft metal, so from a manufacturing point of view is quick and therefore cheap to machine, hence low end user prices. These locks are however susceptible to a drill attack, although realistically, for low budget / low security padlocks this is not the normal form of attack. The cheapest brass bodied padlocks tend to have sharp corners which can easily scratch surfaces they touch and can be uncomfortable to handle, whereas more expensive units will normally feature "softer" mitred or rounded edges.

Laminated Steel Padlocks - the body of this type of lock is constructed from several pre-punched thin steel plates which are riveted together to form the body block. Again the low manufacturing cost is reflected in low prices to the end user. With this type of lock however the exposed rivet heads are a weak point, although they do usually feature a plastic bumper around the base to make handling a little more comfortable.

Armour Encased - this is typically used as a way of increasing the security rating of a brass bodied padlock. In simple terms, the brass body is encased in a hardened steel jacket which is primarily intended to make drilling type attack more difficult, thus increasing the security level of the basic lock.

Solid Steel Alloy - as with the solid brass padlock, the internal cavities in the lock body (which will house the lock mechanism, shackle entry and locking points, etc), must be machined out. Steel alloy however is a harder material than brass and so the machining operation takes much longer, which means much higher manufacturing costs. The solid steel body is however very robust and will typically be hardened to make a drill attack on the internal locking mechanism much more difficult and time consuming. The body will also have a special surface treatment to protect against rusting, etc.



Pressed Steel (Discus Lock)



Solid Brass Body



Laminated Steel Body



Armour Encased Brass Body



Solid Steel Alloy Body



5. What you need to know about the shackle?

The padlock shackle is a key element of your padlock and an obvious attack point; i.e. with a saw, bolt croppers, etc. Good padlocks feature a locking mechanism which will secure the shackle in two places within the lock body when in the padlock is locked.

Here are a few other things you need to consider;



Open, Close or Semi Enclosed Shackle - what's the difference?

A "**Close Shackle**" padlock is one with built in shoulders, which are designed to minimise the amount of the shackle exposed, to a saw or bolt cropper attack. This type of padlock will normally have a higher security rating than an equivalent unit with a semi enclosed or open shackle, however subject to size and clearances, may not be practical for instance, to use where you need to secure 2 chain links together or require a padlock for use with a shrouded hasp, etc. To make them easier to use, many Close Shackle padlocks feature "removable shackles" which are fully released from the body of the padlock when it's unlocked.

An "**Open Shackle**" padlock will typically be easier to use where the shackle needs to pass through 2 chain-links (i.e, a chain securing two opening gates together), etc. As more of the shackle is exposed however, this makes it potentially easier to attack with a saw or bolt croppers.

A "**Semi Enclosed Shackle**" padlock is something of a compromise, but will often offer more flexibility in use than a Close Shackle padlock and improved security over an Open Shackle model.

Long or short shackle?

Many open shackle padlocks are available with a choice of shackle lengths. Whilst a longer shackle may be essential on a padlock where the shackle needs to pass through multiple hasps or fittings (or two fittings or staples which are spaced a distance apart), remember, the longer the shackle, the more vulnerable it will be to attack with bolt croppers, etc.

What Shackle Material, Size and Shape should I choose?

As a rough rule of thumb guide to shackle size, a shackle up to 7mm in diameter can be considered to be low security, from 7 to 9mm diameter: medium security and 10mm or bigger: high security. You need also however to take into account the shackle's material and manufacture;

On cheap brands or unbranded padlocks, the hasp will probably be manufactured from brass or possibly nickel plated ordinary mild steel. These will be very easy to cut or even break with a simple hammer blow and offer very low security.

Quality Padlocks will feature higher quality shackles, although there are still some variances to take into consideration;

Stainless Steel shackles - typically used in padlocks designed primarily for outdoor use.

Hardened Steel shackles - this is the standard type of shackle found on most general purpose padlocks. The shackle is manufactured from drawn mild steel, which is then specially heat treated to provide a case hardened surface to protect against saw attacks, etc. These shackles are typically stamped with the word "Hardened" on them and often feature a shiny chrome type finish.

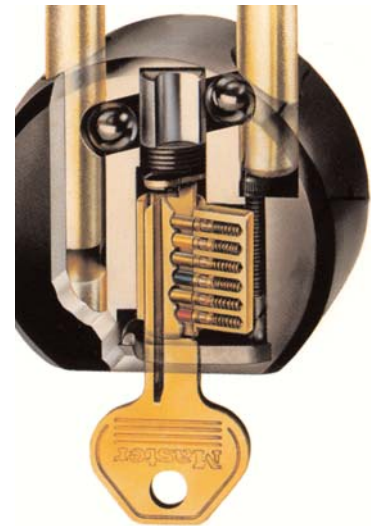
Hardened Alloy Steel shackles - typically used on higher security padlocks, the special steel alloy is subjected to multiple heat treatments to provide a case hardened exterior to protect against saw attacks, and a hardened core to provide added protection against bolt cropper attack. These shackles are also sometimes stamped with the word "Hardened" on them and may feature a dull metallic or chrome type finish.

Shackle Shape - the typical shackle features a round cross section, however more recently there has been a move by some manufacturers toward the use of hexagonal section shackles which offer better protection size for size against bolt cropper type attack.



6. Things you need to know about the lock mechanism

Without getting too bogged down in the detail, suffice it to say that the critical elements of the lock mechanism include; locking pins (or wafers), springs and the design of the keyway itself. The number of pins combined with the number of different lengths of pin made by the manufacturers and the pattern of the keyway (which accommodates the grooves and / or ridges along the length of the key), will determine the possible number of "Differ" (key patterns) that will operate the lock



How many pins should the padlock have?

The simplest form of lock would be a single pin lock with just one pin length (of the type typically used on cheap dining room furniture, such as cupboard door locks, etc). Naturally this type of lock would offer very little security and the key from one lock, would fit all other locks manufactured to that design.

Most respected brands of padlock feature a 4, 5 or 6 pin lock mechanism. A good 4 pin lock could offer as many as 2,000 operational key differs (unique key patterns), which means that if you bought 2 randomly selected locks of the same type, the chances of the key from one lock fitting and operating the other would be 2,000 :1. **Be warned however**; many cheap 4 pin locks are manufactured with as few as 10 or 20 key differs - which makes them hardly high security!

A top quality 6 pin lock could offer literally millions of key differs, although for practical reasons, in reality most manufacturers would restrict manufacture to a couple of hundred thousand. (Note; insurance companies may require the use of a 6 pin lock to meet the terms of their insurance policies).

What do "Keyed to Differ", "Keyed Alike" & "Master Keyed", mean?

When a manufacturer makes a batch of several thousand locks, the lock assemblers may make say; 10 of key pattern 1, 10 of key pattern 2, etc. When all the locks are finished, they are jumbled up, then randomly bulk packed in 50's, 100's or whatever and sent to the sales outlet. When you buy a couple of padlocks from the seller, you will therefore be buying "**Keyed to Differ**" (randomly keyed) locks - i.e. there's only a random chance that you will get two locks which operate from a shared key pattern.

Consider for a moment however, that you are an office manager with 50 desktop computers padlocked to you staffs desks - you may feel that managing 50 different sets of keys (with backup arrangements) could get tricky, so you may prefer to reduce the number of keys you need to manage by purchasing a set of "Keyed Alike" or "Master Keyed" locks.

A "**Keyed Alike**" lock-suite is where all the padlocks in that suite (set) operate from a single key pattern, i.e. the key from any padlock in that suite will operate all other padlocks in that suite. Basically that means you only have one key to manage - which is great from a management perspective, but is obviously a bit of a compromise in security terms, as 1 key fits all.

With a "**Master Keyed**" lock-suite, each lock operates from it's own unique key pattern, so the key from each lock will only fit that lock and will not open any other lock in the suite. A "Master Key" however is provided which will operate any lock in the suite - think of it as an over-ride key. So you'll never get stuck with not being able to open any of the locks because someone has lost the key, but you've also not compromised your security.



What's a Restricted Key?

A restricted key is a key which can only be copied (i.e. a duplicate cut) with the express permission of its owner. This means that if you have locks fitted to your home or office which have restricted keys, you can be sure that no one will be able to get duplicate keys cut without your permission.

The advantages of using a restricted key lock are obvious;

- A key loaned to a friend or neighbour, or to a tradesperson (i.e. painter & decorator, cleaner, etc), cannot have been copied before it was returned to you.
- Lost keys are similarly protected, so if they're recovered and returned to you, you'll know that no copies have been made.
- You'll always know exactly how many keys there are to your property.
- In short, you can be sure that only the people who should have keys to your locks will have them.

About Combination Padlocks

Combination locks may eliminate the need to carry keys around, or issue loads of duplicate keys to people who need them, but they are easy to crack and are among the most likely type of lock to be vandalised

The combination mechanism on this type of padlock is typically of the 3 or 4 tumbler rotating thumbwheel type. Combination padlocks should not be used for anything other than low level security applications, and the three tumbler combination lock should in particular not be considered for anything requiring more than the very lowest level of security.

Most modern combination padlocks allow you to change the security code quickly and easily (and as often as you like). Be warned however there are combination padlocks out there that either won't allow you to change the security code or require you to dismantle half the lock to do so!

In use, the numerals on the thumbwheels of the combination lock tend to become difficult to read over time, as general wear (or just weathering) cause them to deteriorate. This makes these padlocks particularly ill suited to use in poor light conditions or in outdoor locations.



4 tumbler combination padlock

7. Do you need the padlock for indoor or outdoor use?

If you need a padlock for outdoor use, choose one rated at least as weather resistant. The body of a brass padlock won't rust, but the internal springs will if they're made of steel.

Lower cost "weatherproof" padlocks are often ordinary low cost brass or laminated padlocks, fitted with a plastic jacket to offer a level of protection against the elements, whilst purpose designed weather resistant locks will utilise materials such as stainless steel, brass and phosphor bronze, etc.

Remember however that if you need a padlock to be used in hostile, salty environments such as the seaside or for use onboard a ship or boat, you should be looking for a proper "Marine" padlock rather than just a weatherproof one.



padlock in weather resistant jacket



8. Is the security level of the padlock in keeping with it's surroundings and the items it will be used with?

There's no point in investing £200.00 or more in a high security padlock to put on the door of a rickety shed or use with a £2.50 hasp and staple set. A high security padlock should be used with high security accessories and fittings.

Similarly there's little point in investing in a high security padlock and fittings for your shed, if all you're storing in there are a few miscellaneous plant pots and a bag of fertiliser! If however you want to secure your Harley motorcycle, a high security padlock used in combination with a high security chain and ground anchor, is a small investment for the level of protection you will get.

Garages and sheds are particularly vulnerable to attack and good places to use a high security padlock, ...but please remember to use your lock with a suitable "Security Hasp and Staple" set with robust and/or concealed fixings!



this may be a good padlock and a good chain, but they're simply not compatible



where as this padlock and high security hasp set were obviously made for each other!

Remember;

Any security system is only as good as it's weakest link!

Providing you choose the right unit however, padlocks are ideal for a wide range of applications including;

- securing sheds and outhouse doors
- securing warehouse doors, shop shutters, etc.
- protecting motorcycles, trailers, boats, etc, against unauthorised movement
- protecting the contents of toolboxes or equipment cases, against unauthorised access.
- *and lots more*



9. Advice on padlock maintenance?

Padlocks typically require limited maintenance. Outdoor padlocks will however benefit from the odd clean or spot of lubrication (once or twice a year should be fine).

For lubrication, the recommendation is to use a "dry" graphite powder type lubricant of the type available from good locksmiths or security shops (using ordinary lubricating oil, can over time form a sticky deposit inside the lock and lead to impaired operation of the mechanism).



10. So which is the right padlock for you?

Well, you probably already know the answer by now,

...but if you need any more information or advice;

you can visit the Insight Security website;

www.insight-security.com/padlocks.htm

or call the Insight helpline; 01273 475500 (normal office hours),

...our experts will be happy to discuss your requirements and offer practical no nonsense advice.



Here are just a small selection of the padlocks available from Insight security;



We also stock security chains, hasps, bundled padlock & accessories sets, etc...

