

The pallet, a key component of packaging systems



The vast majority of products that we find in stores are transported on a pallet at some point. Pallets are a key component of modern logistical processes and packaging systems. But what types of pallets exist today and how are they best geared to the products that need to be transported? How relevant is prevention in this field? And what are the latest trends? The current state of affairs is discussed below.

Pallets are transport plates used for many years to store and carry goods. The most common pallet size in use in Europe is the 80 x 120 cm format. This standardized size has fostered the existence of various reusable pallet systems in which pallets are exchanged between companies. However, many other formats also currently exist.

prevent **pack**

Wood, plastic, metal, etc.

Approximately 86% of reusable pallets are made of wood. The remainder is made of plastic (4%), chipboard (3%), or metal (3%). In the case of disposable pallets, the share of wood is 70%.

'One of the benefits of wood pallets is that they are easy to recycle,' states Maxence Wittebolle, General Manager of the Belgian Packaging Institute. 'They can also be easily repaired if they are damaged. This is not the case with plastic pallets for instance. The latter, however, are more hygienic because they resist fungus. That is why they are frequently used in the food sector, as well as the chemical and pharmaceutical sectors. Some types of plastic pallet materials integrate synthetic foam in order to make them lighter.'

As their name indicates, presswood pallets are made from wood residue pressed into shape under high pressure. Thanks to their pre-shaped form, they can be stacked very efficiently. As a result, they require less storage space and limit storage costs. Metal pallets are also used—primarily in the metallurgical industry—for the transportation of heavy objects and machine components.

As expected, metal pallets are the ones with the longest lifetime.



good to remember

Pallets must be chosen **according to the product** they are to transport as well as the primary and/or secondary packaging and means of transport.

Tests can indicate whether a pallet is properly designed and **built to meet the various functions** it must fulfill.

Companies continuously strive to **optimize pallet construction materials** as well as the loading pattern of the products they carry.

The pallet, a key component of packaging systems

Pallets are pillars of the logistical process

'A pallet must be seen as a fully-fledged component of a packaging system,' adds Wittebolle. 'The type and size of a pallet must be chosen according to the transported product and the primary and/or secondary packaging used. The conditions of transport and the various functions throughout the logistical process must also be considered. A badly chosen pallet at the bottom can entail considerable damage during transport as well as costly bills for companies, even though they may have chosen suitable packaging.'



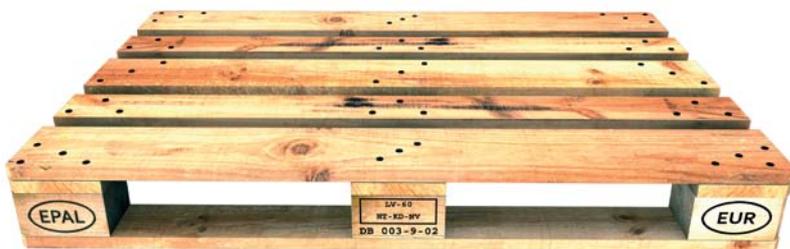
The type and size of a pallet must be adapted to the product in order to avoid damage during transport.

From load capacity to moisture-proofing

'Every situation is different; there is no universal solution,' stresses Wittebolle. 'That is why we always test pallets to ensure that they are sufficiently adapted to the product and the packaging that they must carry.' All tests at the Belgian Packaging Institute are carried out in line with the ISO 8611 reference standard. This enables the precise calculation of the load capacity of the pallets, among other things. The Belgian Packaging Institute also executes bending tests, forklift tests, compression tests, and stacking tests.

Moisture and temperature resistance also play an important role. A pallet that is perfectly suitable for use in Europe, for instance,

may not necessarily be appropriate for warm and humid countries such as India and China. 'For example, we recommend that companies avoid storing wooden pallets outdoors. Wood absorbs humidity, which can substantially weaken the load bearing capacity and encourage the growth of unwanted fungus,' says Wittebolle. 'In the case of products for which fungus must be avoided, presswood pallets are an interesting option. Because these are produced at high pressure, the necessity of chemical fumigation is eliminated.'



A pallet that is perfectly suitable for use in Europe is **not necessarily appropriate** for warm and humid countries such as India and China.

The pallet, a key component of packaging systems

Disposable pallets: not necessarily lost

Today, companies can choose either disposable or reusable pallets. The definitions for both are unequivocally established by federal authorities and can be viewed on www.ivcie.be.

Disposable pallets are often viewed as waste once they have been unloaded at the customer's premises or the site of a logistical services supplier. However, these pallets are not necessarily lost. Today, numerous specialized companies collect used pallets. Depending on the quality, type, and dimensions of the pallets, these companies can repair them and resell them. This process is called reconditioning.

If the pallets cannot be repaired, or if their specific shape or dimensions makes it impossible to find a new application for them, they can be recycled. Depending on their material, the pallets can be ground up, dismantled, or melted to serve as raw material for new products. The disposable pallets then start a new life in another application. This process is referred to as recycling. The majority of the wood packaging that is declared in the VAL-I-PAC system is comprised of pallets. Each year, more than 105,000 tons of wood pallets are recycled.

Reusable pallets in all types and sizes

Two types of reusable pallet systems currently exist: closed and open. In **closed system**, a company buys and manages its own pallets. The company must see to it that the used pallets are always returned and takes care of their management, maintenance, and repair.

In an **open** or pooling system, pallets are shared among several companies. Management of the system is generally in the hands of specialized companies such as CHEP, LPR, and PRS. The benefit

of these pooling systems is that users do not need to answer for the pallets themselves nor do they need to worry about stocks, follow-up, or maintenance. You can read more about this system in the CHEP testimonial.

The Epal system is a pooling system for the reuse of Europallets. Every time a loaded pallet is delivered, an empty pallet – or a credit note – is handed in or credited to the carrier. It is not however part of an overall management system.

Regional and other limitations

The pallets used in pooling systems are often strictly standardized. Indeed, they must be usable by multiple companies. In some cases, this can be a drawback. Companies that require pallets with specific dimensions or characteristics must therefore rely on their own pallets.

In practice, the pooling of pallets is almost always limited to well-

defined areas, even though some pooling systems are available worldwide. In various parts of the world—such as America, the Far East, or in specific local regions—pallets have different dimensions or characteristics. In most cases, pooling will therefore only be possible within certain well-defined areas and almost never between continents.

The pallet, a key component of packaging systems

Prevention - caution is required

In order to optimize the use of pallets, companies often aim to make them lighter or try to place more products on a single pallet. This practice, however, requires caution. 'Saving on transport packaging can have substantial economic and environmental consequences; consider the potential product losses and the cleaning of spoilt containers in the event of a faulty pallet,'

observes Wittebolle. 'We therefore do not recommend the use of pallets that are too light when exporting to distant countries. They do not offer sufficient strength to resist the many movements that containers undergo at sea. As a result, there is a risk of them collapsing, entailing a whole string of risks and consequences.'

New materials, new alternatives

'A recent but limited trend is the development of paper pallets (see also the IKEA testimonial). The benefit of these cardboard pallets is that they are relatively easy to customize,' notes Wittebolle. 'Some distributors even use them as displays in their stores. These pallets are obviously light but this can be a drawback in terms of robustness. In addition, they are less resistant to humidity.' Another trend is the development of alternative handling systems to avoid the use of pallets altogether. The so-called slip sheets, for

instance, are sheets that are placed underneath loads to prevent goods from sliding during transport. Another example is loading ledges, i.e. support plates that can be placed on various sides of a transport load. The benefit of these systems is that they enable the optimal use of space inside a truck. The drawback is that they require other equipment for loading and unloading. 'A great deal of optimization still remains possible in this respect,' concludes Wittebolle.



For additional information

- The Belgian Packaging Institute promotes the rational use of packaging. It provides services to public authorities and companies in the areas of legislation, information, and education. www.ibebevi.be
- CHEP pooling system. www.chep.com
- LPR pooling system. www.lpr.eu
- Pallet Return System (PRS pooling system). www.palletreturnsystem.com
- Europallet system. www.epal-pallets.org