



FÉDÉRATION EUROPÉENNE DE LA MANUTENTION
SECTION II
CONTINUOUS HANDLING

FEM
2 273

DESCRIPTION OF UNIT LOADS
FLAT PALLETS

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PRELIMINARY REMARK

For each installation of continuous handling equipment for unit loads, the characteristics of the goods to be conveyed are important for its proper functioning, being part of the system. It matters therefore to provide a precise description of the product to be conveyed as early as the planning phase. The necessary indications and properties to be mentioned are contained in the International Standard ISO 3569.

Section II "Continuous Handling Equipment" of FEM (Fédération Européenne de la Manutention) presents hereunder one of a series of documents giving complementary information concerning a group of products to be conveyed and provide the user of continuous handling equipment to understand why it is necessary to supply such detailed information and what consequences can be expected in using the equipment for a unit load not foreseen, especially since the user might encounter a problem of such nature for the first time.

1 GENERAL

Making loads known as unit loads helps to reduce transport handling and storage expenses. To this aim, specific quantities of the product concerned are grouped on pallets which serve as a support of the load.

Only the flat pallets as defined by ISO documents DIS 445 and DP 6780.2 will be considered in this document (europallets).

These wooden pallets can be very easily conveyed on continuous handling equipment.

Other pallets of different type and construction, made of wood, metal or plastic (box pallets, "slip sheets", palletized loads, etc.) are also capable of being conveyed on continuous handling equipment in as far as these pallets conform with the specific requirements, depending on which continuous handling equipment is used.

The underside of the pallet and how it is comprised (bottom deck boards, runners lengthwise, feet, metal, plastic material, wood, etc.) have to be particularly seen to for conveying on continuous handling equipment.

The conveying of special pallets often requires special installations which naturally entails a higher price; it is for this reason that attention should be paid to the pallet and as from the first draft of a project of a handling system.

But the carrying of the pallets on the handling equipments is rarely the deciding factor of choice. Other handling equipment e.g. transpallets, handling trucks, rack loaders, etc. and their use in the conveyor system, in the work-shop and in production, provide the deciding factor in most cases.

This is why, when the type of pallet has been chosen, the plant supplier must examine thoroughly all the inconveniences which this pallet may imply in the continuous handling system and take them into account in the design and in the contract with the customer.

The best compromise takes into account :

- the type of the expected deviations
- their frequency
- the type of the resulting system
- the consequences of a malfunction
- the expense necessary to correct the malfunction
- the cost of the installation
- the operating cost

and can only be obtained by cooperation between the manufacturer and the user with a complete exchange of necessary information.

The properties of pallets are discussed in the sequence indicated in the ISO 3569 standard.

2 SHAPE

Pallets are rectangular. Their length L and their width B must be given

If the pallet has runners, the dimension L is always considered as being parallel to the runners.

As the support of the load the pallet always constitutes the bottom surface of the material conveyed; the questions which apply to it are therefore considered together in pa-

ragraph 6 "Bottom surface".

2.1 Dimensions

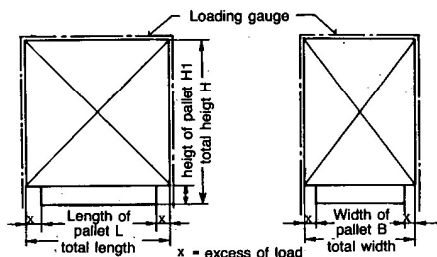
Generally, a normalized or standard pallet is given the corresponding description, which is officially recognised (as for instance in doc. ISO/TC 51 N 352) as well as, if this is necessary, additional information (such as length, width). The structure and the composition can thus be considered as being known.

For non standard pallets, precise details concerning the dimensions, structure, composition, materials, must be provided. The bottom of the pallet and its condition (battens, runners, feet, cross beams, lengthwise beams, metal, plastic, wood, etc.) are particularly important for conveying on continuous handling equipment.

In addition to this, the height (thickness) of the pallet should be indicated and the height of the load. It should be particularly mentioned if it is intended to also convey pallets which are partly loaded or empty.

If the load is larger than the pallet the possible excesses of the load should be indicated.

The gauge corresponds to a frame in which the pallet with its greatest possible load is included.



2.2 Condition

The condition of the pallet may have a considerable influence on the operating qualities of a conveying system. The various continuous handling equipment react differently to a "poor" pallet.

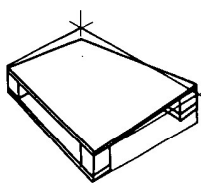
A faulty pallet may be the cause of poor operation of the conveying system and also give rise to faulty system.

A pallet which is "out of true" may quite easily go through a conveying system without any trouble when loaded, whereas the same pallet empty will refuse to go through the system.

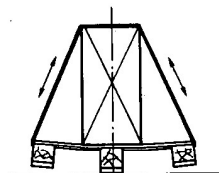
The conveying of different kinds of pallets on a given conveyor system (composite operation) should also be defined precisely.

Non captives pallets may also be used and handled outside the continuous handling system (handling by fork lift trucks for instance). This may cause the pallets to be in a condition which differs considerably with the condition described by the user. Special care will have to be taken of this problem.

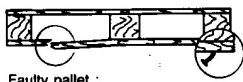
Single trip pallets and exchange pallets will have to be checked also with special care.



Out of true pallet



Pallet deformed due to too tight lashing of the load

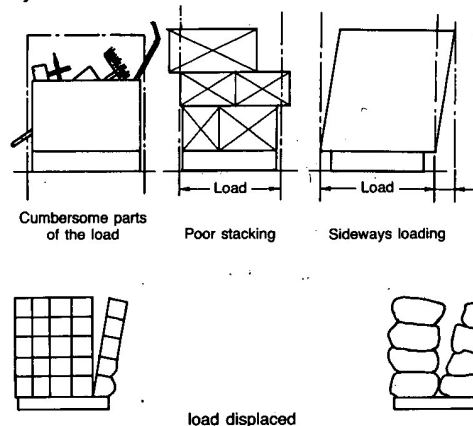


Faulty pallet : broken battens, protruding nails missing or displaced foot blocks

2.3 Profile of the palletised load

In spite of deciding the dimensions of a gauge (paragraph 2.1) it may happen the material which is conveyed is in excess of the gauge.

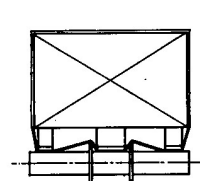
This may be due to :



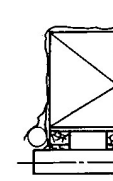
due to the effect of acceleration, slowing down, changing direction, vibrations, shocks, etc.

To avoid displacement of the loads, the load should be consolidated, e.g. strapping of the complete pallet, or at least the top layer wrapping (plastic cover), pallet fittings, cross plan palletising, gluing, etc. if other measures (e.g. conveyors fitted with smoothly starting motors) have not already been taken.

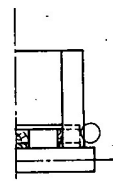
The consolidations of the load may, however, in turn be the cause of further faults.



if the strapping or wrappings also cover the ground surface and thus modify the shape of the bottom of the pallet (runners).



if the wrappings are torn and if the sheds flap and have an effect on the connecting or regulating elements or get entangled with other units.



if the pallet fittings increase the dimensions to cover the size which is allowed or if they have protruding edges or modify the bottom surface.

3 ALIGNMENT

The pallets are usually conveyed in the direction which is exactly parallel or right angled to their runners or main axis (carried lengthwise or crosswise), which is ensured by centering devices.

It is advisable in this respect, to use, in general, for carrying lengthwise or crosswise, various continuous handling equipment, which is in relation to the usual shape of the surface of the floor (cf § 5).

4 CENTRE OF GRAVITY

Place of the centre of gravity does not give rise to special problems, except if it is unusually high or far from the axis.

5 MATERIAL

The majority of pallets are made of wood ; metal or plastic pallets are also used however. But some pallets may also be quite different from each other, in the type of material : single trip pallets are often made in poor soft coniferous wood, roughly joined together with nails ; reusable pallets are at least made of selected wood joined with care, occasionally in conjunction with the separating blocks in synthetic wood, with the upper and lower surfaces in plywood.