

STACKING HEIGHTS FOR EMPTY PALLETS STORED EXTERNALLY

There is no European or International standard that covers empty pallet stacking. The UK Health and Safety Executive (HSE) give no stacking information in their publication *Safety in the use of pallets*. There are safety issues including falling object, personnel in vicinity and fire aspects to be considered. The Table 1 summarises data on best practice collected from new, second-hand, and rental pallet organisations.

Table 1: Stacking on level tarmac or concrete in multiple supporting tiers/blocks -

Same size - undamaged	repaired or new	max 44 high	or max height 6.6 metres
Mixed size - undamaged	repaired or new	max 35 high	or max height 5.3 metres
Sorted - damaged	stacked - await repair	max 30 high	or max height 4.5 metres
Unsorted - damaged	stacked - await repair	max 20 high	or max height 3 metres

Mixed - implies nothing smaller than the 800 x 1200 Europallet, not half-pallets like the Dusseldorfer 800 x 600. These stack heights are maximum heights but height reduction may be necessary due to a number of factors. These might be - proximity of a walkway, poor surface, slope for drainage, nearby private property. A small height *increase* may sometimes be appropriate, for example pallet rental companies often stack *own brand* unsorted damaged pallets 30 high safely because sorting has automatically taken place due to *own brand*. Plastic and steel pallets normally have lower friction properties than wood and are unlikely to be safe at these heights, also the open bases of *stillages* means they are not intended for stacking to any height.

The limit of 44 pallets is double what is loaded on to the bed of a typical delivery vehicle. Most fork lift trucks do not have a mast which extends above 4 metres; even so this allows some trucks to reach the full storage height in Table 1 of 6.6 meters above in two lifts.

Stacks should never be located in isolation; they should be erected in multiple blocks so they support one another against wind or fork truck impact. The UK metrological office states that wind velocities are higher in Scotland and Northern Ireland than England and Wales and Table 1 heights do not allow for conditions of extreme exposure to wind, they are collected from English pallet sites. A site fully exposed to prevailing winds having no windbreak of trees or buildings would reduce the heights above. Also construction of pallet has an effect - bearer type pallets with very narrow bearers when at the bottom of a stack present an overall weakness in that such bearers can fail by a rolling movement due to wind or truck impact.

Some insurers stipulate a fire risk constraint of having no pallet stacks *against* buildings and those which are located close to them must be far enough away not to hit the structure if they were to topple over so they would be less likely to spread the fire to the building.

Wood pallets should not be stacked on grass or unmade ground for more than a few days. Apart from stack instability, rising ground moisture creates ideal conditions for wood decay in the bottom pallet.

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