



178 Automated Warehouse at Distributor – Better Understanding of the Depalletization Process

English version



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This guide has been created to help suppliers gaining a better understanding of the automated palletization process.

To ensure high productivity and minimal operating disruptions to the automated plant, it is important that the quality of the intermediate pallet sheets, SKUs (Stock Keeping Units) and pallet stacking pattern are of a good quality. Intermediate pallet sheets may be used where plastic wrapping alone does not ensure sufficient pallet stability throughout the value chain.

Intermediate pallet sheets

The function of intermediate pallet sheets is to maintain the quality and transportability of the pallet and that their use should be kept to a minimum. They must be used according to STAND's recommendations.

The quality of the intermediate pallet sheet must correspond to the weight of the SKU. If the SKU "digs" into the pallet sheet, the depalletization process will come to a halt because the machine is unable to push the SKU off the sheet.

Cargo from overseas often uses intermediate pallet sheets with friction. When using such sheets, it is important that the friction surface faces down.

SKUs

A good SKU may in itself provide adequate stabilisation. Form stability is a keyword when it comes to SKUs. It means that SKUs must retain their original form throughout the value chain. This also applies to the SKUs at the bottom of the pallet. In addition, through optimal utilization of the bottom deck of the pallet, the supplier can often avoid having to use intermediate pallet sheets altogether.

The lids on the SKU must be securely fitted, and there must be sufficient glue on glued surfaces. This helps the SKU retain its shape during the automated production process. Loose lids and glued surfaces falling off will cause the process to stop.

Stacking pattern: "tying" together one or more layers on a pallet by interlocking stacking will usually provide sufficient pallet stability and eliminate the need for intermediate pallet sheets.



Automatic depalletisers – the depalletization process

The Dtributor creates a depalletization profile for each product. This involves individually setting vacuum strength, clamping function and suction depending on the weight of the product and on the type of SKU. The “head” of the machine lifts one pallet layer at a time. If there is an intermediate pallet sheet underneath one layer, the suction ensures that the sheet follows the pallet layer when it is lifted off the remaining layers on the pallet.

There must be air between the pallet layers to allow the machine to lift the intermediate pallet sheets. For example, even a pallet with compact and dimensionally stable SKU with an added, STAND-compliant intermediate pallet sheet could cause the depalletization process to stop. This is because the SKU makes the pallet layer so compact that the suction is unable to penetrate the layer and pick up the intermediate sheet. Intermediate sheets are often entirely redundant in such cases. The supplier should instead consider stabilising the pallet by cross-stacking rather than using intermediate sheets. Corner mouldings may be an option where the pallet layers are entirely compact but still need additional stabilisation.

Any intermediate pallet sheet should follow the layer when it is lifted. Carefully put down the pallet layer again, and the intermediate sheet stays right where it is underneath the layer. Next, the pallet layer is pushed off the sheet that it rests on. The sheet stays where it is and drops into a container. For this process to be fully automatic, it is crucial that the sheet is made from stiff or corrugated cardboard and otherwise according to STAND's recommendations.

Automatic depalletisers



An automatic depalletiser ready to lift a layer off the pallet.



The “head” of the depalletiser at the top of the machine.



1



A pallet layer has been lifted, and the intermediate pallet sheet moves with it. See the top of the picture where the pallet layer is sticking to the "head" of the depalletiser.

2



The layer on the pallet is pushed off the intermediate pallet sheet that it rests on.

3



The intermediate sheet is left behind when the load is pushed away thanks to the silicone strips underneath.

4



... and finally the intermediate layer drops into a cardboard container.



Common problems

Intermediate pallet sheets not compliant with STAND's recommendations may cause the automated production process to stop. This may happen when the intermediate sheet is too thin, when there are two intermediate sheets for each pallet layer, or when the intermediate sheet has too many perforations.

See below for examples:



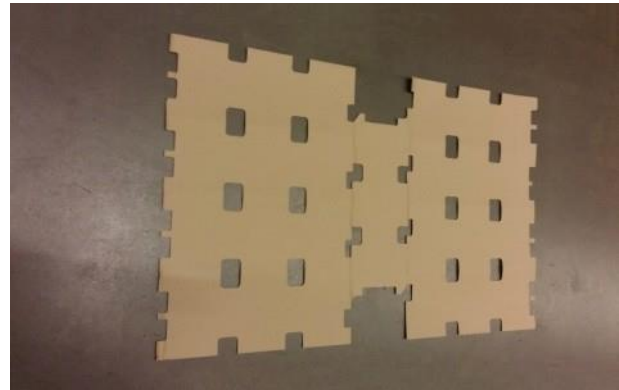
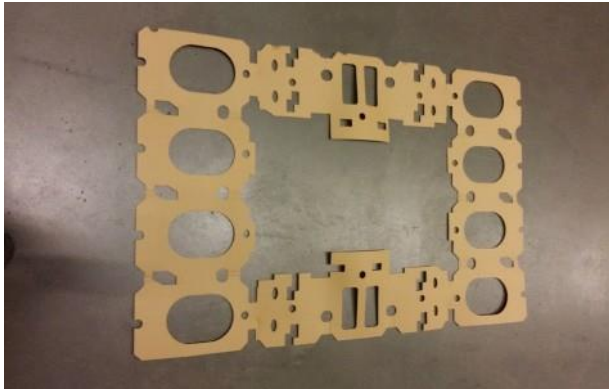
The intermediate pallet sheet is of an inferior quality. It is too thin and not suitable for an automated system.



Example of what may happen when the intermediate layer is too thin. The sheet gets stuck in the machine. This blocks the sensor checking that the layer has been separated from the rest of the pallet. The machine stops, and manual troubleshooting is required in order to restart it.



Example of a double intermediate sheet not compliant with STAND's recommendations bringing the depalletization process to a halt.



An example of pallet sheets not compliant with STAND's recommendations. The holes will prevent them from functioning.