



APRIL 2026

Revision to Cutting Edge No. 417: 21-Pallet Container Loading: EU and Cold Treatment Requirements and Guidelines

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Background

This Cutting Edge updates No. 417 (**21-pallet container loading: EU and cold treatment requirements and guidelines**; April 2025). Key revisions are summarised below and supersede the relevant sections of No. 417.

Realities of using purple block pallets

The purple block system offers one extra pallet per container, roughly 5% more fruit per shipment, but only if the whole chain is aligned and disciplined. The tolerances are tight: bulging cartons, leaning loads, or a container a few centimetres short means the load will not fit. In this case, PPECB will reject the load, requiring correction, or only 20 pallets will be loaded. It is not advisable to load telescopic cartons in this way since they tend to bulge beyond the container's length limit and are heavier.

Purple block pallet

Pallet bases

Purple block pallets (1190 × 990 mm) are required for 21-pallet loading and are slightly smaller than standard citrus pallets (1200 × 1000 mm or 1210 × 1010 mm). Packhouses are recommended to use a stronger citrus purple block pallet base and purple block-compatible cartons. The citrus purple block pallet bases are stronger than other purple block bases used for lighter commodities such as table grapes, and are not interchangeable.

Loading 21-pallets with standard pallet bases (1200 × 1000 mm) should never be attempted. The vast majority of 40-foot refrigerated containers will not accommodate this. Fig 1 lists over 13 thousand container lengths, showing the range of possible lengths.

Standard door-end void plugs

Do not use standard door-end void plugs. The standard paperboard (door-type) void plugs required for 20-pallet loads must not be installed for 21-pallet configurations.

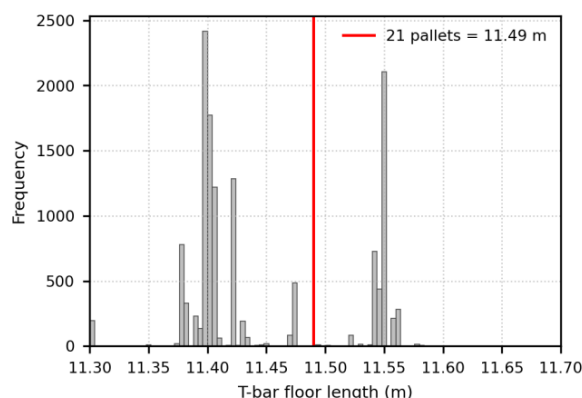


Fig 1. Interior length distribution of ATO-certified reefer containers (n = 13,308); red line indicates the 21-pallet threshold (11.49 m). Source: Wageningen UR Food & Biobased Research (2026).

There is insufficient space at the door end, and the void plug will obstruct airflow in that region.

Chimney-type (C-type) void plugs

Pallet chimneys in 21-pallet configurations must be fitted with a C-type void plug along the T-bar floor, with a minimum height of 200 mm to cover the pallet base and prevent displacement during transit. Cold stores can use polyurethane sponges or specially designed paperboard cartons. Undersized plugs, which allow airflow to be short-circuited, completely undermine cooling efficiency.

PPECB will reject containers without or with improper C-type void plugs for FCMSA and cold treatment markets.

Packaging

Position of the corner pieces

Corner pieces should be positioned above the pallet base to keep the overall pallet footprint within 1190 × 990 mm. If placed below the top of the base, each corner piece can add up to 10 mm to the pallet width/length, increasing the total row length by up to 110 mm. This will cause the last pallet to extend over the T-bar floor and push against the door. Citrus purple block compatible cartons have a reduced footprint that fits within these pallet base dimensions (Fig 2). *Note, some role-players claim that placing corner pieces below the pallet base improves stability. Contact your carton manufacturer and cold store for details.*

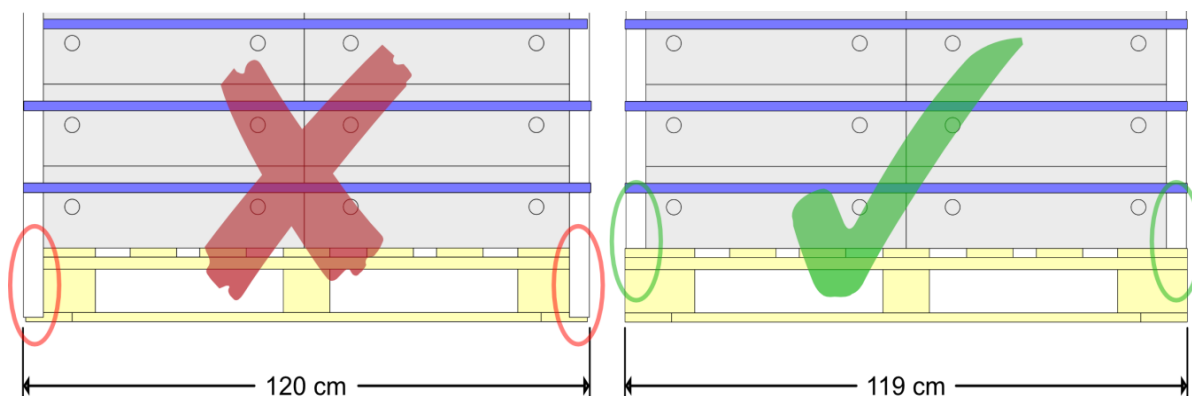


Fig 2. Corner pieces should be positioned above the pallet base so that they do not increase the overall pallet footprint.

Pallet loading configurations

Carton type recommendations

We recommend against loading 21-pallets in a container when using telescopic packaging. “Soft citrus” opentop cartons have minimal bulge and form relatively narrow pallets that fit the 21-pallet configuration well. In contrast, telescopic cartons and some “Hard citrus” opentops tend to bulge, resulting in a larger footprint and the cartons not fitting properly onto a purple block pallet. Hard citrus is also normally heavier, increasing the risk of exceeding container weight limits.

Mid-shift of the pallets

At least the last 10 pallets to be loaded should be mid-shifted to maximise the gap between the pallets and container walls. This ensures C-type void plugs are tightly fitted in the chimney during the loading to allow cold air to flow around the pallets, and improves cooling uniformity (Fig 3).

PPECB will inspect for this as part of the C-type void plug installation

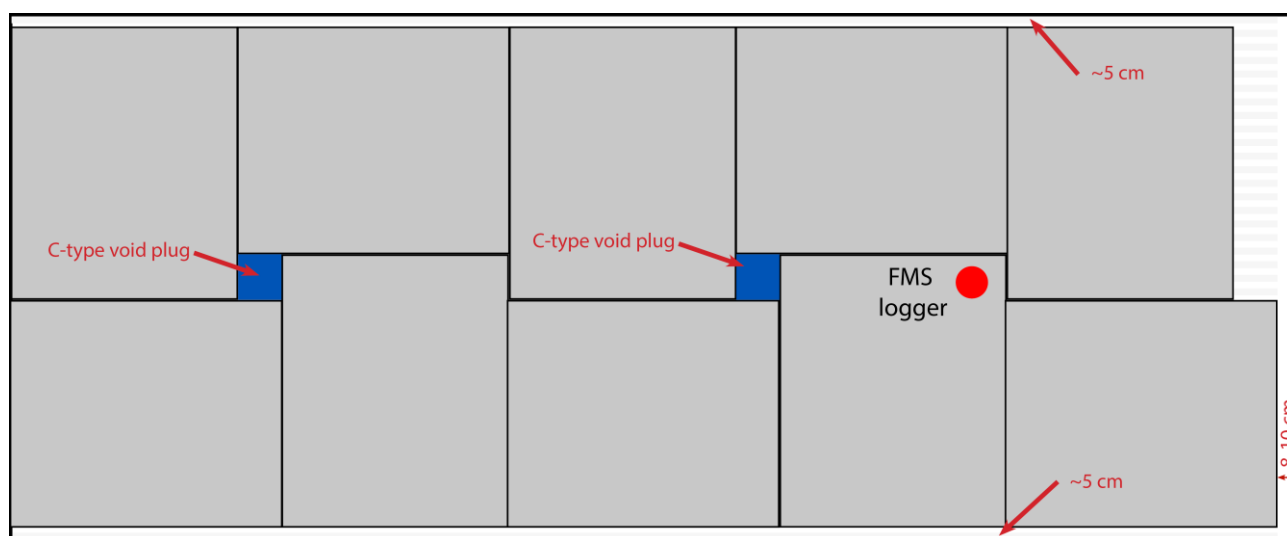


Fig 3. Top-view schematic of the rear section of a 21-pallet loadout configuration, illustrating the gap at the door end and between the container walls and the pallets.



Length limitations

Ensure pallets do not extend beyond the T-bar floor. PPECB will reject containers with pallets that extend beyond the T-bar floor. Container internal lengths vary, and the majority are too short to accommodate 21-pallets, as confirmed by multiple cold stores and the stone and table grape industries (Fig 1 and Fig 3).

In Fig 4, the different approved loadout configurations are illustrated. The 21-pallet-**short configuration** is better than the long configuration.

Summary

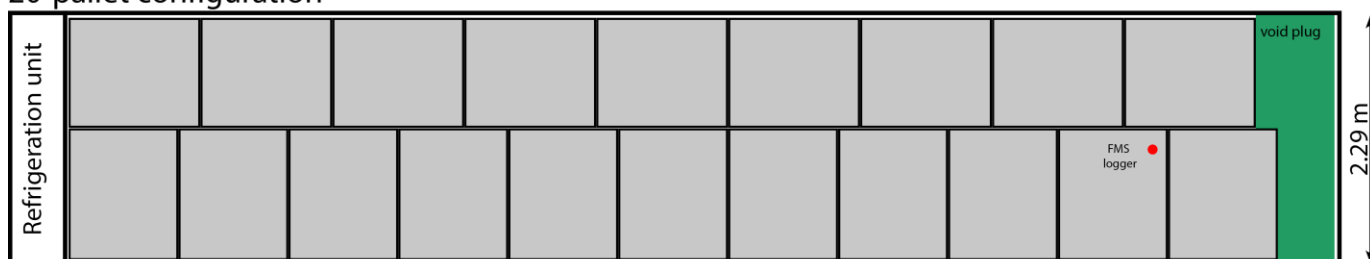
- Purple block pallets are required; standard pallet bases will not fit.
- You gain roughly 5% more fruit per shipment, but tolerances are very tight.
- Bulging cartons or a short container mean PPECB rejects the whole load.
- Use opentop cartons, not telescopic. Telescopes bulge too much and are heavier.

- Do not use standard door-end void plugs. No space and they block airflow.
- C-type void plugs are required along the T-bar floor.
- PPECB will reject containers without proper C-type void plugs (FCMSA/EU and cold treatment markets).
- Corner pieces must sit above the pallet base, or you add up to 110 mm to the total length.
- Mid-shift the last 10 pallets to maximise the gap between pallets and container walls.
- Pallets must not extend past the T-bar floor. The majority of containers are too short.
- The 21-pallet-short configuration is better than the long configuration.

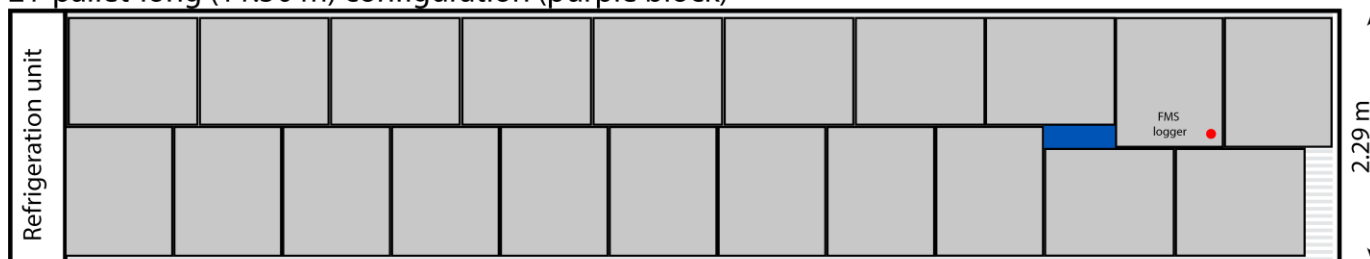
Any questions can be directed to Tarl Berry (tarl@sun.ac.za, 082 419 7218).

A revised C-type void plug design is under evaluation; a Cutting Edge update will follow.

20-pallet configuration



21-pallet-long (11.50 m) configuration (purple block)



21-pallet-short (11.49 m) configuration (purple block)

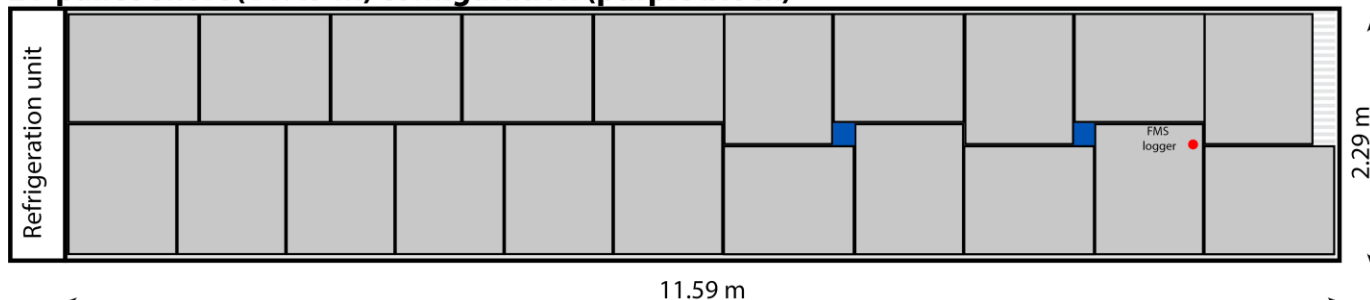


Fig 4. Top-view schematic illustration of the different pallet loadout configurations. The blue and green blocks indicate chimney-type and standard void plugs, respectively. The red circle indicates the position of the FCMSA (EU) logger.

Hersiening van Snykant Nr. 417:

21-Palet Houerlaai – EU- en Kouebehandelingsvereistes en -riglyne

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²Perishable Products Export Control Board (PPECB)

Agtergrond

Hierdie Snykant is 'n opdatering van Nr. 417 (**21-palet houerlaai: EU- en kouebehandelingsvereistes en -riglyne; April 2025**). Sleutelwysigings word hieronder opgesom en vervang die relevante afdelings van Nr. 417.

Gebruik van die persblok-paletbasis

Die persblok-stelsel bied een ekstra palet per houer, ongeveer 5% meer vrugte per verskeping, maar slegs as die hele ketting in lyn en gedissiplineerd is. Die toleransies is streng: uitbultende kartonne, skuins vragte, of 'n houer wat 'n paar sentimeter kort is, beteken dat die vrag nie sal pas nie. In hierdie geval sal PPECB die vrag afkeur, wat korreksie vereis, of slegs 20 palette sal gelaai mag word. Dit word nie aanbeveel om teleskopiese kartonne op hierdie manier te laai nie, aangesien hulle geneig is om buite die houer se lengtelimiet te bult en swaarder is.

Persblok-palet

Paletbasisse

Persblok-palette (1190 × 990 mm) word benodig vir die laai van 21-palette en is effens kleiner as standaard sitruspalette (1200 × 1000 mm of 1210 × 1010 mm). Pakhuise word aanbeveel om 'n sterker sitruspersblok-paletbasis en persblok-verenigbare kartonne te gebruik. Die sitruspersblok-paletbasisse is sterker as ander persblokbasisse wat vir ligter kommoditeite soos tafeldruiwe gebruik word, en is nie onderling vervangbaar nie.

Die laai van 21-palette met standaard paletbasisse (1200 × 1000 mm) moet nooit beproef word nie. Die oorgrote meerderheid 40-voet verkoelde houters kan dit nie akkommodeer nie. Fig. 1 lys meer as 13 duisend houerlengtes, wat die reeks moontlike lengtes toon.

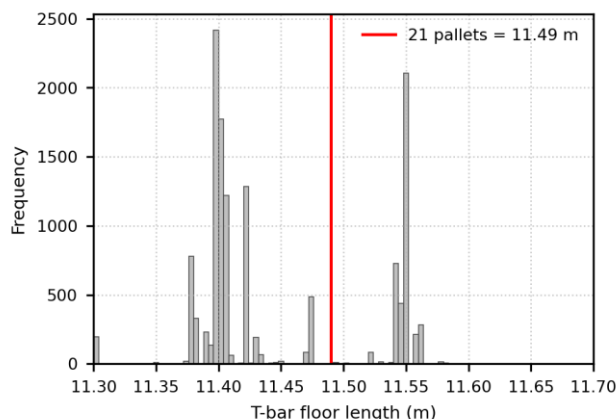


Fig 1. Die binnelengte van ATO-gesertifiseerde verkoelde houters (n = 13 308); rooi lyn dui die 21-palet-drempel (11,49 m) aan. Bron: Wageningen UR Food & Biobased Research (2026).

Standaard deurkant void plugs

Daar mag nie van die standaard void-plugs gebruik gemaak word nie. Die standaard karton void plugs (deurtype) wat benodig word vir 20-palet-uitlaai, mag nie in die 21-palet-konfigurasies geïnstalleer word nie. Daar is onvoldoende spasie aan die deurkant, en die void plug sal lugvloei in daardie area belemmer.

Skoorsteentipe (C-tipe) void plugs

Paletskoorstene in 21-palet-konfigurasies moet toegerus wees met 'n C-tipe void plug langs die T-balkvloer, met 'n minimum hoogte van 200 mm om die paletbasis te bedek en verplasing tydens vervoer te voorkom. Koelstore kan poliuretaansponse of spesiaal ontwerpte karton void plugs gebruik. Te klein void plugs, wat lugvloei kortsluitings veroorsaak, gaan verkoelingsdoeltreffendheid drasties benadeel.

PPECB sal houters sonder of met verkeerde C-tipe void plugs vir FCMSA- en kouebehandelingsmarkte afkeur.

Verpakking

Posisionering van die palethoekstukke

Hoekstukke moet bó die paletbasis geplaas word om die algehele paletvoetspoor binne 1190 × 990 mm te hou. Indien dit onder die bokant van die basis geplaas word, kan elke hoekstuk tot 10 mm by die paletwydte/lengte voeg, wat die totale rylengte met tot 110 mm verhoog.

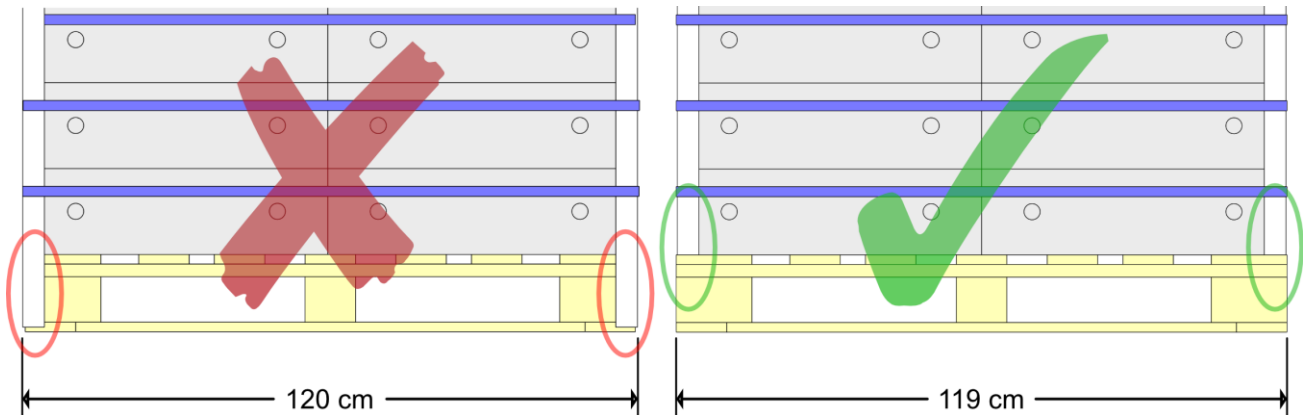


Fig 2. Hoekstukke moet b6 die paletbasis geplaas word sodat dit nie die algehele paletvoetspoor vergroot nie.

Dit sal veroorsaak dat die laaste palet oor die T-balkvloer uitsteek en teen die deur druk. Sitruspersblok-verenigbare kartonne het 'n verminderde voetspoor wat binne hierdie paletbasis-afmetings pas (Fig. 2). *Let wel, sommige rolspelers beweer dat die plasing van hoekstukke onder die paletbasis, stabiliteit verbeter. Kontak u kartonvervaardiger en koelstoor vir besonderhede.*

Aanbevelings vir die keuse van die tipe karton

Ons beveel aan om nie 21-palette in 'n houer te laai wanneer teleskopiese verpakking gebruik word nie. "Sagte sitrus" oopdak-kartonne het minimale bult en vorm relatief smal palette wat goed by die 21-paletkonfigurasie pas. In teenstelling hiermee is teleskopiese kartonne en sommige "harde sitrus" oopdakke geneig om te bult, wat lei

tot 'n groter voetspoor en die kartonne pas nie behoorlik op 'n persblokpalet nie. Harde sitrus is ook normaalweg swaarder, wat die risiko verhoog om die gewigslimiete van die houer te oorskry.

Mid-verskuiwing ("mid-shifting") van die palette

Ten minste die laaste 10 palette wat gelaai moet word, moet mid-verskuif word om die gaping tussen die palette en houerwande te maksimeer. Dit verseker dat C-tipe void plugs styf in die skoorsien pas tydens die laai om koue lug rondom die palette te laat vloei, en verbeter verkoelingsuniformiteit (Fig. 3).

PPECB sal hiervoor inspekteer as deel van die C-tipe void plug-installasie.

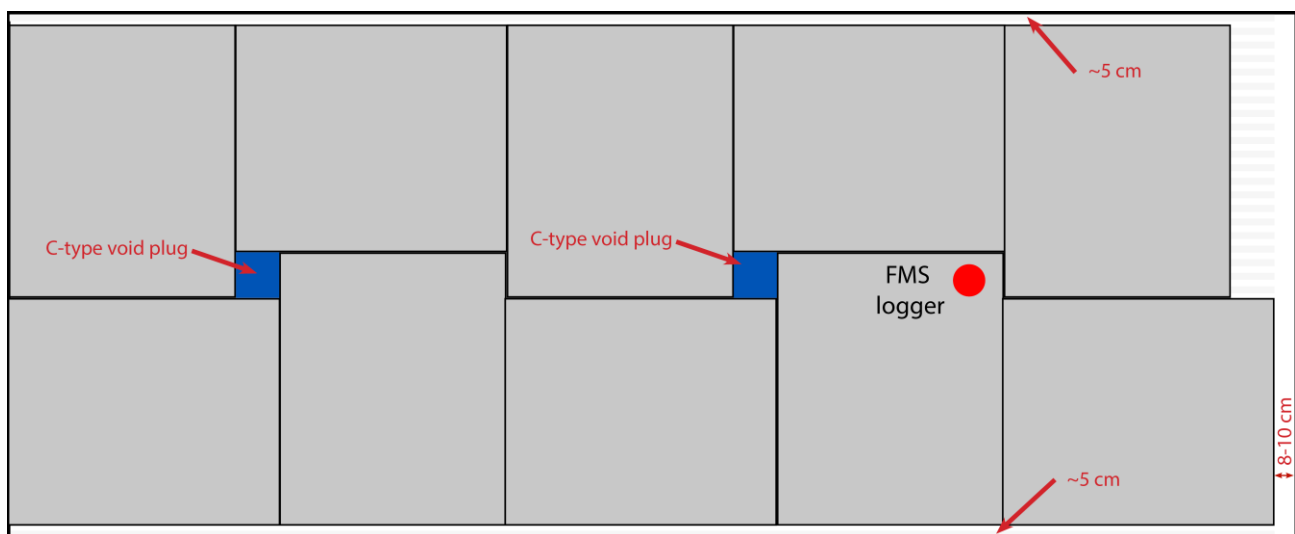


Fig 3. Skematiese bo-aansig van 'n 21-paletlaai-konfigurasie, wat die gaping by die deurkant en tussen die wande van die houer en die palette toon.



Lengte-beperkings

Verseker dat palette nie verder as die T-balkvloer uitsteek nie. PPECB sal houters met palette wat verder as die T-balkvloer uitsteek, afkeur. Die interne lengtes van houters wissel, en die meerderheid is te kort om 21-palette te akkommodeer, soos bevestig deur verskeie koelstoren en die steenvrug- en tafeldruifbedrywe (Fig. 1 en Fig. 3).

In Fig. 4 word die verskillende goedgekeurde uitlaaikonfigurasies geïllustreer. Die 21-palet-kort-konfigurasie is beter as die lang konfigurasie.

Opsomming

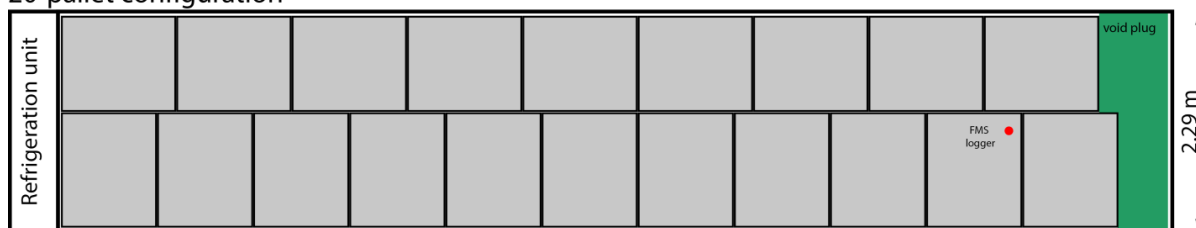
- Persblok-palette is verpligtend; standaard paletbasisse sal nie pas nie.
- Jy kry ongeveer 5% meer vrugte per besending, maar die toleransies is baie streng.
- Uitbultende kartonne of 'n kort houer beteken dat PPECB die hele vrag afkeur.
- Gebruik oopdak-kartonne, nie teleskopiese kartonne nie. Teleskopiese kartonne bult te veel uit en is swaarder.

- Moenie standaard deurkant void plugs gebruik nie. Dit lei tot geen spasie by die deur nie en blokkeer lugvloei.
- C-tipe void plugs is verpligtend langs die T-balkvloer.
- PPECB sal houters afkeur sonder behoorlike C-tipe void plugs.
- Hoekstukke moet bó die paletbasis sit, anders word tot 110 mm by die totale lengte gevoeg.
- Verskuif die laaste 10 palette in die middel om die gaping tussen palette en houerwande te maksimeer.
- Palette mag nie verder as die T-balkvloer uitsteek nie. Die meerderheid van die houters is te kort.
- Die 21-palet-**kort-konfigurasie** is beter as die lang konfigurasie.

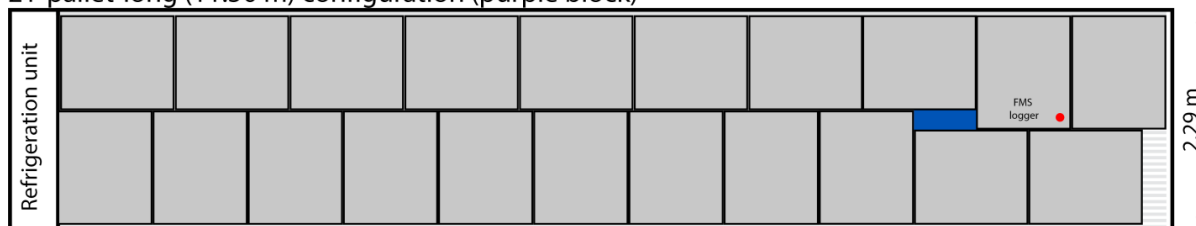
Enige vrae kan gerig word aan Tarl Berry (tarl@sun.ac.za, 082 419 7218)

'n Hersiene C-tipe void plug-ontwerp word geëvalueer; 'n Snykant-opdatering sal volg.

20-palet configuration



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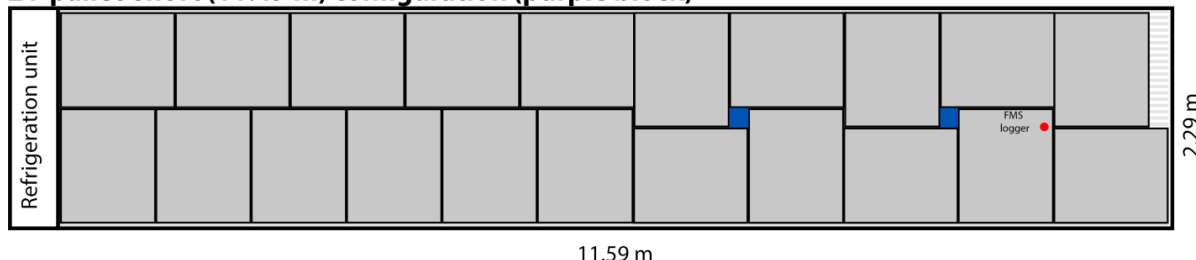


Fig 4. Skematiese bo-aansig-illustrasie van die verskillende paetlaai-konfigurasies. Die blou en groen blokke dui onderskeidelik op skoorsteentipe- en standaard void plugs. Die rooi sirkel dui die posisie van die FCMSA (EU)-datalogger aan.