Commodity Stacking GUIDELINES

1. Determine how many stacks are needed.

   - Make a different stack for each different shipment number.
   - Make a different stack for each different type of commodity (e.g., maize, wheat).
   - If applicable, make separate stacks for commodity from the same shipment but with different BUBDs.
   - Stack reconstituted commodity separately, by commodity type and shipment number.

2. Calculate floor area needed for **each** stack: $\frac{\text{(commodity volume) x (MT of commodity)}}{\text{(stacking height in meters)}}$

Commodity	Volume (m^3/MT)	Maximum Stacking Height[a.]
bagged grain/beans (**50-kg bags**)	~ 1.5	4 meters
bagged flour/meal/blended foods (**25-kg bags**)	~ 2 m^3	3.5 meters[b.]
edible **oil in tins**	~ 1.4 m^3	10 tins
edible **oil in cans** (25-kg cartons of 6 cans each)	~ 2 m^3	8 cartons

[a.] Maximum stacking height depends crucially on the packaging materials (including outer packages/cartons), the climatic conditions, the equipment used for stacking, and the skill of the workers. The figures shown are only rough guidelines. Check any specific recommendations given by the suppliers (and perhaps printed on cartons).

[b.] Polypropylene bags supplied by local millers may be irregular in size or shape, reducing the maximum stacking height.

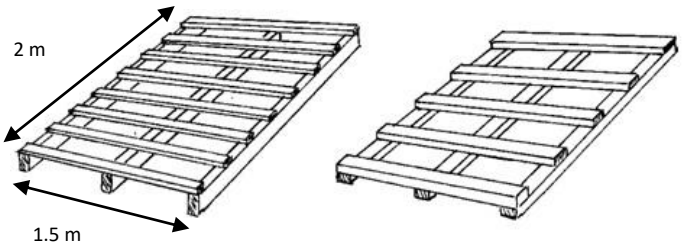
3. Using chalk or paint, mark out the required floor space for each stack. Allow sufficient space around the stacks for loading, unloading, inspecting, fumigating, and counting.

   - Stacks should be at least one (1) meter from the walls.
   - If possible, leave a two (2) meter passage between stacks.
   - Do not block access to stacks that have been stored for the longest period of time (as they will be dispatched first).

4. Apply a residual pesticide to the floor within–and one (1) meter beyond–the delineated stack area.

5. Lay pallets–all of equal size–in the delineated stack area. (Pallets protect the commodity from dampness, allow ventilation, and facilitate fumigation.) Ensure the pallets are level and free of protruding nails or splinters that could damage commodity.

Examples of pallets:



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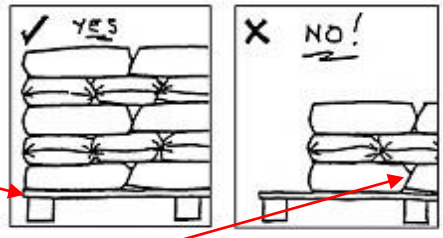
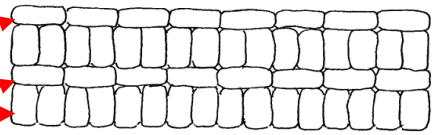
6. Set the **bottom layer** of the stack carefully on the pallets. This layer is fundamental for maintaining uniform, stable stacks, and facilitating physical count.
   - Line up bags/containers with pallet edge.
   - Place bagged commodity so the "open end" seam is to the inside of the stack. (If any spillage occurs, the commodities will fall inside the stack and not on the warehouse floor.)
   - Place oil cartons or tins in the upright position.
   - Place the longest side of the unit parallel to the longest side of the stack facing outward.
   - Interlace bags by alternating the direction of each row.

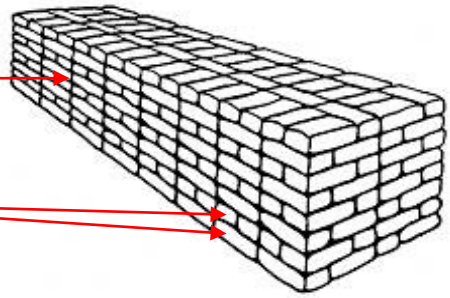


(warehouse aisle side)

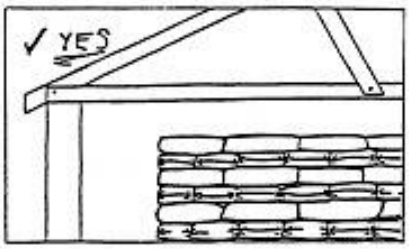


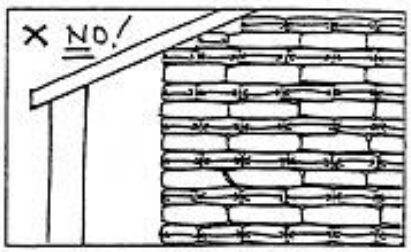
(bottom layer as seen from above)

7. Construct subsequent stack layers in an orderly manner, so that the quantity of commodity in the stacks can be easily counted.
   - Place the same number of items on each layer.
   - Ensure the sides of the stack are flush.
   - "Bond" layers (in other words, orient each layer at right angles to the layer below) to prevent stack from shifting and falling.



8. Do not exceed the maximum stacking height for the commodity. Also:
   - Do not stack whole grains or beans higher than 30–40 layers.
   - Do not stack flour and meals higher than 20 layers.
   - Do not stack fiberboard cartons of oil tins higher than 8 layers.
   - Do not stack containers of oil higher than 10 layers.
   - Leave at least 1 meter of circulation space between the top of the stack and the **eaves** of the warehouse roof.





9. Complete the stack card, and attach it to the side of the stack, in a visible and accessible position.