

# BEST RECOMMENDED PRACTICES FOR GRANULAR MOP HANDLING AND STORAGE

The majority of URALKALI Granular MOP is handled in bulk. To preserve maximum integrity throughout the entire supply chain, it is important to follow correct handling processes and procedures.



## DISCHARGING

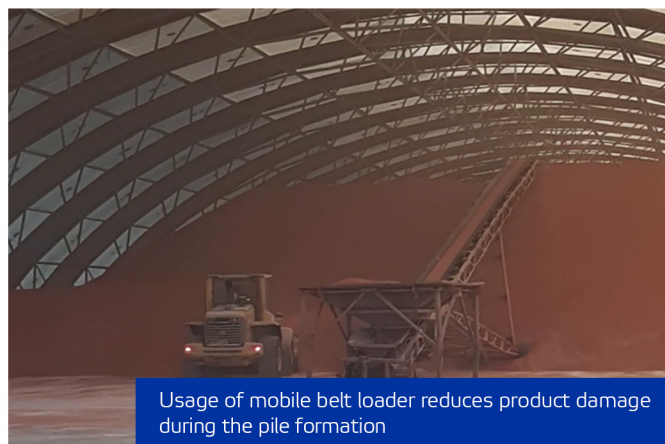
- Shore cranes or ship crane equipped with grabs are recommended. If available, sealed lip bucket is recommended.
- Inspect the cargo before start of discharge, check the hatch coamings and rain rails, look for rusty water markings on the coaming walls and check all rubber seal gaskets. When checking the cargo surface, there shouldn't be any signs of footprints over the surface. If this is noted, pay close attention to the discharge when discharging the top surface of the hold.
- If the product is damaged (contamination/water ingress), stop the discharge, immediately call for the surveyors and inform the master. Officially place the vessel on Notice with a written Letter of Protest, stating undetermined amount of damaged cargo. With the permission of the chief officer and with no objection, ensure that water damaged cargo and contaminants are separated from the good product. If at all possible and time is permitted, separations of the contaminated product should be done in day light hours.
- Do not discharge during precipitation, heavy fog or if walls are dripping wet from condensation. Close the hatches even in good weather if the discharge is paused for both vessels and barges.
- Do not mix spilled or wet material on the quay or deck of vessel with good product.
- Prior to cleaning holds, if available, the use of excavators is recommended to pull out all of the product from under the wings of the hold to a point whereas most of the product should be on the tank top and easily accessible to retrieve with a rubber tire frontend loader or bobcat. Never allow the excavator tracks to make contact with the hold floor, or tank top. Leave a cushion of product of about 1' to 2' pad between the excavator tracks and the tank top. Prior to setting a frontend loader or bobcat into the hold, a significant area of the floor should be visible and clean best as possible with the crane grabs. Minimize driving into onto the product to reduce formation of dust and fines.
- Do not clean the cargo hold "to the maximum", in order to avoid collecting dust and contaminating good material.

## Use of equipment

- Prior to use, after shutdowns, prior to resuming, inspections of the grabs, hoppers, trucks, conveyor belts and transfer points should be clean and tight.
- Empty the hoppers and conveyor belts before breaks. Clean if necessary. If down for rain and before resuming, open parts of the conveyor belt system must run for approx. 30 min to run off excess water and drying.
- Pneumatic conveyors, Redler (chain conveyors), screw feeders are not recommended. Avoid use of grain trimmers: fines formation will occur due to impact.
- Mobile belt loaders are more preferable for pile formation than payloaders.



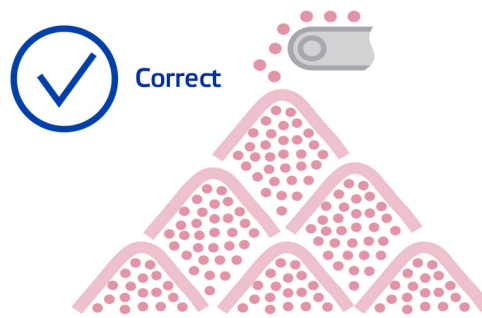
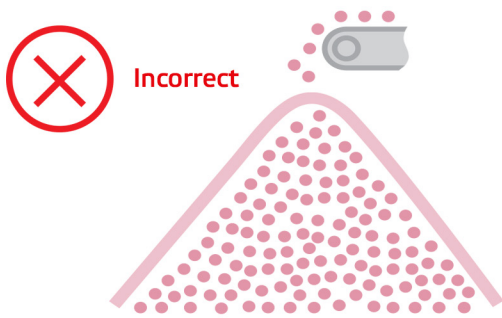
Correct frontal loader driving during discharge operations avoids formation of extra fines and dust



Usage of mobile belt loader reduces product damage during the pile formation

## Minimizing segregation in a pile

Segregation of GMOP during discharge into warehouse should be minimized through correct handling in order to avoid that a changing particle size distribution would induce deviating properties of the product. It is strongly recommended to build up heaps by using many small ones and to ensure good mixing during reclaiming.



## STORAGE AND HANDLING INSIDE OF A WAREHOUSE

- It is recommended that Granular MOP be stored in clean, dry warehouses to avoid product degradation due to moisture effect.
- Doors should be tight fitting and other openings closed.
- If there is spillage, sweep and clean immediately and store in a separate tailings pile.
- Avoid cross-contamination with other fertilizers, especially urea.
- First In – First Out rule should be followed where practical.
- Avoid spillage when re-claiming the pile with a front-end loader. Do not overfill the bucket and drive onto the pile.



Use the right equipment for piling

### In case of long-term storage and in case of high humidity it is strongly recommended to store Granular MOP under a cover:

- Bulk products should be completely covered with tarpaulin immediately after completion of discharge.
- Coverings should overlap by at least 0.5 m, and be fastened properly.
- When removing product from the pile do not unnecessarily expose the product to air. Re-cover it immediately when the operation is completed. Only uncover and access the area of the pile to be delivered and leave the remaining pile covered.

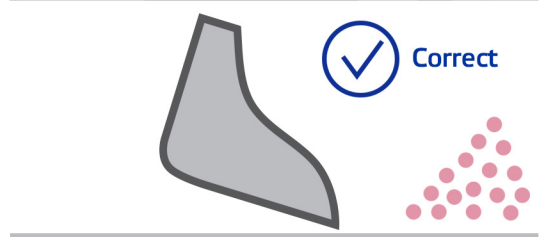


Insulation of roof and correct sheeting prevents condensation and water uptake

## Use of payloaders

A payloader is convenient to use when moving bulk material. However, to avoid damaging the material, it is advised that the following precautions are taken:

- Keep a correct angle between the bucket and the floor to minimize crushing and driving onto the product. Do not keep the bucket flat.
- Avoid spillage on the floor. Do not overfill payloader bucket causing excessive spillage in-transit to the loading hopper.
- When delivering cargo from a warehouse pile, have the payloader work the face of the pile left to right or right to left, so that the cargo is cross sectioned, as the fines will accumulate at the center of the pile.
- Do not drive the wheels into the pile.



**REMEMBER:** the weakest link in the supply chain will determine the product quality.