

Bulletin 103 - 7/99 - Dangerous Stowage - Granite Blocks - South/East Africa

We have been advised by the Society of Master Mariners South Africa that a considerable number of cargoes of granite blocks weighing up to 40 tonnes each are presently being shipped from ports in Southern and Eastern Africa. We understand that there is an increasing tendency for such blocks to be stowed mainly in "drop-stow" i.e. in hatch squares, leaving large gaps between the sides of the stows of blocks (three or four high) and the ship's side frames (see photograph below).

A variation upon this is a "pyramid" stow, in which the bottom one or two blocks are floored out, ship's side to ship's side, and then a stepped stow made, ending up five or six high in the hatch square. In addition to being impossible to secure adequately, such a stow also has the effect of concentrating the weight of the stow in the centre of the hold, possibly exceeding the permissible "tonnes per square metre" tank top capacity in that area.

The reasons for such stowage may be due to the time taken to "wing out". Such stowage would also require the use of large capacity lift trucks, which are expensive for stevedores to purchase and operate and are frequently not available. It is far quicker and cheaper for shippers, charterers and stevedores simply to lower most, or all of these blocks into hatch square stowage.

By the very nature of this cargo, a ship loaded with granite blocks will have a large GM and be stiff. When subject to external forces such as beam swell, the ship will have a short period of roll and a tendency to jerk to the upright which may in turn place excessive strain on the lashings.



The Society of Master Mariners South Africa recommend that masters of ships loading granite blocks ensure that :-

1. A level, ship's side to ship's side stow is made. On ships fitted with side hopper tanks, the blocks should be stepped out until the upper tier or tiers make contact with ship's side frames, protected by dunnage.

Due to the difficulty in winging out these heavy blocks into hopper tanks or outward flaring ship's side frames, the optimum stowage position is in a centre hold. Stowages in the extreme ends of forward and after holds should be avoided.

2. Any unavoidable large gaps in the stow, due to varying dimensions of the blocks or an insufficient number of blocks to complete the top tier, should be left in the centre of the stow, where they can be securely braced with substantial timber shores.

3. Smaller gaps between individual blocks in the completed stow, as a result of varying dimensions of blocks, should be chocked and wedged with timber, creating a solid, ship's side to ship's side stow.

4. Substantial hardwood timber bearers should be used under the blocks; softwood is not recommended as this will crush and compress under the weight of the blocks. Care must be taken that the dunnage laid between the bottom tier of the blocks and the tank top is adequately spaced to spread the weight of the eventual stow evenly over the tank top, avoiding localised loading between strength members in the double bottom tanks.

The use of round or partially round "pole" dunnage should be avoided. If the blocks do shift as the vessel rolls, these will simply serve as rollers under the blocks, exacerbating any movement.

5. A proper granite stow (as described above) hardly requires securing. This should be necessary only on free-standing blocks (if these cannot be avoided) or across the face of part hatch stows. Shoring or tomming, between outboard blocks and ship's sides is of little use and should not be required if the cargo has been correctly stowed.

Lashing wires should be of at least 16mm diameter, protected from fraying where they are led around the sharp corners of blocks. Rigging screws must be accessible, with sufficient thread capacity remaining to permit re-tensioning on passage. A sufficient number of wire rope clips - minimum three - correctly fitted, should be used on all wire rope joins and at rigging screws.

Cargoes of granite blocks, properly stowed, dunnaged, chocked and secured into a solid, level, ship's side to ship's side block may well be time consuming and costly to stow, but are perfectly safe to carry, if the above guidelines are observed. On the other hand, free-standing, or "pyramid" stows are extremely hazardous. The consequences of several hundred tons of granite blocks of up to forty tonnes individual weight rolling and coming into heavy contact with the side shell of the ship needs no elaboration.

Source of information: The Society of Master Mariners South Africa, Durban Branch through Capt D Rogers P&I Associates (Pty) Durban e-mail pidurban@andy.co.za