How long do containers float for?

The Container Owners Association was recently asked by a member for information about the length of time that a container will float.

The dangers of floating shipping containers cast adrift or lost overboard from ships in the ocean are often discussed in newspapers or on the television. Instead of coming from the container shipping community, the comments often come from the environmental sector, yachting and pleasure-boat enthusiasts, or the fishing industry.

Many myths have grown up relating to containers floating in the sea – how long they float, how they frequently hover below the surface, how they can bring down fishing boats and how these hazards should be disposed of. To find out more, the Container Owners Association surveyed its membership for further information on the subject.

How long?
On the question of the length of time that a container float will float for in the sea - there is, of course, no single, simple, answer, as there are too many variables. The length of time depends on the type of cargo, the type of container and its permeability or durability.

Some containers sink immediately, while there are stories of containers floating across the Atlantic – in one case, taking some 15 months to cross the Atlantic from the Caribbean to Spain.

Empty freight containers are not truly watertight under floating conditions and will take water through vents, seals flooring and damages and sink will sink almost straight away. Containers filled with lightweight, low density and buoyant cargoes can float for years - even when holed and waterlogged. A reefer may float until it is broken up - so sea and wave action is critical. A cargo of low density may float longer, until the doors are damaged and opened by the sea action.

In the case of the *MSC Napoli*, which earlier this year beached on the UK's south coast and lost a number of containers overboard, about half of those which went into the sea sank almost immediately, while the other 50 percent floated the one mile to the shore.

The myth
One particular issue is that of the "sub-floater" – the danger caused by a submerged container located invisibly a few meters or more below the surface of the ocean.

This, say COA members, is a myth: it is not physically possible that a container can be totally immersed and freely floating some distance below the surface.

The reason is that, in accordance with Archimedes principle and fundamentals of mass and displacement. The container can only be at surface level partly immersed, or on the

bottom. (Or in the process of moving from floating to sinking - which is normally a rapid event anyway).

The upward thrust or force on any free floating object is equal to the weight of the liquid it displaces. If the weight of the container and its contents is less than the amount of water displaced it will therefore float, in a partly immersed state.

If the weight of the container and its contents - which includes water occupying inside space - is more than the weight of the fluid displaced, it therefore sinks. Sinking normally rapidly gains momentum as the increasing pressure compresses the container and contents (if compressible) thus further affecting the mass displacement ratio and reducing the buoyancy.

The figures

In other words: like a ship, a container will sink in the water to the point where the weight of water displaced by the container is equal to the weight of the container.

It follows that a fully loaded (MGW 30 tonne) 20ft or 40ft dry freight container will float. This is because the volume of a 20ft container is approximately 1300 cu ft. If it was to be fully immersed in sea water, it would displace about 83,000 lb of water - which is more than 30 tonne (approx 66,000 lb). A fully loaded 20ft x 8ft 6in high container would therefore float with about 1ft 6in showing above the water.

Once enough water has got through the floor, the door seals and the ventilators - to increase the total weight to more than 83,000 lb - the 20ft container will sink, If the floor is solid and well sealed, and if the door seals are good and there are no ventilators fitted, the container may float for many hours.

Indeed, if the cargo is watertight and it fills the majority of the space inside the container, leaving little space for water, the container may float indefinitely.

Disposal

One COA member recalls that it had a "floater" off France a few years ago – it was a controlled atmosphere container, loaded with pineapples, which, by its very nature was sealed and therefore buoyant. A helicopter or fighter jet was launched, and the container was used as target practicem, to pepper it full of holes until it sank.

Another recalls how the Navy was called out to shell some containers lost overboard from a cargo ship in the English Channel, which were floating and creating a danger to shipping.

However, these methods are not allowed any more – due to risk of pollution - and the containers have to be towed on to the shore, which is not something the shipping lines particularly like, because they then have the recovery and salvage costs!

Captions

1
Half of the containers lost overboard from the *MSC Napoli* sank almost immediately …

2
... while the others floated the one mile to the shore.