

Your Growing ISO Container Fleet

Innovative Solutions
To Safety Risks





The chemical industry, the food industry and a variety of others make use of ISO containers, also known as isotainers and seatainers. These are essentially round tanks fixed in rectangular frames to allow for easy stacking on ships. When they're not being transported via ship or barge, these containers are transferred onto different types of flatbed trucks and driven to their final destinations.

In the 1990s, ISO containers were fairly rare, outside of coastal areas. With the rise of global corporations and international shipping, they have become a common solution for industrial transportation. Once used primarily to transport chemicals overseas to Singapore, China and other destinations, fleets of isotainers and seatainers now supply many facilities within the United States.

The growing popularity of ISO containers also presents new safety challenges for companies and their workers. That means it's more important than ever to provide safe access for loading and unloading this equipment.

ISO Container Safety Challenges

Here are three safety challenges that must be addressed when working with ISO containers:

1) Wide Variety Of Configurations

While the International Standards Organization (ISO) regulates the dimensions of ISO containers, they come in a wide variety of sizes and configurations, each designed for a specific purpose. These containers must be loaded and unloaded in different ways, making it difficult for facilities to provide a comprehensive safety solution.

According to [engineering resource IHS Engineering360](#), the basic types of ISO containers your workers encounter include:

- Insulated or thermal containers
- Dry freight or cube containers
- "Reefer" or refrigeration containers
- Open-top containers
- Flat racks and platforms
- Tank containers



Lately, some companies have been adding elements to ISO container frames that create additional configuration issues. Extensions to the middle of the crossbar, for example, could add 12" to the frame, making the frame unstackable. Companies in the U.S. that send containers out of the country may also have to accommodate configurations and foreign standards that differ from those set by the ISO.

Adding to the complexity are the different container sizes available. While the standard height of an ISO container is 8'6", they range from 4' to 9'6". Most ISO containers are 20' or 40' in length, but they also come in seven other sizes. And, while most containers are 8' wide, there are at least eight other width variations.

2) Undefined Loading And Unloading Procedures

On the most basic level, loading and unloading ISO containers sounds straightforward. Specially made forklifts move ISO containers to the loading area, where large cranes move them and stack them onto ships.

During unloading, these cranes trolley out over the ship and pick up containers one at a time. From there, longshoremen use forklifts to inventory and tag the containers, and isotainer trucks come in with a lowboy or flatbed to transport the containers to their destination.

But the process grows more complicated once the ISO containers reach the customer or the end point.

Containers typically have hatches where workers must attach a hose, loading arm or other device in order to remove the product. In many facilities, there's no clear procedure for unloading (and possibly reloading) the products inside these various types of ISO containers. Open-top containers, often used to carry materials like coal or grain, should be loaded from the top or the end, while dry freight containers are front-loaded.

Without specific procedures, workers could risk serious injury or death when unloading the product.

A tank container, for example, is a cylinder mounted in a rectangular steel frame, and looks much like a tank car. It's typically used to transport liquid chemicals. Without a clear procedure, workers often assume they should unload it the same way as they would a tank truck, which isn't necessarily safe.

When unloading liquid from a tank container, workers may attach a hose to a spigot on the bottom of the tank, and open a valve. Depending on the operation, workers in hazmat suits may also be standing on top of the container, which carries risk of falling off the side or through a hole in the grating.

One company, for example, realized that when loading a certain type of container, the safety grating on their platform didn't cover the entire work area. While the handrails and other safety measures on the platform provided some protection from falling over the side of the container, they had a big hole in the platform, creating a serious safety hazard. When unloading an isotainer, a worker could slip between the tank and the container's frame and fall to the ground.



3) Lack Of Standard Safety Protocols

When working with ISO containers, companies must have internal safety protocols in place and ensure that workers are both aware of the protocols and following the correct procedures. Since ISO containers are considered rolling stock once they leave the dock, OSHA does not provide explicit safety standards. Your company must take a proactive approach to safety to remain in compliance with the General Duty Clause of the Occupational Safety and Health Act.

The General Duty Clause states that your company is responsible for being aware of best safety practices in your industry and how competitors are reacting to their own safety incidents. It also states that you **have an obligation to protect workers from serious or recognized safety hazards, even when no OSHA standard exists**. In other words, you're required to take reasonable or feasible actions to eliminate known hazards – or you could receive an OSHA citation.

Some facility managers may not be aware of **specialized equipment designed to protect employees during the loading and unloading process**. Without the necessary safety equipment, employees often use unsafe workarounds when unloading a tank car, increasing the risk of a citation or incident.

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With all the possible configurations and loading scenarios your workers could encounter when handling ISO containers, it's unlikely your existing loading platforms and other safety equipment have the flexibility to provide safe access in all situations.

Railings and safety platforms provide protection from some types of falls, but most loading platforms aren't able to prevent workers from falling through the isotainer. A better safety solution would be to install an elevating truck platform with flip-up panels that only expose the areas you need to access.

This type of elevating platform makes it possible for workers to easily and safely access multiple isotainers and hatches, with the flexibility to accommodate the wide variety of configurations found in today's ISO containers. Since the gangway may be raised and lowered to the optimal height for unloading, the platform reduces the risk of slip-and-fall accidents. By integrating flip-up floor panels, you're able to open the panels you need to provide complete access to hatches on an isotainer, while keeping the rest of the platform closed for walking.



Another option is to add an isotainer tread to your loading gangway. This gives your loading or unloading spot increased versatility, allowing you to safely access all of the vehicle types you currently use as well as isotainers and seatainers.

While safety is the prime consideration when finding a solution for accessing isotainers, choosing an elevating platform with flip-up panels may also improve efficiency, depending on your operation. One plant in Louisiana found they were able to load isotainers more quickly with the elevating platform, in part because they stored all of their tools on the platform itself. Integrating boxes and storage areas that attach to platform handrails could help employees avoid wasting time and effort when accessing an ISO container.



Conclusion

In today's global economy, your plant or facility is likely to see more and more raw materials and feedstock coming from overseas in isotainers and seatainers. While ISO containers do present some unique safety challenges, combining the right equipment with a proactive approach goes a long way in maintaining a safe, effective work environment.

Discover how the right safety equipment or fall prevention solution fits within your next workplace safety initiative. Contact Weighing Technologies, Inc. today or call us at 281.474.5277 to start your own safety success story.

About Weighing Technologies, Inc.

Weighing Technologies, Inc. opened our doors in 1995, and we have grown from a small company working with a few local customers, to a corporation supporting a vast industry along the Texas Gulf Coast Region. However, with all this growth, Weighing Technologies, Inc. has not lost sight of what brought us to where we are today. For more information, visit weigh-tech.com.