

Safe Shipment of Plastic Pellets in Containers

Reducing environmental risks from plastic pellet transportation.



What are Plastic Pellets?

“Plastic pellets mean a mass of pre-formed moulding material, having relatively uniform dimensions, used as feedstock in plastic product manufacturing operations. Plastic pellets are transported in various forms, including flakes, granules and powders, and can be referred to as resin or pellets”. They are also referred to as *Plastic Nurdles*. Derived primarily from petrochemicals, plastic nurdles are non-biodegradable and considered a major environmental concern.

Understanding the Risks of Plastic Pellets:

In recent years, several high-profile incidents have occurred, such as the *Trans Carrier* in 2020 and the *X-Press Pearl* in 2021, where containers have fallen overboard from container ships and resulted in the release of plastic pellets into seas and oceans with subsequent harm to the marine environment.

While the carriage of plastic pellets in shipping containers is a secure means of shipment, the environmental concern arises when these containers are lost overboard. Once plastic pellets are released, their physical properties of being small and light allow them to travel extensive distances from the initial release location. These incidents have given rise to concerns within the shipping industry about not only the risks plastic pellets pose to marine ecosystems, but also about the resulting multi-million-dollar clean-up and recovery operations, which can span many months or even years. These costs include shoreline recovery, wildlife rehabilitation and long-term monitoring, and achieving complete recovery is often impossible.

The inclusion of plastic nurdles in the IMDG Code is being considered in part due to the escalating cost of recovery, because mandatory packaging, labelling, and stowage requirements are considered essential in reducing the frequency and severity of such incidents.

IMO Guidance and Regulatory Developments:

Shipping operations are inherently unpredictable and involve many stakeholders within the supply chain, all of which increases the likelihood of errors. While best practices aim to mitigate against the known risks, incidents can occur due to various causation factors. Where an incident results in containers carrying plastic pellets being lost overboard, spillage into the sea is likely, either because the containers sustain damage or because packaging integrity has been compromised through damage or by seawater.

Pending the adoption of future mandatory measures for the carriage of plastic pellets in freight containers, the International Maritime Organisation (IMO) has published ([MEPC.1/Circ.909 - Recommendations for the Carriage of Plastic Pellets by Sea in Freight Containers](#)) on packaging, cargo information and stowage of plastic pellets in freight containers to avoid marine environmental damage. Whilst these IMO guidelines are voluntary and aim to reduce the likelihood of plastic pellets spillage the Club would recommend its members abide by these international Recommendations.

General Causation:

There are various factors that could contribute to the loss of containers from ships, resulting in marine environmental damage caused by plastic pellets. These factors may include –

Risks Linked to Shore-Based Handling

- The use of damaged or weakened containers for shipment can result in structural collapse and trigger the failure of entire stacks and adjacent stacks.
- Inadequate or damaged packaging of plastic pellet shipments.
- Cargo within containers is not properly secured, causing cargo to shift and potential container damage.

Stowage Planning Errors

- Heavy containers stowed on top of lighter ones.
- Exceeding stack height limits, particularly with high-cube containers.
- Exceeding stack weight limits.

Securing Failures

- Non-compliance with the Cargo Securing Manual (CSM).
- Ineffective lashing management during the voyage.
- Failures of fixed and portable securing equipment (ISO sockets, lashing pad eyes, twistlocks, lashing rods).

Voyage Factors

- Parametric rolling, an unstable phenomenon that can quickly generate large roll angles coupled with significant pitch and yaw motions.
- Synchronous rolling, which occurs when large rolling motions may be induced because the natural rolling period of a ship coincides with the encounter wave period.
- Poor voyage planning.
- Adverse weather conditions.

Mechanical Failures

- Machinery or propulsion failures leaving the vessel adrift and exposed to heavy seas.
- Consequential excessive rolling beyond safe limits, putting extreme loads on container stacks and lashing equipment.

All the above could result in the collapse of container stacks with loss of containers, including container carrying plastic pellets, potentially resulting in marine environmental damage.

General Recommendations:

Carriers and shippers should be aware that failure to comply with best practices and emerging regulations may result not only in environmental harm but also in significant financial exposure and reputational risk. The Club recommends Members consider the following measures to mitigate the loss of containers at sea, which could result in significant damage to the marine environment from plastic pellet spillage.

Shore-Based Training and Awareness

Ensure that all shore-based personnel involved in packing, stowage planning and loading plastic pellets containers are fully aware of the environmental risks associated with pellet spillage and understand the procedures required to prevent spillage.

Proper training and clear instructions should be provided so that everyone involved in the shipment knows their responsibilities and can take the necessary measures to minimise the likelihood of incidents. Member expectations in regard to the packaging, loading and securing of cargo within containers should, where possible, be brought to the attention of relevant parties, including shippers and suppliers.

Packaging and Containment

The packaging utilised for plastic pellets should be “strong enough” to withstand the shocks and loads normally encountered during shipping of containers and should ideally maintain its integrity in the event of these packages floating free from lost containers.

Securing Arrangement within Containers

Plastic pellet packages inside the container should be secured adequately to ensure they do not move or shift during adverse sea conditions.

Cargo Information

Shipping documentation must clearly identify containers carrying plastic pellets, in addition to the cargo details required under SOLAS Regulation VI/2. This includes providing the Verified Gross Mass (VGM) for all containers to prevent weight misdeclaration and ensure accurate stowage planning.

Stowage Planning

The shipper must provide complete cargo information, including any special stowage requirements. Containers carrying plastic pellets should be properly planned, stowed and secured to minimise risks to the marine environment without compromising the safety of the ship and those on board. Wherever reasonably practicable, these containers should be stowed under deck or alternatively, inboard within sheltered areas of exposed decks. Heavier containers must not be placed over lighter ones, stack height and weight limits must not be exceeded and the vessel's overall stability should be carefully assessed for the entire voyage.

Labelling and Documentation

All shipping documents and booking systems should explicitly indicate that the containers contain plastic pellets. This ensures that appropriate stowage arrangements can be planned and implemented effectively.

Cargo Securing Before Departure

Containers must be secured in accordance with the approved Cargo Securing Manual (CSM). Weather routing should be reviewed and evaluated to minimise exposure to extreme conditions.

Crew Awareness and Training

Masters and navigating officers should be trained to recognise signs of parametric and synchronous rolling. They must also be prepared to adjust course and/or speed when necessary to maintain safety.

Monitoring During Voyage

Lashing arrangements should be inspected regularly and tightened as required throughout the voyage. The passage plan should be reviewed daily and adjusted in line with the latest weather reports.

Maintenance of Securing Equipment

Container sockets and lashing pad eyes should be maintained as part of the ship's planned maintenance regime. When the thickness of container sockets and lashing pad eyes falls below the required limit, they must be replaced or clearly marked as “Not to be used.” Defective portable lashing equipment should be removed from the vessel or segregated to prevent accidental use.

Operational Precautions

Carriers, terminals and shippers are encouraged to follow the IMO guidelines to minimise the likelihood of damage, mis-declaration or improper handling.

Implementing the above measures and good seamanship practices will significantly reduce the likelihood of containers carrying plastic pellets going overboard and help mitigate associated environmental risks.

Recent Regulatory Developments (April 2026):

In April 2026, the Directorate General of Shipping (DGS), India, introduced national requirements for the carriage of plastic pellets in freight containers, incorporating and expanding upon the recommendations contained in IMO MEPC.1/Circ.909.

The [DGS Circular No. 19 of 2026](#) establishes mandatory measures for the carriage of plastic pellets, including a prohibition on the stowage of containers carrying such cargo on deck and enhanced packaging standards equivalent to those applicable to packaged dangerous goods under the IMDG Code. Compliance with these requirements will be verified through Port State Control and Flag State inspections.

Members involved in the shipment, carriage or handling of plastic pellets on voyages calling at Indian ports or transiting Indian coastal waters should ensure that their operations comply with the Circular and any other applicable international, national and local regulatory requirements.

Looking Ahead:

The IMO continues to collect feedback on the application of MEPC.1/Circ.909 and is working towards developing mandatory global requirements under MARPOL Annex III and the IMDG Code. The objective is to ensure that all parties involved in the supply chain are aligned in taking effective steps to prevent plastic pellets loss and in protecting the marine environment.

Resources:

[IMO MEPC.1/Circ.909 - Recommendations for the Carriage of Plastic Pellets by Sea in Freight Containers](#)
[Directorate General of Shipping \(DGS\), India - DGS Circular 19 of 2026](#)

Supportive Information:

For further information on this or other Loss Prevention topics please contact the Loss Prevention Department, Steamship Insurance Management Services Ltd.

Tel: +44 20 7247 5490 Email: loss.prevention@simsl.com

Revision Note (July 2026), this Risk Alert has been updated to include regulatory developments in India and should read alongside applicable national requirements where relevant.

The information contained in this publication is provided for general informational and guidance purposes only and does not constitute legal or professional advice. While every effort has been made to ensure the accuracy and reliability of the content at the time of publication, no guarantee is given that the information is complete, current or applicable to all circumstances.