

Maize (Corn) Guideline:

Maize (corn) is among the most widely cultivated crops worldwide. This versatile cereal is one of the grain cargoes most frequently carried by sea, typically in bulk aboard general and bulk carriers. Brazil, particularly via the Port of Paranaguá, is a key global player in this trade.

Problems with maize cargoes often originate before loading commences, including missing or inaccurate shippers' cargo declarations, cargo holds or hatch covers failing pre-shipment inspections due to inadequate cleanliness, or unsuccessful hose or ultrasonic weathertightness tests performed by charterers or cargo interests.

As with any grain that has not undergone mechanical or chemical processing and is transported in large bulk volumes, maize is susceptible to biological deterioration when exposed to elevated moisture content and temperature.

Corn, which is "dry for shipment," may be kept for up to 12 months or longer. If the critical water content (approx. 13 - 14%) is exceeded, mold growth occurs. Corn with excessive moisture content has a sour odor.

Favorable travel temperature range: no lower limit -20°C. Molds reach optimum activity at temperatures of between 20 and 30°C. In addition, at temperatures >25°C, metabolic processes increase, leading to increased CO₂ production and self-heating of the corn. If the cargo is transported in a hot, moist storage climate, there is a risk of premature germination. Maximum temperatures of 30°C are admissible for short periods.

Ventilation of cereals depends on water content: goods with a water content of <14% and equilibrium moisture contents of <70% do not need to be ventilated. Up to a water content of 15%, surface ventilation is recommended, in order to dissipate CO₂, heat, and moisture.

Simultaneously, it is essential to monitor that the surfaces are not excessively cooled, thereby preventing the development of damp boundary layers beneath the cargo surface.

Given maize's sensitivity and the risk of cargo damage or shortage, shipowners and charterers are well advised to appoint trusted local surveyors to assist the Master and crew before, during and after loading operations.

It is important to note that an investment of BRL 3.48 billion has been confirmed for the construction of a corn ethanol biorefinery in Mato Grosso, Brazil. Accordingly, it is expected that in the future ethanol exports will increase, likely replacing the export of raw corn.

Maize Loading Operation at the Paranagua Port:



Photo by Claudio Neves/ Portos do Parana

There are several preventive measures that Shipowners and Masters can adopt to mitigate the risks of cargo loss. It is recommended that the vessel's crew:

1. Prepare the hold for grain-ready.
2. Be aware of the temperature of the cargo and its limits.
3. Take care of the ventilation.
4. Comply with the statutory documentation and contractual specifications.
5. Keep ongoing visual inspection of the cargo during loading.