JAPAN P&I CLUB
日本船主責任相互保険組合

No.1235
5 September 2023

JAPAN P&I NEWS

To the Members

China－Suggested Measures in Preventing Off-spec Claims of MEG cargo due to excessive aldehyde content

Recently a number of vessels which were loaded with MEG (Mono Ethylene Glycol) cargo from Houston and Point Comfort ports of U.S. encountered off-spec claims in respect of aldehydes content at discharging ports in China.

Aldehydes and acetals are by-products of MEG cargo generated during the production process; however, they may be difficult to be removed completely before loading due to instability in the production process or failure in process control. Because aldehydes and/or acetals are usually not evenly distributed in the load port shore tank, it is not uncommon that samples taken from the same cargo tank at different time give different test results. Moreover, after being loaded on board, acetals would gradually convert into aldehydes during the voyage due to its unstable nature, which results in off-specification of aldehydes content upon arrival at discharging port.

We have obtained information and suggestions to ship owners by Oasis P&I Services Company Limited. For details, please find attached their circular.

Yours faithfully,

The Japan Ship Owners' Mutual Protection & Indemnity Association

Attachment: Oasis Circular No.2307

24 hour duty phone: +86 150 1080 6478
email: oasis@oasispandi.com
www.oasispandi.com
Shanghai Dalian Tianjin Beijing Qingdao
Guangzhou Xiamen Ningbo Hongkong

Date: 31 August 2023

Oasis Circular No.:2307

Subject: Suggested measures in preventing off-spec claims of MEG (Mono Ethylene Glycol) cargo due to excessive aldehyde content

Recently a number of vessels which were loaded with MEG cargo from Houston and Point Comfort ports of U.S. encountered off-spec claims in respect of aldehydes content at discharging ports in China. Based on our experiences, we have prepared this circular for the reference of owners who carry this type of cargo.

Main cause of off-spec claims of MEG cargo

Aldehydes (e.g. formaldehyde and acetaldehyde) and acetals are by-products of MEG cargo generated during the production process. However, they may be difficult to be removed completely before loading due to instability in the production process or failure in process control.

Besides, usually aldehydes and/or acetals are not evenly distributed in the load port shore tank due to low osmotic pressure caused by their low concentration and large capacity of ship's tanks/shore tanks, among others. It is not uncommon that samples taken from the same cargo tank at different time give different test results and the MEG cargo which was tested off-spec in cargo tanks is subsequently tested on-spec in shore tanks after discharge.

Two typical off-spec scenarios and how they developed

1. One typical scenario is that only aldehydes are produced during the cargo production process. Samples passed the test before loading but cargo turn out to be off-spec at the discharging port.

As aldehydes are not distributed evenly in the shore tank, the cargo surveyor could have taken samples of sound cargo from shore storage tank by chance. The cargo

would then be loaded onboard after passing the sample test, which indicates the cargo being loaded is sound cargo.

During a long voyage, the cargo would experience rolling and pitching in the cargo tanks and aldehydes would be distributed more evenly during this period, so that samples taken at discharging port may fail in passing the test due to off-spec of aldehydes content.

2. Another typical scenario is that aldehydes have been completely removed before loading on board, but could still be found at discharging port and cargo turn out to be off-spec.

Aldehydes and acetals can be simultaneously produced during the production of MEG. Acetals are a sort of relatively unstable chemical substance with tendency to convert into aldehydes if hydrolysis condition is satisfied.

The test method “ASTM E 2313” is commonly used by manufacturer in determining aldehydes content in MEG cargo. However, it could not detect acetals content. If aldehydes are detected, it would be completely removed by way of “de-aldehyde resin” before shipment by manufacturer, but acetals cannot be removed in the same way.

After being loaded on board, acetals would gradually convert into aldehydes during the voyage due to its unstable nature, which results in off-specification of aldehydes content upon arrival at discharging port.

Suggestions to ship owners

1. Given the above, apart from shore tank samples (usually running samples) delivered by the cargo surveyor at load port, we suggest additional separate samples are taken jointly with the shipper’s appointed surveyor from upper, middle, and lower levels of shore tanks before commencement of loading operation. This would more accurately reflect the actual condition of the cargo to be loaded.

2. In addition to the routine cargo samples drawn at the ship’s manifold at the beginning of loading operation, additional samples are suggested to be drawn from ship’s manifold at intervals of 0.5 -1 hour throughout the whole loading process. The sampling time shall be accurately tagged on each sample by an independent surveyor.

3. If there is any doubt about the condition of the cargo, please consult an experienced chemist as soon as possible.

We hope the above is of assistance. If there is any query, please feel free to contact us at oasis@oasispandi.com any time.

Best regards,

Oasis P&I Services Company Limited