

Venepandi's Circular - 020 – Increasing Ignition during loading of petcoke at the port of Amuay

We've recently noticed that the number of cases of ignition of petcoke on board at the port of Amuay has increased with the subsequent risk to the safety on board.

Petcoke (which stands for petroleum coke) is a byproduct of the oil refinery coking process that produces low-cost fuel, often with a high sulphur content. Petcoke may also be known as green delayed coke, sponge coke, needle coke, delayed coke or raw coke-fuel grade.

Petcoke is over 90 percent carbon and emits 5 to 10% more carbon dioxide (CO₂) than coal on a per-unit-of-energy basis when it is burned. As petcoke has a higher energy content, petcoke emits between 30 and 80 percent more CO₂ than coal per unit of weight. The differences between Coal and Coke in CO₂ production per unit energy produced are small and depend upon the moisture in the coal (increases the CO₂ per unit energy -- Heat of combustion) and volatile hydrocarbon in coal and coke (decrease the CO₂ per unit energy). This means that the product has selfheating hazards and should be treated properly before loading, when on board and during shipment.

Typical petroleum coke characteristics:
Total Moisture (as received basis) 8 to 13%
Ash (dry basis) 0.15 to 4.5%
Volatile Matter (dry basis) 8.0 to 13.5%
Sulfur (dry basis) 5.7 to 6.8%
HGI (dry basis) 42 to 60
Btu/lb (dry basis) 14,500 to 15,500

In Venezuela these cargoes can be found at the port of Jose (see our circular 007) and the port of Amuay. We've recently noticed that matter if self heating and ignition have taken place during loading of cargo and with the cargo already on board.

As a general advice, when the cargo is loaded in a cargo space over a tank containing fuel or other material having a flashpoint under 93 degree C, the cargo having a temperature of 59 degree C or higher shall not be loaded in the cargo space, unless part of the cargo having a temperature 44 degree C or lower is loaded

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in lawyer of at least 0.6 m thickness throughout the cargo space prior to load the cargo having a temperature of 59 degree C or higher.

When the cargo having a temperature of 55 degree C or higher is loaded in accordance with the above requirement and thickness of the layer of the cargo to be loaded is bigger than 1.5 m the cargo shall first be loaded within a layer, the thickness of which is between 0.6 m and 1.0 m.

In order to reduce the cargo temperature, the terminal may use water to wash the cargo but the Vessel must be aware of the MARPOL regulations on pollution regarding this topic. All actions to reduce the cargo temperature before and during loading must be addressed to the terminal.

Cargo hold ventilation is also advised with favourable weather, in case there's raining, the cargo holds should be close. In case the crew notices that the cargo temperature exceeds 60 degrees C, they should contact their P&I correspondent immediately so proper actions may be taken to reduce fire risk on board.

According to the IMSBC code, this cargo is non-combustible or has a low fire-risk, however, the codes defines it as MHB (Materials hazardous only in bulk). For which a close monitoring of the cargo must be kept during loading, loading survey for petcoke is advised as well.

Should you have any question about this or any other matter, please don't hesitate on contacting us. In case you choose to share this information, please don't forget to credit our company.

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