

Annex B (informative)

Composition of marine fuels — ISO 8217:2017, Clause 5 and Annex B

ISO 8217:2017, Clauses 1 and 5, which is a general requirement directed to suppliers, are applicable to all marine fuels delivered in accordance with ISO 8217. Thereafter ISO 8217:2017, Table 1 or Table 2, as relevant, set down a number of category specific limits.

Marine fuels consist of a wide range of hydrocarbons from sources such as petroleum crude oil, synthetic or renewable sources, shale and tar sands, and potentially Fatty Acid Methyl Ester (FAME). The marine fuels standard is largely based on parameters related to operational performance/experience rather than a compositional standard.

In some cases, marine fuels that have met the ISO 8217:2017, Table 1 or Table 2 requirements have later gone on to cause operational problems despite the efforts of the ship to appropriately manage the fuel by applying best industry practices. At this point, after all appropriate operational procedures carried out have been confirmed, it could come into question as to whether the fuel contains deleterious materials and whether it has failed to meet the requirements of ISO 8217:2017, Clause 5. While these instances are infrequent, damage and loss of power and propulsion may occur.

In view of the above, advanced analytical investigative test methods are very often carried out on the fuel to determine if there is any anomaly in the composition of the fuel such as the presence of deleterious material, that could point to the cause of the problem, thus pointing to the failure of the fuel meeting [Clause 5](#) general requirements.

It remains however difficult to break down the exact composition of a marine fuel and for most fuels supplied, this is neither needed nor feasible. It is however acknowledged that the ongoing advances in analytical techniques have made it possible to detect chemical species which could not be identified in the past. While there have been improvements in the capability to detect an increasing range of chemical species, it remains unknown if these species have been present previously in marine fuels and were consumed by vessels without operational issues or that they do warrant further consideration in the context of the investigation.

ASTM D 7845^[10] is the often referred to standardised test method to identify individual components within a marine fuel. This test method offers a limited number of components where some are found within fuels on a regular basis without causing any operational difficulties. The test methods applied to detect components falling outside the scope of ASTM D 7845 are very often proprietary non-standardised and in-house test methods, generally used for investigative purposes. As such, results from one independent laboratory may not always be possible to reliably be compared to results obtained by another independent laboratory.

Best efforts are made to establish links between identified species and reported operational performance issues. However, even when incidents have occurred, sufficient data was generally not available to evaluate the effects of any one specific chemical species and/or combinations thereof.

This is further complicated when coming to consider the specific concentrations of the species detected and to be able to predict their possible impact on the variety of marine machinery systems in service, on personnel and/or on the environment. As such, it is currently very difficult to predict the potential behaviour of a fuel and whether it meets ISO 8217:2017, Clauses 1 and 5, solely based on the presence of what may be perceived as deleterious materials. If the presence of a chemical species at a concentration is recognized to have caused such operational problems, the fuel oil is deemed to have not met ISO 8217:2017, Clauses 1 and 5.

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In cases where a ship suspects the specific fuel in use on board is the possible cause of the operational problems, applicable evidence should be gathered to support further investigation. Such evidence includes but is not limited to logging the case in detail, collecting further in-use fuel system samples, documenting the evidence leading up to, during and after the operational problems were experienced as well as any mitigating actions taken.

Fuel producers, suppliers, traders, fuel terminals and supply facilities should have in place adequate quality control procedures to ensure that the blend stocks used for formulating the 0,50 mass % S fuels are suitable for the use on board ship and that the fuel meets the requirements of ISO 8217:2017, 5.2, at the point of custody transfer.