

FAQs on VLSFOs

- Q1.** VLSFOs will be Blended Fuels, is **this big concern to the end user?**
- A1.** **Almost all** marine fuels (except distillates) are blends, nothing new to this respect; it is just that the blend recipe needs to change to meet the lower Sulphur limit.
- Q2.** ISO PAS 23263 and CIMAC Guideline on Stability and Compatibility state that fuel blend formulations are expected to vary widely across the regions. Due to the expected higher variety in fuels composition post 2020, the risks for incompatibility between fuels might increase. **Which is the recommended mixing ratio when performing a compatibility test?**
- A2.** Two fuels may be compatible at some mixing ratios and incompatible at other mixing ratios – or they can be compatible or incompatible over the entire mixing ratio. **Thus, it is recommended to perform the compatibility testing at the intended mixing ratio.**
- Q3.** The spot test (ASTM D4740) is a stability and compatibility test that has been heavily utilized as a practical solution throughout the years onboard the vessels. **Is this still a reliable test for VLSFOs?**
- A3.** The spot test is still a reliable test when properly performed and interpreted. The only limitation is with paraffinic fuels where **it may result in a false negative interpretation**, i.e. indicate that the fuels are incompatible although they are actually compatible. If a properly performed and interpreted result is either a No. 1 or No.2, then the fuel is considered to be compatible at the specific blend ratio.
- Q4.** In ISO PAS 2326 and in the Concave report three additional test methods for compatibility are mentioned namely ASTM D7157, D7112 and D7060. However, there are fuel quality testing agencies recommending more testing options such as the **Turbiscan reserve stability number (RSN).**
- A4.** RSN as a method is neither accepted by ISO 8217 nor CIMAC. **In its current form is not suitable** for determining fuel oil stability reserve and may erroneously classify stable fuels as unstable or vice-versa.
- Q5.** Is there a need for **enlarging the routine test slate** when testing VLSFOs?
- A5.** Our intention is to educate and not to scare the industry into buying expensive tests that may not be required. **Testing should be basis ISO 8217:2017 and any additional**

testing should be done on an as needed basis only. Note that VeriFuel has extensively tested all new VLSFOs – using standardized test methods - in order to gain a better understanding to the benefit of our customers. Amongst these methods are: SARA IP 469 (composition of fuels), P- Value ASTM D7060 (stability & compatibility), WAT (Wax appearance temperature IP389), Phase transition temp (DSR) etc.

- Q6. Lately a new in house test method for WAT** (Wax appearance temperature) is recommended by a fuel quality testing agency.
- A6. Again, expensive tests should be performed only when required.** The circular is inconsistent. On one hand it (rightly) points out that you cannot measure the Cloud Point (CP) in residual fuels or VLSFOs due to the opacity of these fuels. Next, the circular claims that the new test method, which allegedly should be able to determine the wax appearance temperature for opaque fuels have been validated by use of the CP test... but you cannot test CP on opaque fuels. On top of that, the circular states that wax problems occur above the PP and CFPP. This is not correct, Wax crystals start to form at the CP – they do not necessarily cause problems at temperatures above CFPP. The CP can be significantly above PP and/or CFPP; however, it is the worst case scenario. When you cool the fuel from CP towards CFPP and PP, more and more wax crystals will form. It is however recognized in the industry that although CP is the worst case scenario, it is too strict a parameter and CFPP provides a better indication of the actual risk of filter blocking. CFPP is a performance test developed to evaluate the risk of filter blocking due to wax for the automotive industry and it also applies to the marine industry.
- Q7.** What are the **practical experiences** so far in using VLSFOs?
- A7.** As expected, VLSFOs will have some **initial teething issues** till fuel suppliers fine tune their productions. So far we have seen some **unstable fuels. Overall, the main observation is a confirmation of the expectations: The VLSFO quality differs from port to port and from supplier to supplier and sometimes from batch to batch.**
- Q8.** Any VLSFOs **advantages** over the HSFOS?
- A8. Higher specific energy** in the range of 2-3%, better ignition and combustion properties where paraffinic fuels are involved and relatively easier removal of catalytic fines due to lower density and viscosity values.
- Q9.** What is the **recommended action** if a ship received compliant fuel oil as per BDN but subsequently received a fuel test report indicating non-compliance?
- A9. Ship should issue a notification** to Flag State / Bunker Port Authority / Authority of the relevant Port of Destination / Supplier stating that

“The representative fuel sample as taken by the vessel and tested by Bureau Veritas VeriFuel indicates that the sulphur content in the fuel is ...% m/m or ...% m/m (for ECAs) and above the declared sulphur content on the bunker delivery note”.

Q10. General recommendations when using VLSFOs?

A10. Following should be highlighted:

- Pay attention to optimum fuel management: Huge variations in viscosity, density and cold flow properties mandating possibly different temperature management batch to batch
- Segregating each fuel by avoid mixing, unless compatibility is checked by VeriFuel
- If possible, do not burn the fuel until the analysis is available
- Study Certificate of Quality (CoQ) carefully before bunker operation. Key message: *Know your fuel*
- Do not be afraid to report immediately any irregularities.