IMO 2020 and Alternative Fuels Symposium

IMO 2020 from a fuel's specification perspective

ISO/PAS 23263:2019

London, 17-18 October 2019

Presented by ISO/ TC28/ SC4/ WG6 Convenor
Monique Vermeire

ISO/PAS 23263:2019

- **Petroleum products — Fuels (class F) — Considerations for fuel suppliers and users regarding marine fuel quality in view of the implementation of maximum 0,50 % sulfur in 2020**

  - Interim solution to respond to an urgent market need: addresses technical considerations that might apply to 0,50 % S max. marine fuels
  - Publication: September 2019

Contents

ISO/PAS 23263:2019

General considerations for 0,50% S marine fuels

Considerations that apply to **ALL 0,50% S max fuels**

- Regulatory requirements: sulphur and flash point
  - Supplier's responsibility to deliver fuel that meets sulphur and flash point requirement
- Application of ISO 8217:2017
  - ISO/PAS23263:2019 to be used in conjunction with ISO 8217:2017 but can also be used with earlier editions
- Fuel purchasers shall continue to order fuel as they did before 1 January 2020
- **NO NEW SPECIFICATIONS / NO NEW TABLES**

ISO/PAS 23263:2019

Specific considerations for 0,50% S marine fuels

Addresses considerations that may apply to **particular 0,50 mass % S fuels**

Included in ISO 8217

- Kinematic viscosity
- Cold flow properties: Cloud point, CFPP, PP
- Stability: total sediment aged of 0,10 % m/m max.
- CCAI
- Catalyst fines

Concern on potential incompatibility of fuels:

- Suppliers can not guarantee compatibility without testing
- CONCAWE sponsored ISO/TC 28/SC 4/WG6 study to evaluate testing methodologies to obtain indication of degree of compatibility between marine fuels without having to mix the fuels

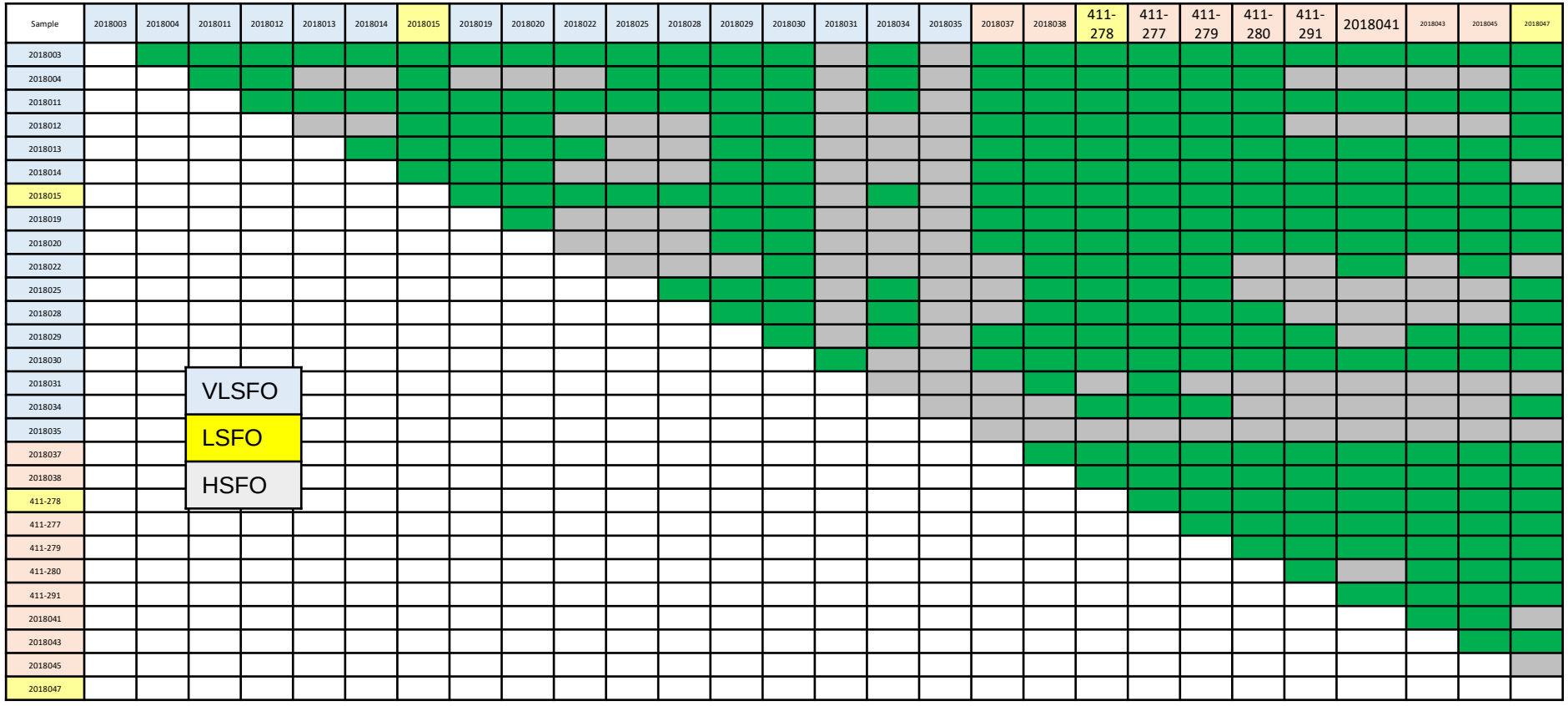
ISO/CONCAWE study

- Test program conducted on a limited fuel set (52 samples, including 27 VLSFO)
- All samples (ULSFO, VLSFO, LSFO, HSFO) tested according to ISO 8217
- 3 Additional test methods (ASTM D7157, D7112, D7060) evaluated:
  - Measurement of parameters related to:
    - Ability of fuel oil matrix to maintain asphaltenes dispersed
    - Capacity of the asphaltenes to remain dispersed
  - Parameters of the individual fuels to be commingled can be used to obtain indication on degree of compatibility of the fuels

ISO/CONCAWE study

Example compatibility prediction model:

- Green shaded cells: compatible over the entire 0-100 % commingling range
- Grey shaded cells: compatible at specific commingling ratio



ISO/CONCAWE study
Conclusion

- Prediction methodologies predict 65-69% of all possible fuel combinations to give stable blends whatever the mixing ratio is
  - ±50% of the possible fuel combinations that are predicted to be always stable whatever the mixing ratio is, are common for all 3 test methods
- Prediction methodology can only be applied to fuels that have been tested with the same test method
- Recommendation to use TSP (Potential Total Sediment) to guarantee total sediment aged of a fuel meets specification of 0,10 % mass max.

ISO/CONCAWE study
Conclusion

Test methods that can be applied for stability/ compatibility evaluation

Test method	Reference	Applicability		
		Stability	Compatibility= stability of mixture	Prediction of compatibility without testing
Total sediment (TSE, TSP, TSA)	ISO 10307	✓	✓	x
Spot test[1]	ASTM D4740	✓	✓	x
S-value	ASTM D7157	✓	✓	✓
P-value	ASTM D7112	✓	✓	✓
P-ratio	ASTM D7060	✓	✓	✓

[1] Waxier asphaltenes-free products can incorrectly give high spot rating

Additional documents *(to be published soon)*

- CONCAWE – Report on the study to evaluate test methods to assess the stability and compatibility of marine fuels in view of the IMO MARPOL Annex VI Regulation 14.1.3 for 2020 Sulphur requirements
- CIMAC Guideline, General guidance in marine fuel handling in connection to stability and compatibility (01/2019)

Thank you

www.ISO.org