

AMENDMENT NO. 4 NOVEMBER 2022
TO
IS 1571 : 2018 AVIATION TURBINE FUELS, KEROSENE TYPE, JET-A-1 —
SPECIFICATION
(Tenth Revision)

(Page 2, clause 3.2.1) — Substitute the following for the existing:

3.2.1 Antioxidants

An approved antioxidant or mixture of antioxidants shall be added to a fuel (or a fuel component) which has been severely hydro processed to prevent peroxidation and gum formation. The total concentration of active material(s) in the final batch shall not exceed 24.0 mg/l (defence requirements 17 to 24 mg/l for severely hydro processed component in fuel).

The point of anti-oxidant addition shall be before or during release from the manufacturing site. The total concentration of active material(s) in fuel shall not be exceed 24.0 mg/l (Defence requirements 17 to 24 mg/l for severely hydro processed component in fuel). Where a finished fuel comprises a blend of severely hydro processed, hydroprocessed and non-hydroprocessed components, the requirements for mandatory addition of antioxidant applies only to that portion of the blend which has been severely hydro processed. In such cases the proportion of the blend which has been severely hydro processed, shall be reported

NOTE — If fuel is certified before the addition of antioxidant, the certificate of quality should be annotated thus, Product meets the requirements of IS 1571, except for antioxidant, which will be added prior to product leaving the manufacturing location.

For fuel (fuel component) which has not been severely hydroprocessed such addition is optional. However, the total concentration shall not exceed 24.0 mg/l and shall be reported on the certificate of quality.

The concentration of antioxidant added to the fuel shall be reported as follows:

- a) Report the anti-oxidant concentration as a total active material in the final batched fuel in refinery certificate of quality. Same shall not exceed 24.0 mg/l.
- b) In case of defense supply, additionally, report the total antioxidant addition as an equivalent concentration of active material in the proportion of the final batched fuel that comprises severely hydro processed and/or synthetic blend components on the certificate of quality.

NOTE — If the antioxidant is added during ship loading the reporting requirements shall be the same as those in 1 and 2 above.

If anti-oxidant is added to the fuel report the anti-oxidant concentration as a total active material in the final batched fuel. To account for residual tank heel concentrations of anti-oxidant, where new batches do not contain anti-oxidant, it is not required to report the concentration of active material in the final batch once the calculated dosage is <0.5 mg/l.

If anti-oxidant is added post manufacture, report the total active material concentration in the final batched fuel on the Certificate of Analysis.

NOTE — Antioxidants are mandatory for synthetic blend components and shall be added prior to or during release from the designated manufacturing site of the ASTM D7566/IS 17081 component.

Price Group 2

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The following are the approved antioxidants:

<i>Sl No.</i>	<i>Formulation</i>	<i>Qualification Reference</i>
i)	2,6-ditertiary-butyl-phenol	RDE/A/606
ii)	2,6 ditertiary-butyl-4-methyl-phenol	RDE/A/607
iii)	2,4-dimethyl-6-tertiary-butyl-phenol	RDE/A/608
iv)	75 percent minimum, 2,6-ditertiary-butyl-phenol 25 percent maximum, tertiary and tritertiary-butyl-phenols	RDE/A/609
v)	55 percent minimum, 2,4-dimethyl-6-tertiary-butyl-phenol 15 percent minimum, 4 methyl-2,6-ditertiary-butyl-phenol Remainder, 30 percent maximum, as a mixture of monomethyl and dimethyl-tertiary-butyl-phenols	RDE/A/610
vi)	72 percent minimum, 2,4-dimethyl-6-tertiary-butyl-phenol 28 percent maximum, mixture of tertiary-butyl-methylphenols and tertiary-butyl dimethyl phenols	RDE/A/611

(Page 3, clause 3.2.4.2, Table, row 5 and 6) — Delete.

[Page 5, Table 1, Sl No. (ii), (f), (2)] — Delete.

[Page 6, Table 1, Note 3, line 2 (see also Amendment No. 3)] — Substitute ‘ISO 4406:2021’ for ISO 4406:1999’.

(Page 6, Table 1, Note 3, line 3 (see also Amendment No. 3)] — Substitute ‘Appendix X2’ for ‘Annex A2’.

(Page 6, Table 1, Note 3, line 5 (see also Amendment No. 3)] — Substitute ‘Annex’ for ‘Annex B’.

(Page 7, Note 8) — Substitute the following for the existing:

‘8 Refinery components used in the make-up of the batch shall be reported on the refinery certificate of quality as a percentage by volume of the total fuel in the batch. Severely hydroprocessed components are defined as those petroleum derived hydrocarbons that have been subjected to a hydrogen partial pressure of greater than 7 000 kPa (70 bar or 1015 psi) during manufacture.’

(Page 7, Note 13, Line 1) — Insert the following new para before line 1:

‘13 Heater tubes other than those supplied by the original equipment manufacturer (OEM) shall not be used. Technically suitable heater tubes are (a) PAC-Alcor, or (b) Falex.’

(Page 15, Annex G) — Substitute the following Annex for the existing:

‘ANNEX G
(Foreword)

ALTERNATE TEST METHODS

	<i>Characteristic</i>	<i>Alternate Method of Test</i>
i)	Appearance	ASTM D4176 Procedure 1, ASTM D6986 Procedure A, Section 8.1.1.1
ii)	Total sulphur	ISO 4260, ISO 14596, ASTM D1266, ASTM D1552, ASTM D2622, ASTM D5453, IP 107, IP 373, IP 447, IP 336, ISO 20846, ISO 20884
iii)	Flash point	ASTM D56 (Note 3), IP 523, ASTM D3828
iv)	Density at 15°C	ISO 12185, ASTM D1298, IP365, ISO 3675, IS 1448 (Part 167)
v)	Freezing point	IP 435/ASTM D5972, IP 528, IP 529/ASTM D7153, ASTM D7154, IP16
vi)	Specific energy	ASTM D4809, IP 12, IP 355
vii)	Distillation	ASTM D7345 (see Note 1), ISO 3405
viii)	Kinematic viscosity	ASTM D7042 (see Note 2), ISO 3104, IS 1448 (Part 186)

ix)	Smoke point	ASTM D1322, ISO 3014
x)	Cu strip corrosion	ISO 2160
xi)	JFTOT	ISO 6249
xii)	FAME	IP 583, ASTM D7797, IP 599
xiii)	Aromatics	ASTM D8267

NOTES

1 Results from Test Method ASTM D7345 shall be corrected for relative bias as described in Test Method ASTM D7345.

2 Test Method ASTM D7042 results shall be converted to bias-corrected kinematic viscosity results by the application of the correction described in Test Method ASTM D7042 for jet fuel at – 20°C as described in the precision and bias section

3 A joint Energy Institute and ASTM International study of results from alternative flash point methods to IP 170 was published in 2019 and showed that the results obtained are comparable within the precision statement for the methods. EI report reference is ILS2019_MMS_1.'

(PCD 03)

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