

EI 1590 – microfilters

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**Introduction
to the
specification**

**Key
parameters
of the scope**

**Overview of
qualification tests
- laboratory
performance
assessment**

**Issues for
users to
consider**

- **First edition published by The Institute of Petroleum in 1999**
- **Third edition published by the EI in September 2014**
- **Fourth edition due to be published shortly**

EI 1590

Specifications and qualification procedures for aviation fuel microfilters

**Third edition
September 2014**

EI 1590 – microfilters - Scope

- Intended to remove particulate matter in both avgas and jet fuel above airport and for avgas on airport
- Provides protection for downstream filter components
- Outside-to-in flow format
- Elements nominally rated as 1.0, 2.0, 3.0, 5.0 and 10.0 μm
- 22 psi maximum differential pressure

EI 1590

Specifications and qualification procedures for aviation fuel microfilters

Third edition
September 2014

EI 1590 – microfilters - Scope

- **Minimum flow rates ...**
 - 50 mm (2 in) → 2.5 L/sec/m (1 Gal/min/in)
 - 100 mm (4 in) → 5 L/sec/m (2 Gal/min/in)
 - 150 mm (6 in) → 10 L/sec/m (4 Gal/min/in)

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**Specifications and
qualification procedures
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**Third edition
September 2014**

- **Changes to be introduced by 4th edition:**
 - Inclusion of 125 mm (5 in.) element
 - Clarify that there is no rating $<1 \mu\text{m}$
 - $2.0 \mu\text{m}$ qualification read across to $3.0 \mu\text{m}$
 - Clarify that elements can be used in an EI 1587 vessel (for single cartridge housings)
 - Test fuel can be one meeting a jet fuel specification other than ASTM D1655 or DEF STAN 91-091 by agreement with user (e.g. Russian TS-1, Chinese No 3)
 - Compatibility test protocols via EI 1589

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EI 1590 – microfilters Laboratory Qualification Tests

- **Single-element testing**
- **Test dust challenges**
 - 1.0 μm – iron oxide
 - 2.0 or 3.0 μm - 90 wt% A1 Ultrafine & 10 wt% iron oxide
 - 5.0 μm - A1 Ultrafine
 - 10.0 μm – A2 Fine
 - 50 mg/L test dust injection
 - Rated flow
 - 50% of rated flow
 - Rated flow with simultaneous 100 ppm water

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- **Performance criteria**

- Solids content < 0.15 mg/L (max)
- Media migration < 10 fibres/gal
- Withstand 75 psi dP for 5 minutes without structural failure or extrusion of media
- Meet compatibility requirements for four test fluids

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User awareness

- **Microfilters are not designed to remove free water from fuel**
- **Designed for single-use, although some manufacturers produce elements with a replaceable media shroud (i.e. the centre tube is reused)**

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Any questions?

A Venn diagram consisting of three overlapping circles. The top circle is dark blue, the bottom-left circle is orange, and the bottom-right circle is light blue. The text is centered within the intersection of the top and bottom-right circles.

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