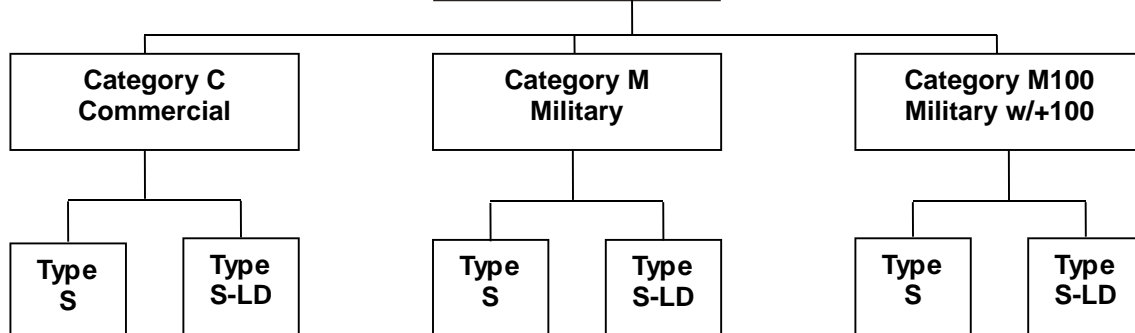


Note: By permission of Velcon Filters, Inc., we have reprinted their Data Sheet No. 1934 because it provides an excellent summary of the entire 5<sup>th</sup> Edition. See GamGram No. 9 for further explanation and our comments.

## API/IP 1581 5<sup>th</sup> Edition Specification\* Key Points

- **Category "C"** filter/separators are for use in commercial Jet-A or Jet-A1 fuel. They are tested in fuel containing anti-static additive, Stadis 450 and corrosion inhibitor DCI-4A.
- **Category "M"** filter/separators are for use in military JP-8 or JP-5 fuel. They are tested in fuel containing Stadis 450, DCI-4A, and anti-icing additive Di-EGME.
- **Category "M100"** filter/separators are for use in military JP8+100 fuel. They are tested in fuel containing Stadis 450, DCI-4A, Di-EGME, and thermal stability additive Spec Aid 8Q462.
- **Type "S"** filter/separators are used at filtration points where significant levels of both dirt and water can be expected.
- **Type "S-LD"** filter/separators are used at filtration points where significant levels of water but minimal amounts of dirt can be expected. (Note: Testing to Type "S" qualifies for both Type "S" and Type "S-LD".)

### API/IP SPEC 1581



- Multi-Stage Systems can be used at all filtration points in addition to filter/separators where additional performance is desired. Multi-stage devices can include upstream pre-filters and downstream water absorbing filters.
- The API specification procedures qualify the entire filter/separator, not just the elements. Strictly speaking, there is no such thing as an API qualified element. There are only elements that are used in an API qualified filter/separator.
- A filter/separator of similar geometry to the tested vessel can be qualified by similarity providing that a complex set of criteria are met. This is particularly significant in establishing A.P.I. qualification for existing equipment in the field. API/IP Specification 1582\*\* details the similarity specifications that have to be met in order for a filter/separator to be qualified by similarity.
- In order for a filter/separator to be accepted as meeting the API specification, it must be tested to the specification with an official witness designated by the API committee present. This witness ensures that all procedures are followed per specification and that all test results meet the specification requirements. An official test report is then issued by the API.

\* API/IP Specification 1581, Fifth Edition, "Specifications and Qualification Procedures for Aviation Jet Fuel Filter/Separators", July 2002

\*\* API/IP Specification 1582, "Specifications for Similarity For API/IP 1581 Aviation Jet Fuel Filter/Separators", February, 2001

## FILTER/SEPARATOR SPECIFICATIONS

### MAJOR MECHANICAL, TEST, & PERFORMANCE REQUIREMENTS

CRITERIA		SPECIFICATION REQUIREMENT
<b>TEST FUEL ADDITIVES</b>	<b>CATEGORY C</b>	1.0 MG/L STADIS 450 + 15.0 MG/L DQ-4A
	<b>CATEGORY M</b>	2.0 MG/L STADIS 450 + 15 MG/L DQ-41 + 0.15% DIEGME
	<b>CATEGORY M100</b>	2.0 MG/L STADIS 450 + 15 MG/L DQ-41 + 0.15% DIEGME + 256 MG/L SPEC AID 8Q462
<b>TEST SERIES TO BE RUN</b>		<b>SINGLE ELEMENT</b>
		<b>FULL SCALE</b>
<b>FUEL HANDLING</b>	<b>SINGLE ELEMENT</b>	SINGLE PASS FROM 1 TANK TO A NOTHER
	<b>FULL SCALE</b>	RECIRCULATE
<b>FUEL TEMPERATURE</b>	<b>MINIMUM TEMPERAT URE</b>	40 DEG F
	<b>MAXIMUM TEMPERA TURE</b>	90 DEG F
	<b>DEVIATION FROM TEST START TEM PERAT URE</b>	+/- 11 DEG F
<b>MAXIMUM CLEAN INITIAL DIFFERENTIAL PRESSURE</b>		6 PSID A CROSS FILTER/COALESCER STAGE, 10 PSID ACROSS VESSEL
<b>STRUCTURAL STRENGTH OF FILTER/COALESCER ELEMENTS</b>		75 PSID WITH NO RUPTURE, BY PASSING OF SEALS, OR PINHOLE LEAKS
<b>STRUCTURAL INTEGRITY OF FILTER/COALESCER ELEMENTS</b>		NO MEDIA OR STRUCTURAL DETERIORA TION SUCH A S LEAKS OR TEARS
<b>MAXIMUM EFFLUENT CONTAM INANT LEVELS DURING TESTS</b>	<b>FIBER CONTENT</b>	10 FIBERS PER LITER
	<b>SOLIDS CONTENT</b>	1.0 MILLIGRAM PER GALLON
	<b>FREE WATER CONT ENT</b>	15 PARTS PER MILLION
<b>CONDITIONING RUN TEST</b>	<b>FLOW RATE</b>	3 GPM FOR SINGLE ELEMENT TEST, 3.0% OF RATED FLOW FOR FULL SCALE TEST
	<b>TEST DURA TION</b>	30 MNUTES
<b>WATER COALESCENCE TEST - CLEAN ELEM ENT</b>	<b>FLOW RATE</b>	RATED FLOW
	<b>TEST DURA TION</b>	30 MNUTES
	<b>WATER INECTION RA TE</b>	0.01% BY VOLUME
<b>SOLIDS HOLDING TEST</b>	<b>FLOW RATE</b>	RATED FLOW
	<b>TEST DURA TION - TYPE S</b>	75 MNUTES
	<b>TEST DURA TION - TYPE S-LD</b>	ADD SOLIDS UNTIL PRESSURE REACHES 22.5 PSID, THEN RUN ADDITIONAL 45 MINUTES WITH NO A DDITION
	<b>SOLIDS INJECTION RA TE</b>	72 MG/GAL
	<b>MAXIMUM DEPTA PAT 50 MINUTES - TYPE S</b>	15 PSID
	<b>MA XIM UM PRESSURE AT 75 MINUTES - TYPE S</b>	45 PSID
<b>WATER COALESCENCE TEST - DIRTY ELEM ENT</b>	<b>FLOW RATE</b>	RATED FLOW
	<b>TEST DURA TION - Single Element</b>	1ST PERIOD: 150 MINUTES, 2ND PERIOD: 30 MINUTES
	<b>- Full Scale</b>	1ST PERIOD: 90 M INUTES, 2ND PERIOD: 15 M INUTES
	<b>WATER INJECTION RATE</b>	1ST PERIOD: 0.01%, 2ND PERIOD: 3.0%
<b>VESSEL LENGTH TO DIAMETER RATIO</b>	<b>VESSEL ≤ 24 INCHES</b>	1.75
	<b>VESSEL &gt; 24 INCHES</b>	2.5
<b>MINIM UM SPACING BET WEEN ELEMENTS A ND BET WEEN ELEMENTS &amp; VESSEL WALL</b>		0.5 INCHES