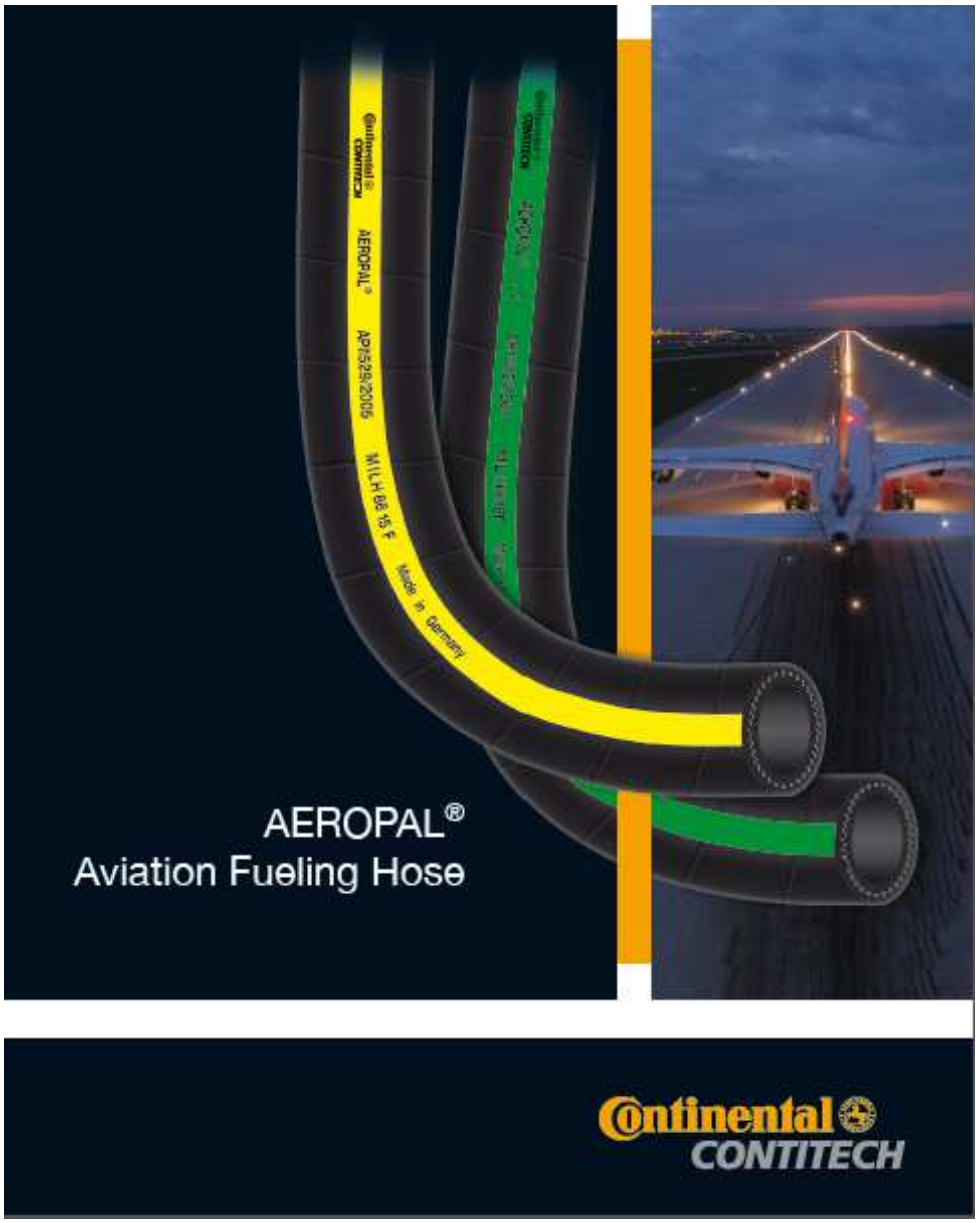
ContiTech- Aeropal

Performance Report



Date: 02/17/2014

In accordance with EI 1529, 6th Edition 2005, as noted in Section 6, Testing and Test Results, paragraph 6.2, Test Frequencies, ContiTech has re-qualified the Aeropal Aviation Fueling hose as required and stated that "Type approval test shall be repeated a minimum of every three years……". The following test results indicated and acknowledge that ContiTech Aeropal Aviation Fueling grade type C and CT hose meets or exceeds the specification requirements as outlined.

Test values according to API/EI 1529

	API/EI 1529 6thedition	Aeropal C	Aeropal CT
Component Tests			
Tensile Strength Tube|Cover	> 7 Mpa	11|17 (± 1.5)	18|18 (± 1.5)
Minimum Elongation Tube|Cover	> 250|300 %	440|320 (± 20)	295|325 (± 20)
Volume increase Tube|Cover	< 50|75 %	34|52 (± 2.0)	43|51 (± 2.0)
Fuel-soluble matter RT|CT	< 4|6 %	3 (± 1.0)	5 (± 1.0)
Abrasion resistance RT|CT	< 140|200 mm^3	115 (± 15)	100 (± 15)
Resistance to ageging (TS) Tube|Cover	± 30 %	18|12 (± 5)	-3|10 (± 5)
Resistance to ageging (EB) Tube|Cover	± 30 %	-5|-7 (± 5)	-14|-6 (± 5)
Cold embrittlement RT|CT	no cracks @ -40|-48 °C	i.O.	i.O.
Hose Tests			
Adhesion (dry) T/R|R/R|R/C	> 3 N/mm	5|7,7|4	4,3|5|5,7
Adhesion (after contact with fuel) T/R|R/R|R/C	> 2 N/mm	3,5|6,8|4,9	2,7|3,7|3,3
Proof pressure	no leakage @ 40 bar	i.O.	i.O.
Burst pressure	80 bar	129 bar	123 bar
Elongation @ proof pressure	+/- 7%	1,2%	1,3%
Vacuum resistance		i. O.	i. O.
Flexibility @ 20 °C	no damage	i. O.	i. O.
Flexibility @ -30 °C		i. O.	n. a.
Flexibility @ -40 °C (only CT hoses)		n. a.	i. O.
Electrical resistance	10^3 - 10^6 Ohm / m	1450	2500
Kink resistance	no damage, no increase Ω	i. O.	i. O.
Ozone resistance Cover		i.O.	i.O.
Concentricity	< 1,0mm	0,57	0,57
Thickness of Tube|Cover	> 1,6mm I > 2,0mm	2,57 I 3,03	2,73 I 2,73

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It is noted that the test also confirm that the ContiTech Aeropal Low Temp CT hose is in compliance with Mil Spec MIL-DTL-6615G.

Test values according to MIL-DTL-6615G

	MIL-DTL-6615G		Aeropal CT
	Sept 1st, 2011		
Adhesion (dry)	> 2,1 N/mm / (1,75 4")	-	4,3|5|5,7
Adhesion (oil aged, 48h, 24°C)	> 1,6 N/mm / (0,88 4")	-	5,3|5,9|5,3
Tensile strength (48h, 24°C, Fuel B) Tube I Cover	> 4,1 N/mm² I 2,8 N/mm²	-	10|5,8 (± 1.5)
Ultimate Elongation (dry)	> 200%	-	338|325 (± 20)
Ultimate Elongation (48h, 24°C, Fuel B)	> 100%	-	167|159 (± 20)
Low Temperature Bend (U-shape, -55°C, 72h)	no cracks	-	i. O.
Volume increase (24h, 24°C, Fuel B) Tube I Cover	< 50% I 100%	-	43|51 (± 2.0)
Proof pressure (30s)	no leakage	-	i. O.
Elongation and contraction (@ proof pressure)	+/- 7%	-	1,3%
Burst pressure	48 bar	-	123 bar
Inner tube electrical resistance (during proof pressure also)	10^3 - 10^6 Ohm / m	-	2500
Low temperature flexibility (U-shape, -55°C, 72h)	318 N for 90° / 363 N 3", 4"	-	i. O.
Sediment contamination and color change	2mg / l; color change 40	-	n.a.

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