

ISO 9940:2015-08 (E)

Aerospace series - Fluid, hydraulic, phosphate ester-base, fire resistant - Technical specification

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Technical requirements	3
3.1	General	3
3.2	Fluid types	3
3.3	Physical and chemical properties	3
3.4	Products and manufacturers qualification	4
3.5	Approved laboratories	4
4	Qualification requirements	5
4.1	Absolute kinematic viscosity ""	5
4.2	Water content "[H ₂ O]"	6
4.3	Density ""	6
4.4	Acidity index "AI" -- Acid number "AN"	6
4.5	Electrical conductivity ""	6
4.6	Chemical content	7
4.6.1	Chlorine	7
4.6.2	Other components	7
4.7	Pour point temperature	7
4.8	Flash point and fire point temperatures	8
4.9	Auto-ignition temperature	8
4.10	Flammability test	8
4.10.1	Determination of wick flame persistence	8
4.10.2	Spray ignition test	8
4.10.3	Manifold-Ignition test on a hot element	8
4.11	Colour -- Condition	9
4.12	Bulk modulus (Isothermal secant)	9
4.13	Thermal expansion coefficient ""	11
4.14	Dielectric resistance	11
4.15	Specific heat "Cp"	11
4.16	Solid particulate contamination	11
4.16.1	General	11
4.16.2	Particle counting	11
4.16.3	Filterability "F"	12
4.17	Foaming	12
4.18	Toxicity	12
4.19	Stability	13
4.19.1	Shear stability	13
4.19.2	Thermal, corrosion and oxidation stability	13
4.20	In-service lifetime	15
4.20.1	General	15
4.20.2	Ampoule test method	16
4.20.3	"1 Litre-Container" Test method for fire resistance requirement in accordance with 4.8	18
4.21	Material compatibility with qualified fluids (see list provided by the airframe manufacturer)	18
4.21.1	Compatibility with qualified fluids	18
4.21.2	Compatibility with elastomeric materials	19

4.21.3	Compatibility with paints	20
4.21.4	Compatibility with electrical aircraft components	20
4.21.5	Compatibility with structural elements: adhesive, metallic parts (including tubes), composites	20
4.22	Lubrication	20
4.23	Erosion tests of the hydraulic fluid	21
4.23.1	General	21
4.23.2	Test 1 -- Erosion System Test Bench representative of one aircraft hydraulic system	21
4.23.3	Test 2 -- Pumping Test	21
4.23.4	Test 3 -- Erosion Resistance Tests	21
5	Batches	21
6	Quality control	21
6.1	Hydraulic fluid acceptance tests	21
6.2	Physical characteristics	21
6.3	Chemical characteristics	22
7	Recommended limits	22
8	Marking	22
9	Packing and storage	22
Annex A	(normative) Elastomer compatibility	24
Annex B	(informative) Erosion tests	26
Annex C	(normative) Fluid monitoring after A/C delivery	27
Bibliography	28