BUREAU OF INDIAN STANDARDS

Program of Work

ETD 3 : Fluids For Electrotechnical Applications

Scope: To prepare product specifications, test methods as well as maintenance and use guides for

liquid and gaseous dielectric. Also to prepare specifications and maintenance and use guides for lubricants and control fluids for turbines, generators and control systems as well as to assist

in the preparations of test methods for such fluids

Liaison: **IEC TC-10 (P):** Fluids for electrotechnical applications

Published Standards

S.No	IS No.	TITLE	Reaffirm M-Y	No. of Amds	Eqv.
1	IS 10593 : 2023	Mineral oil-filled electrical	Acquillin 1/1-1	-	Identical under dual
^		equipment in service - Guidance on			numbering
	IEC 60599:2022	the interpretation of dissolved and			
		free gases analysis			
2	IS 11697 : 1986	Guide for determination of	October, 2021	-	Modified/Technically
	Reviewed In: 2021	lightning impulse electric strength			Equivalent
	IEC Doc 10A	of insulating liquids			•
	(Central Office) 64				
3	IS 12177 : 1987	Methods of tests for oxidative	April, 2018	1	Indigenous
	Reviewed In: 2018	ageing of electrical insulating	•		
		petroleum oils by open beaker			
		method			
4	IS 12422 : 2023	Unused Hydrocarbon Based		-	Identical under dual
	IEC 61125:2018	Insulating Liquids � Test			numbering
	IEC 61125:2018	Methods for � Evaluating the			
		Oxidation Stability (Second			
		Revision)			
5	IS 12475 (Part 1):	Specification for gassing of	April, 2018	-	Modified/Technically
	1988	insulating liquid under electric			Equivalent
	Reviewed In: 2018	stress and ionization: Part 1			
	IEC 60628	methods of determination of			
		gassing rate under hydrogen			
		atmosphere			
6	IS 12475 (Part 2):	Specification for gassing of	April, 2018	-	Modified/Technically
	1988	insulating liquids under electric			Equivalent
		stress and ionization: Part 2 method			
	IEC 60628	of determination of gassing rate			
		under nitrogen atmosphere			
7	IS 12958 : 1990	Oxidation stability of inhibited	October, 2021	1	Modified/Technically
	Reviewed In: 2021	mineral insulating oil by rotating			Equivalent
	ASTM D 2112-1986				
8	IS 13067 : 1991	Impregnants for power capacitors -	October, 2021	-	Modified/Technically
	Reviewed In: 2021	Specification			Equivalent
	ASTM D 92 - 1985				
	& ASTM D 2441 -				

9 IS 13072 : 2021 Specification of Technical Grade (6376 : 2018 IEC 60376 : 2018 IEC 60376 : 2013 IEC 60376 : 2013 IEC 60970 : 2007 IEC 60970 : 2008 IEC 60970 : 2008 IEC 60970 : 2008 IEC 600970 : 2009 IEC 600970 IEC 600		1985			1	
G0376 : 2018 Sulphur Hexafluoride SF6 for Use EIC 60376 : 2018 Method of test for catbomype Reviewed In : 2021 Method of test for catbomype analysis of mineral oils by infra Red spectrophotometry Insulating liquids Method of test for catbomype Analysis of mineral oils by infra Red spectrophotometry Insulating liquids March 2018 Identical under du numbering Insulating liquids March 2018 Identical under du numbering Identical	9		Specification of Technical Grade		-	Identical under dual
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IEC 60970 : 2007	11	IS 13236 : 2013		May, 2018	-	Identical under dual
Reviewed In 2018 Revision		IEC 60970 : 2007	e 1	• •		numbering
IEC 60970 : 2007		Reviewed In: 2018				
IS 1393: 2013 Classification of insulating liquids Rec (61039: 2008 Reviewed In : 2018 IEC 61039: 2008 Reviewed In : 2018 IEC 60814: 1997 IEC 6081: 1997 IEC 60814: 1998 IEC 6095: 2010 IEC 6198: 1998 IEC 6095: 2010 IEC 6198: 1998 IEC 6085: 1998 IEC 60165: 1998 IE			,			
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14 IS 13631 : 2017 Detection and determination of specified additives in mineral IEC 60666 : 2010 IEC 61198 (1993) Mineral insulating oils (First Revision) June, 2021 - Identical under du numbering IEC 61198 (1993) IEC 61198 (1993) Insulating liquids - Specifications IEC 61198 (1993) IEC 61198 (1993) IEC 61198 (1993) IEC 61199 : 2010 Insulating liquids - Specifications IEC 61099 : 2010 Insulating liquids - Contamination IEC 61619 : 1997 Reviewed In : 2018 IEC 61619 : 1997 Propose Propose Propose IEC 61619 : 1997 Propose Propose Propose IEC 61619 : 1997 Propose						
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Reviewed In: 2018 (PCBS) - Method of determination by capillary column gas chromatography 18				,		numbering
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IEC 61181:2012		2.1)	dissolved gas analysis DGA to			
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IEC 61203 : 1992 in equipment						numbering
23 IS 16310 : 2017 Insulating liquids - Test method for - Identical under du						
	23	IS 16310 : 2017	Insulating liquids - Test method for		-	Identical under dual

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	IEC 62535 : 2008	detection of potentially corrosive			numbering
	IEC 62535 : 2008	sulphur in used and unused			
24	TG 1 (107 (P + 1)	insulating oil			X1 2 1 1 1 1
24	IS 16497 (Part 1):	Test methods for quantitative		-	Identical under dual
	2017	determination of corrosive sulphur			numbering
	IEC 62697-1 : 2012	compounds in unused and used			
	IEC 62697-1:2012	insulating liquids: Part 1 test			
		method for quantitative			
		determination of dibenzyldisulfide			
25	IS 16659 : 2017	(Dbds) Fluids for electrotechnical			Identical under dual
23		applications - Unused natural esters		-	numbering
	IEC 62770 : 2013	for transformers and similar			numbering
	ILC 02/70 . 2013	electrical equipment			
26	IS 16785 : 2018	Guide for Interpretation of Gases		_	Identical under dual
20	IEEE Std	Generated in Natural Ester and			numbering
	C57.155TM-2014	Synthetic Ester- Immersed			namoering
	IEEE C 57.155	Transformers			
27	IS 16838 : 2018	Specifications for unused silicone		-	Identical under dual
	IEC 60836 : 2015	insulating liquids for			numbering
	IEC 60836 : 2015	electrotechnical purposes			C
28	IS 16839 : 2019	Methods for the determination of		-	Identical under dual
	IEC 60897: 1987	the lightning impulse breakdown			numbering
	IEC 60897: 1987	voltage of insulating liquids			
29	IS 16840 : 2018	Insulating liquids - Measurement of		-	Identical under dual
	IEC 60247 : 2004	relative permittivity, dielectric			numbering
	IEC 60247 : 2004	dissipation factor (Tan) and D.C.			
		resistivity			
30	IS 16841 : 2018	Guide for the maintenance of		-	Identical under dual
	IEC 60944 : 1998	silicone transformer liquids			numbering
	IEC 60944 : 1988				*1 1 1 1 1
31	IS 16859 : 2018	Specification for unused		-	Identical under dual
	IEC 60963 : 1998	polybutenes			numbering
32	IEC 60963 : 1988 IS 16863 (Part 1) :	Insulating Liquids â€"			Identical under dual
32	2018	Determination of Acidity Part 1		-	numbering
	IEC 62021-1 : 2003	Automatic Potentiometric			numbering
	IEC 62021-1 : 2003	Titration			
33	IS 16863 (Part 2):	Insulating Liquids â€"		_	Identical under dual
	2018	Determination of Acidity Part 2			numbering
	IEC 62021-2 : 2007	Colourimetric Titration			8
	IEC 62021-2:2007				
34	IS 16863 (Part 3):	Insulating Liquids â€"		-	Identical under dual
	2018	Determination of Acidity Part 3			numbering
	IEC 62021-3:2014	Test Methods for Non-Mineral			
	IEC 62021-3:2014	Insulating Oils			
35	IS 16867 : 2018	Insulating Liquids â€" Linear		-	Identical under dual
	IEC 61197 : 1993	Flame Propagation â€" Test			numbering
	IEC 61197 : 1993	Method Using a Glass-Fibre Tape			
36	IS 16868 : 2018	Test Method for the Determination		-	Identical under dual
	IEC 61144 : 1992	of Oxygen Index of Insulating			numbering
	IEC 61144 : 1992	Liquids			**
37	IS 16869 : 2018	Method for Evaluating the Low		-	Identical under dual
	IEC 61065 : 1991	Temperature Flow Properties of			numbering
	IEC 61065 : 1991	Mineral Insulating Oils After			
38	IS 16870 : 2018	Ageing Guidance on the interpretation of			Identical under dual
38	IEC TR 62874 :	Guidance on the interpretation of carbon dioxide and 2 -		-	numbering
	2015	Furfuraldehyde as markers of			numbering
	2013	1 diffuldicity de as markets of			

1	IEC TR 62874:	paper thermal degradation in		1	
	2015	insulating mineral oil			
39	IS 16871 : 2018	Mineral insulating oils - Oxidation		-	Identical under dual
	IEC/TR 62036 :	stability test method based on			numbering
	2007	differential scanning calorimetry			
	IEC/TR 62036:	(DSC)			
	2007				
40	IS 16899 : 2023	Guide for Acceptance and		-	Identical under dual
	IEC 62975:2021	Maintenance of Natural Ester			numbering
	IEC 62975:2021	Fluids in Transformers (First			
41	IC 17052 2022	Revision)			T1 (1 1 1 1
41	IS 17053 : 2023	Guidelines for the Checking and		-	Identical under dual
	IEC 60480:2019	Treatment of Sulfur Hexafluoride			numbering
	IEC 60480:2019	(SF6) Taken from Electrical			
		Equipment and Specification for its Re-Use (First Revision)			
42	IS 17244 : 2019	Mineral Insulating Oils â€"			Identical under dual
42	IEC TR 61946 :	Characterization of Paraffinic /		_	numbering
	2007	Naphthenic Nature â€" Low			numbering
	IEC TR 61946 :	Temperature Differential Scanning			
	2007	Calorimetry (DSC) Test Method			
43	IS 17245 : 2019	Insulating Liquids â€"		_	Identical under dual
'5	IEC TR 61294 :	Determination of the Partial			numbering
	1993	Discharge Inception Voltage (
	IEC TR 61294 :	PDIV) â€" Test Procedure			
	1993	, ,			
44	IS 1866 : 2017	Mineral insulating oils in electrical		-	Identical under dual
	IEC 60422 : 2013	equipment supervision and			numbering
	IEC 60422 : 2013	maintenance guidance (Fourth			
		Revision)			
45	IS 335 : 2018	New insulating oils - Specification	-	1	Indigenous
		(Fifth Revision)			
46	IS/IEC 60867 : 2024	_		-	Identical under single
	IEC 60867:2022	SPECIFICATIONS FOR			numbering
	IEC 60867:2022	UNUSED LIQUIDS BASED ON			
		SYNTHETIC AROMATIC			
17	XQ (104 1071	HYDROCARBONS	0 1 2021	1	***
47	IS 6104 : 1971	Method of test for interfacial	October, 2021	1	Identical under dual
	Reviewed In : 2021	tension of oil against water by the			numbering
48	IEC 62961:2018 IS 6104 : 2024	ring method Insulating Liquids �			Identical under dual
40	IEC 62961:2018	Determination of Interfacial		-	numbering
	IEC 62961:2018	Tension with the Ring Method \ddot{i}_{ℓ_0} ¹ / ₂			numbering
	11.002701.2010	Method of Test (First Revision)			
49	IS 6792 : 2023	Insulating liquids - Determination		_	Identical under dual
'	IEC 60156: 2018	of the breakdown voltage at power			numbering
	IEC 60156: 2018	frequency - Test method			
50	IS 6855 : 2023	Method of sampling insulating		-	Identical under dual
	IEC 60475:2022	liquids			numbering
	IEC 60475:2022	1			
51	IS 9434 : 2019	Oil-Filled Electrical Equipment —	-	-	Identical under dual
	IEC 60567 : 2011	Sampling of Gases and Analysis of			numbering
	IEC 60567: 2011	Free and Dissolved Gases —			
		Guidance (Second Revision)			
				· · · · · · · · · · · · · · · · · · ·	·

Standards under Development

Projects Approved				
SI. No.	SI. No. Doc No. Title			
No Records Found				

Preliminary Draft Standards					
SI. No.	SI. No. Doc No. Title				
No Records Found					

	Drafts Standards in WC Stage					
SI. No.	SI. No. Doc No. Title					
	No Records Found					

Draft Standards Completed WC Stage				
SI. No.	SI. No. Doc No. Title			
No Records Found				

	Finalized Draft Indian Standard				
SI. No.	SI. No. Doc No. Title				
	No Records Found				

Finalized Draft Indian Standards under Print					
SI. No.	SI. No. Doc No. Title				
	No Records Found				

Total Published Standards:48 Total Standards Under development:0

Aspect Wise Report

Product: 9
Code of Practices: 5
Methods of Test: 32
Terminology: 1
Dimensions: 0
System Standard: 0
Safety Standard: 0
Others: 2

Service Specification: 0 Process Specification: 0 Unclassified: 0

Annexure-I :List of Indian Standards Withdrawn/Superseded

SI. No.	IS No. & Year	Title
1	IS 11549 : 1986	Specification for impregnating oils and compounds for paper insulated cables up to 33 KV
	Reviewed In: 2018	
2	IS 12026 (Part 1): 1986	Guide for the determination of the aromatic hydrocarbon content of new insulating oils Part 1
	Reviewed In: 2021	adsorption chromatographic method
3	IS 12026 (Part 2): 1986	Guide for the determination of the aromatic hydrocarbon content of new insulating oils Part 2
	Reviewed In: 2021	infra - Red spectrophotometric method
4	IS 12463 : 1988	Inhibited Mineral Insulating Oils
	Reviewed In: 2013	
5	IS 12819 : 1989	Transformer Oil Feed Stock tofs Base Stock tobs

	Reviewed In: 2000	
6	IS 335 : 1993	New Insulating Oils
	Reviewed In: 2015 ISO	
	28594:2017	
7	IS 6103 : 1971	Method of test for specific resistance Resistivity of electrical insulating liquids
	Reviewed In: 2021	
8	IS 6262 : 1971	Method of test for power factor and dielectric constant of electrical insulating liquids
	Reviewed In: 2021	
9	IS 8264 : 1976	Air-drying and anti-tracking insulating varnishes for electrical purposes
10	IS 9960 : 1981	Specification for electrical grade castor oil for use as capacitor impregnant
	Reviewed In: 2017	

Annexure-II :List of Indian Product Standards

SI. No.	IS No. & Year	Title
1	IS 13067 : 1991	Impregnants for power capacitors - Specification
	Reviewed In: 2021 ASTM	
	D 92 - 1985 & ASTM D	
	2441 - 1985	
2	IS 13072 : 2021	Specification of Technical Grade Sulphur Hexafluoride SF6 for Use in Electrical Equipment
	60376 : 2018	purposes
	62552-3	
3	IS 16081 : 2013	Insulating liquids - Specifications for unused synthetic organic esters for electrical purposes
	IEC 61099 : 2010	
	Reviewed In: 2018 IEC	
	61099 : 2010	
4	IS 16083 : 2013	Specification for unused insulating mineral oils for cables with oil ducts
	IEC 60465 : 1988	
	Reviewed In: 2018 IEC	
	60465 : 1988	
5	IS 16659 : 2017	Fluids for electrotechnical applications - Unused natural esters for transformers and similar
	IEC 62770 : 2013	electrical equipment
	IEC 62770 : 2013	
6	IS 16838 : 2018	Specifications for unused silicone insulating liquids for electrotechnical purposes
	IEC 60836 : 2015	
	IEC 60836 : 2015	
7	IS 16859 : 2018	Specification for unused polybutenes
	IEC 60963 : 1998	
	IEC 60963 : 1988	
8	IS 17053 : 2023	Guidelines for the Checking and Treatment of Sulfur Hexafluoride SF6 Taken from Electrical
	IEC 60480:2019	Equipment and Specification for its Re-Use First Revision
9	IS/IEC 60867 : 2024	INSULATING LIQUIDS SPECIFICATIONS FOR UNUSED LIQUIDS BASED ON
	IEC 60867:2022	SYNTHETIC AROMATIC HYDROCARBONS