Annex 1

ETD 03-Fluids for Electrotechnical Applications Sectional Committee

Joint Secretary: Ms, Meghna Mudgal

Last Two Meeting 22th & 23th

S.No.	Organization	Member Name	Member Email	Meetings Attended/ Held
1.	IN INDIVIDUAL CAPACITY	Dr. P. Thomas	pthomas64@gmail.com	2/2
2.	Adani Electricity Limited, Mumbai	Shri Ashish Nema	ashish.nema@adani.com	1/2
		Shri Damodar Sahasrabuddhe	damodar.sahasrabuddhe@adani.com	
3.	Apar Industries Limited, Mumbai	Dr T C S M Gupta	tcsm.gupta@apar.com	2/2
		Shri Sanjay Abhyankar	corporate@apar.com	
4.	Bharat Heavy Electrical Limited, New Delhi	Shri S. K. Mahajan	skmahajan@bhel.in	0/2
		Shri Dharmendra Varyani	dvaryani@bhel.in	
5.	Bharat Petroleum Corporation Limited, Mumbai	Dr. Kashinath T. Sutar	kashinaths@bharatpetroleum.in	2/2
		Shri Khalid Zubair Mohammed	khalidzubairmoh@bharatpetroleum.in	
6.	Bureau of Energy Efficiency, New Delhi	Shri Pravatanalini Samal	psamal@beeindia.gov.in	1/2
		Shri Dheeraj Pandey	dheeraj.pandey96@beeindia.gov.in	
7.	CG Power and Industrial Solutions, Mumbai	Shri Uday Sanvatsarkar	uday.sanvatsarkar@cgglobal.com	0/2
8.	CSIR - National Physical Laboratory, New Delhi	Dr Arun Ram Prasath RT	arunramprasathrt@nplindia.org	2/2
		Shri Manish Kumar Tamrakar	tamrakarm@nplindia.org	
9.	Cargill India Private Limited, Gurugram	Ms Madhuree Hage	madhuree_Hage@cargill.com	2/2
		Shri Naveen Jain	Naveen_Jain@cargill.com	
10.		Shri Nitin Dhamale	nitin@ceedeevacuum.net	0/2

	Cee Dee Vacuum Equipment Private Limited, Wasuli	Shri Suhas Dhamale	suhas@ceedeevacuum.net	
11.	Central Electricity Authority, New Delhi	Shri O.P. Suman	suman.om@gov.in	0/2
		Shri Mukesh Kumar	hetdcea@nic.in	
12.	Central Power Research Institute, Bengaluru	Shri Sada Sivamurthy	ssmurthy@cpri.in	2/2
		Shri Ann Pamla Cruze	pamla@cpri.in	
13.	Electrical Research and Development Association, Vadodara	Shri Pankaj Chawla	pankaj.chawla@erda.org	1/2
		Manjusha Nambiar	manjusha.nambiar@erda.org	
14.	Global Electrical Laboratory, Vadodara	Shri Hardik Rana	enquiry@gelab.co.in	1/2
15.	Hindustan Petroleum Corporation Limited, Mumbai	Shri Amitabh Kumar Jain	akjain@hpcl.in	1/2
		Shri Lalit Yadav	lalit.yadav@hpcl.in	
16.	Indian Electrical and Electronics Manufacturers Association, New Delhi	Shri Rishabh Joshi	rishabh.joshi@ieema.org	1/2
		Ms. Charu Mathur	charu.mathur@ieema.org	
17.	Indian Oil Corporation Limited, New Delhi	Shri Deepak Saxena	saxenad@indianoil.in	1/2
		Dr Chanakya Tripathi	tripathic@indianoil.in	
		Dr. Kavita Rai	raikavita@indianoil.in	
18.	NTPC Limited, New Delhi	Shri S.K. Lal	sklal@ntpc.co.in	1/2
		Shri Koushik Das	koushikdas@ntpc.co.in	
19.	Power Grid Corporation of India, Gurugram	Shri Gunjan Agarwal	gunjan.agrawal@powergrid.in	1/2
20.	Savita Oil Technologies Limited, Mumbai	Shri D.S. Dhanak	dsdhanak@savita.com	2/2
		Shri Sanjay G Jagdale	sgjagdale@savita.com	
		Shri Prabhakar P. Phatak	ppphatak@savita.com	
21.	Schneider Electric India Private Limited, Gurugram	Shri Ishwari Dutt Kabdal	ishwaridutt.kabdal@se.com	0/2
		Shri Abhishek Tomar	abhishek.tomar@se.com	
22.	IN PERSONAL CAPACITY	Shri Rajaram shinde	rshinde34@hotmail.com	1/2
		Shri B N De Bhowmick	barin.de@gmail.com	

Annex 2

Annual Action Plan for Standardization

Sectional Committee	Standards due for review	No. of Standards Reviewed	Pending for review	Action completed based on review	Action under process based on review	NWIP	NWIP Status
ETD 03	40 (7 Pre-2000)	38	2 (Both Pre-2000)	32	6 (5 Pre-2000)	1	Allocated as R&D project

New Work Item Proposal		**2. Standard under review - carried over**						**Standard under review – current**		**4. ISO / IEC documents** (11)	
Current		**Pre 2000 (8)**				**Due for review (2)**		**Current**			
Under Consideration 1		*Taken up for review 7 (5 P draft, 2 archive proposal)*		*Under Publication 1*		*Taken up for review 2*		*Due for Review 30*			
Subject/Title	**Status**	**IS. No**	**Status**	**IS. No**	**Status**	**IS. No**	**Status**	**IS No.**	**Status**	**IEC/TC**	**Status/ IEC Current Stage**
Sampling and DGA analysis for ester based transformer fluids and method of interpretation of DGA for fault	R&D allocated to NIT	IS 11697: 1986	P-Draft	IS 6104 : 1971	Published as IS 6104: 2024	IS 335: 2018	Under Revision in WG	IS 13236 : 2013	Reviewed by committee. Reaffirmed	10/1214 /NP	
								IS 16081 : 2013	Reviewed by committee. Reaffirmed	10/1218 /CD	
		IS 12177: 1987	P-Draft					IS 16082 : 2013	Reviewed by committee. Reaffirmed	10/1203 /CDV	
						IS 16659 : 2017	Reaffirmed				

identification of ester fluid filled transformers.		IS 12475: Part 1: 1988	P-Draft					IS 16083 : 2013	Reviewed by committee. Reaffirmed	10/1204 /CDV	
								IS 16084 : 2013	Reviewed by committee. Reaffirmed	10/1201 /CDV	
								IS 16086 : 2013	Reviewed by committee. Reaffirmed	10/1219 /FDIS	
								IS 16099 : 2013	Reviewed by committee. Reaffirmed	10/121 5/FDIS	
		IS 12475 : Part 2 : 1988	P-Draft					IS 13503 : 2013	Reviewed by committee. Reaffirmed	10/123 3/FDIS	
		IS 12958 : 1990	Pending. Proposed to archive					IS 13567 : 2018	Reviewed by committee. Reaffirmed	10/115 1/RR	
		IS 13067 : 1991	Pending. Proposed to archive					IS 13631 : 2017	Reviewed by committee. Reaffirmed	10/115 3/RR	
		IS 13155 : 1991	P-Draft					IS 1866 : 2017	Reviewed by committee. Reaffirmed	10/115 8/RR	
								IS 9434 : 2019	Reviewed by committee. Reaffirmed		
								IS 16497 : Part 1 : 2017	Reviewed by committee. Reaffirmed		
								IS 16310 : 2017	Reviewed by committee. Reaffirmed		

								IS 16863 : Part 2 : 2018	Reviewed by committee. Reaffirmed		
								IS 16863 : Part 1 : 2018	Reviewed by committee. Reaffirmed		
								IS 16863 : Part 3 : 2018	Reviewed by committee. Reaffirmed		
								IS 16871 : 2018	Reviewed by committee. Reaffirmed		
								IS 16870 : 2018	Reviewed by committee. Reaffirmed		
								IS 16868 : 2018	Reviewed by committee. Reaffirmed		
								IS 16869 : 2018	Reviewed by committee. Reaffirmed		
								IS 16867 : 2018	Reviewed by committee. Reaffirmed		
								IS 16840 : 2018	Reviewed by committee. Reaffirmed		
								IS 16859 : 2018	Reviewed by committee. Reaffirmed		
								IS 16838 : 2018	Reviewed by committee. Reaffirmed		

								IS 16841 : 2018	Reviewed by committee. Reaffirmed	
								IS 16785 : 2018	Reviewed by committee. Reaffirmed	
								IS 16839 : 2019	Reviewed by committee. Reaffirmed	
								IS 17245 : 2019	Reviewed by committee. Reaffirmed	
								IS 17244 : 2019	Reviewed by committee. Reaffirmed	

ANNEX 3

Inputs Received from the Utilities with respect to revision of IS 335:2018

Sl. No.	Name of the Utility	Inputs received
1.	GETCO	Presently, GETCO follows the technical specification for the insulating oil for all class Transformers/Reactors conform to IS: 335 (latest edition/amendment thereof). As IS 335: 2018 (latest edition/amendment thereof) caters all the requirements, GETCO suggested to adopt the IS 335: 2018.
2.	MP Paschim Kshetra Vidyut Vitaran Co. Ltd	In regard to the contents of the letter it may be mentioned that our company purchases the Type-II Transformer Insulating Oil in line with applicable Indian Standards and not having expertise in regard to detailed quality specification of insulating Oils. As such, it may not be possible for providing inputs on the subject, as desired. Consensus decision taken with other expertise inputs in the matter will be admissible, please.
3.	Damodar Valley Corporation	1. In IS:335 2018, ***Quote*** "Sl. No. 6.3: Water Content: A low water content of mineral insulating oil is necessary to achieve adequate break down voltage and low dissipation losses. To avoid separation of free water, unused insulating oil should have limited water content. Before filling the electrical equipment, the oil should be treated to meet the requirements of IS 1866. Water content shall be measured in accordance with IEC 60814." ***Unquote***. Water content measurement reference may be put as IS 13567:2018 : Measurement of water content in insulating liquid and oil impregnated paper insulation. 2. In IS:335 2018, ***Quote*** "Sl. No. 6.22: Stray Gassing of Oil: Some oils can produce gases such as hydrogen, hydrocarbons, and carbon oxides at low temperatures (< 120 °C) without thermal or electrical faults in a transformer, sometimes even without operational stress. This phenomenon could result in a high production of gases and a misinterpretation of DGA results. NOTE — Methods to measure stray gassing are described in CIGRE Brochure 296 and ASTM D7150. Inhibited grades typically produce less stray gassing than uninhibited ones." ***Unquote***. Details of stray gassing of Oil as per IEC 60296 : 2020, ANNEX-A may be incorporated in new edition IS 335.

		3. In IEC 60296 : 2020: Sl no. 7.4- Thermal properties, 7.5- Properties connected with consistency (aromatic content, distribution of PAHs, refractive index), 7.6- Lubricating properties, 7.8- Foaming are mentioned but these are not present in IS:335 2018. These may be incorporated in new edition IS 335.
4.	TSSPDCL	TSSPDCL holds good with IS 335: 2018 (identical or with modification as suggested in enclosed sheet) and is suitable for climatic conditions of the State.
5.	NTPC	1. Table 2 General Specifications C. Performance- c) DDF at 90°C Comment- May be considered 0.005 in place of 0.5 Justification- May help to ensure lesser polar contaminants and better refining quality. 2. D Health, Safety and Environment (HSE) xxv) Flash point Comment- May be considered 140°C in place of 135°C for Type-I Transformer Oil. Justification- May help to ensure better safety of electrical equipment.
6.	CEE DEE Vaccum Equipment Pvt. Ltd	1.The Inclusion of recycled mineral oil does not indicate the vender/end user to compromise on the quality of oil result . 2.**Inclusion of Recycled mineral insulating oils in IS 335**: IEC 60296-2020 has included unused as well as recycled (reclaimed and re-refined) mineral insulating oil. The recycled mineral insulating oil in this specification refers to oil used inside the electrical equipment. This is not for the supply of used or recycle oil from venders but to use the same oil and avoid buying and save environment. Today India is sourcing million Ltrs of oil from overseas. Considering the National interest, recycle oil inclusion in standard will avoid confusion of recycle of oil parameter and will help to save oil purchasing and attend Environmental call. In India, oil inside the operating electrical instrument is treated to enhance oil parameter and its performance. Indian end user is having record of recycle oil inside the electrical instrument from 2006-07. When all the parameter of IEC 60296 is accepted in Toto, we should also consider the **Inclusion of Recycled mineral insulating oils in IS 335** and it should not be dealt in separate specification

ANNEX 4

Program of Work

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 - Fluids for electrotechnical applications - Participating (P)

S.No	IS NO Year	Title	Reaffirmation Details
1.	IS 10593 : 2023 IEC 60599:2022	Mineral oil-filled electrical equipment in service - Guidance on the interpretation of dissolved and free gases analysis	Due for review 2028
2.	IS 11697 : 1986 Reviewed In : 2021	Guide for determination of lightning impulse electric strength of insulating liquids	October, 2021
3.	IS 12177 : 1987 Reviewed In : 2018	Methods of tests for oxidative ageing of electrical insulating petroleum oils by open beaker method	April, 2018
4.	IS 12422 : 2023 IEC 61125:2018	Unused Hydrocarbon Based Insulating Liquids ï¿½ Test Methods for ï¿½ Evaluating the Oxidation Stability (Second Revision)	Due for review 2028
5.	IS 12475 (Part 1) : 1988	Specification for gassing of insulating liquid under electric stress and ionization: Part 1 methods of determination of gassing rate under hydrogen atmosphere	April, 2018
6.	IS 12475 (Part 2) : 1988	Specification for gassing of insulating liquids under electric stress and ionization: Part 2 method of determination of gassing rate under nitrogen atmosphere	April, 2018
7.	IS 12958 : 1990	Oxidation stability of inhibited mineral insulating oil by rotating bomb - Method of test	October, 2021
8.	IS 13067 : 1991	Impregnants for power capacitors - Specification	October, 2021
9.	IS 13072 : 2021 60376 : 2018	Specification of Technical Grade Sulphur Hexafluoride SF6 for Use in Electrical Equipment purposes	Due for review 2026
10.	IS 13155 : 1991	Method of test for carbontype analysis of mineral oils by infra - Red spectrophotometry	October, 2021
11.	IS 13236 : 2013 IEC 60970 : 2007	Insulating liquids - Methods for counting and sizing particles (First Revision)	May, 2024

12.	IS 13503 : 2013 IEC 61039 : 2008	Classification of insulating liquids (First Revision)	May, 2024
13.	IS 13567 : 2018 IEC 60814 : 1997	Insulating liquids - Oil - Impregnated paper and pressboard - Determination of water by automatic coulometric karl fischer titration (First Revision)	May, 2024
14.	IS 13631 : 2017	Detection and determination of specified additives in mineral insulating oils (First Revision)	May, 2024
15.	IS 15668 : 2006 IEC 61198 (1993)	Mineral insulating oils - Methods for the determination of 2 - Furural and related compounds	June, 2021
16.	IS 16081 : 2013 IEC 61099 : 2010	Insulating liquids - Specifications for unused synthetic organic esters for electrical purposes	May, 2024
17.	IS 16082 : 2013 IEC 61619 : 1997	Insulating liquids - Contamination by polychlorinated biphenyls (PCBS) - Method of determination by capillary column gas chromatography	May, 2024
18.	IS 16083 : 2013 IEC 60465 : 1988	Specification for unused insulating mineral oils for cables with oil ducts	May, 2024
19.	IS 16084 : 2013 IEC 61868 : 1998	Mineral insulating oils - Determination of kinematic viscosity at very low temperatures	May, 2024
20.	IS 16085 : 2023 IEC 61181:2012 (Ed 2.1)	Mineral oil-filled electrical equipment - Application of dissolved gas analysis DGA to factory tests on electrical equipment	Due for review 2028
21.	IS 16086 : 2013 IEC 61620 : 1998	Insulating liquids - Determination of the dielectric dissipation factor by measurement of the conductance and capacitance - Test method	May, 2024
22.	IS 16099 : 2013 IEC 61203 : 1992	Synthetic organic esters for electrical purposes - Guide for maintenance of transformer esters in equipment	May, 2024
23.	IS 16310 : 2017 IEC 62535 : 2008	Insulating liquids - Test method for detection of potentially corrosive sulphur in used and unused insulating oil	May, 2024
24.	IS 16497 (Part 1) : 2017 IEC 62697-1 : 2012	Test methods for quantitative determination of corrosive sulphur compounds in unused and used insulating liquids: Part 1 test method for quantitative determination of dibenzyldisulfide (Dbds)	May, 2024
25.	IS 16659 : 2017 IEC 62770 : 2013	Fluids for electrotechnical applications - Unused natural esters for transformers and similar electrical equipment	May, 2024
26.	IS 16785 : 2018 IEEE Std C57.155TM-2014 Reviewed In : 2024	Guide for Interpretation of Gases Generated in Natural Ester and Synthetic Ester- Immersed Transformers	May, 2024

27.	IS 16838 : 2018 IEC 60836 : 2015	Specifications for unused silicone insulating liquids for electrotechnical purposes	May, 2024
28.	IS 16839 : 2019 IEC 60897 : 1987	Methods for the determination of the lightning impulse breakdown voltage of insulating liquids	May, 2024
29.	IS 16840 : 2018 IEC 60247 : 2004	Insulating liquids - Measurement of relative permittivity, dielectric dissipation factor (Tan) and D.C. resistivity	May, 2024
30.	IS 16841 : 2018 IEC 60944 : 1998	Guide for the maintenance of silicone transformer liquids	May, 2024
31.	IS 16859 : 2018 IEC 60963 : 1998	Specification for unused polybutenes	May, 2024
32.	IS 16863 (Part 1) : 2018 IEC 62021-1 : 2003	Insulating Liquids â€" Determination of Acidity Part 1 Automatic Potentiometric Titration	May, 2024
33.	IS 16863 (Part 2) : 2018 IEC 62021-2 : 2007	Insulating Liquids â€" Determination of Acidity Part 2 Colourimetric Titration	May, 2024
34.	IS 16863 (Part 3) : 2018 IEC 62021-3 : 2014	Insulating Liquids â€" Determination of Acidity Part 3 Test Methods for Non-Mineral Insulating Oils	May, 2024
35.	IS 16867 : 2018 IEC 61197 : 1993	Insulating Liquids â€" Linear Flame Propagation â€" Test Method Using a Glass-Fibre Tape	May, 2024
36.	IS 16868 : 2018 IEC 61144 : 1992	Test Method for the Determination of Oxygen Index of Insulating Liquids	May, 2024
37.	IS 16869 : 2018 IEC 61065 : 1991	Method for Evaluating the Low Temperature Flow Properties of Mineral Insulating Oils After Ageing	May, 2024
38.	IS 16870 : 2018 IEC TR 62874 : 2015	Guidance on the interpretation of carbon dioxide and 2 - Furfuraldehyde as markers of paper thermal degradation in insulating mineral oil	May, 2024
39.	IS 16871 : 2018 IEC/TR 62036 : 2007	Mineral insulating oils - Oxidation stability test method based on differential scanning calorimetry (DSC)	May, 2024
40.	IS 16899 : 2023 IEC 62975:2021	Guide for Acceptance and Maintenance of Natural Ester Fluids in Transformers (First Revision)	Due for review 2028
41.	IS 17053 : 2023 IEC 60480:2019	Guidelines for the Checking and Treatment of Sulfur Hexafluoride (SF6) Taken from Electrical Equipment and Specification for its Re-Use (First Revision)	Due for review 2028

42.	IS 17244 : 2019 IEC TR 61946 : 2007	Mineral Insulating Oils â€" Characterization of Paraffinic / Naphthenic Nature â€" Low Temperature Differential Scanning Calorimetry (DSC) Test Method	May, 2024
43.	IS 17245 : 2019 IEC TR 61294 : 1993	Insulating Liquids â€" Determination of the Partial Discharge Inception Voltage (PDIV) â€" Test Procedure	May, 2024
44.	IS 1866 : 2017 IEC 60422 : 2013	Mineral insulating oils in electrical equipment supervision and maintenance guidance (Fourth Revision)	May, 2024
45.	IS 335 : 2018	New insulating oils - Specification (Fifth Revision)	-
46.	IS/IEC 60867 : 2024 IEC 60867:2022	Insulating Liquids Specifications For Unused Liquids Based On Synthetic Aromatic Hydrocarbons	Due for review 2029
47.	IS 6104 : 2024 IEC 62961:2018	Insulating Liquids ï¿½ Determination of Interfacial Tension with the Ring Method ï¿½ Method of Test (First Revision)	Due for review 2029
48.	IS 6792 : 2023 IEC 60156: 2018	Insulating liquids - Determination of the breakdown voltage at power frequency - Test method	Due for review 2028
49.	IS 6855 : 2023 IEC 60475:2022	Method of sampling insulating liquids	Due for review 2028
50.	IS 9434 : 2019 IEC 60567 : 2011	Oil-Filled Electrical Equipment — Sampling of Gases and Analysis of Free and Dissolved Gases — Guidance (Second Revision)	May,2024

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4.	IS 12422 : 2023 IEC 61125:2018	Unused Hydrocarbon Based Insulating Liquids ï¿½ Test Methods for ï¿½ Evaluating the Oxidation Stability (Second Revision)	Due for review 2028
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15.	IS 15668 : 2006 IEC 61198 (1993)	Mineral insulating oils - Methods for the determination of 2 - Furural and related compounds	June, 2021
16.	IS 16081 : 2013 IEC 61099 : 2010	Insulating liquids - Specifications for unused synthetic organic esters for electrical purposes	May, 2024
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19.	IS 16084 : 2013 IEC 61868 : 1998	Mineral insulating oils - Determination of kinematic viscosity at very low temperatures	May, 2024
20.	IS 16085 : 2023 IEC 61181:2012 (Ed 2.1)	Mineral oil-filled electrical equipment - Application of dissolved gas analysis DGA to factory tests on electrical equipment	Due for review 2028
21.	IS 16086 : 2013 IEC 61620 : 1998	Insulating liquids - Determination of the dielectric dissipation factor by measurement of the conductance and capacitance - Test method	May, 2024
22.	IS 16099 : 2013 IEC 61203 : 1992	Synthetic organic esters for electrical purposes - Guide for maintenance of transformer esters in equipment	May, 2024
23.	IS 16310 : 2017 IEC 62535 : 2008	Insulating liquids - Test method for detection of potentially corrosive sulphur in used and unused insulating oil	May, 2024
24.	IS 16497 (Part 1) : 2017 IEC 62697-1 : 2012	Test methods for quantitative determination of corrosive sulphur compounds in unused and used insulating liquids: Part 1 test method for quantitative determination of dibenzyldisulfide (Dbds)	May, 2024
25.	IS 16659 : 2017 IEC 62770 : 2013	Fluids for electrotechnical applications - Unused natural esters for transformers and similar electrical equipment	May, 2024
26.	IS 16785 : 2018 IEEE Std C57.155TM-2014 Reviewed In : 2024	Guide for Interpretation of Gases Generated in Natural Ester and Synthetic Ester- Immersed Transformers	May, 2024

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39.	IS 16871 : 2018 IEC/TR 62036 : 2007	Mineral insulating oils - Oxidation stability test method based on differential scanning calorimetry (DSC)	May, 2024
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41.	IS 17053 : 2023 IEC 60480:2019	Guidelines for the Checking and Treatment of Sulfur Hexafluoride (SF6) Taken from Electrical Equipment and Specification for its Re-Use (First Revision)	Due for review 2028

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43.	IS 17245 : 2019 IEC TR 61294 : 1993	Insulating Liquids â€" Determination of the Partial Discharge Inception Voltage (PDIV) â€" Test Procedure	May, 2024
44.	IS 1866 : 2017 IEC 60422 : 2013	Mineral insulating oils in electrical equipment supervision and maintenance guidance (Fourth Revision)	May, 2024
45.	IS 335 : 2018	New insulating oils - Specification (Fifth Revision)	-
46.	IS/IEC 60867 : 2024 IEC 60867:2022	Insulating Liquids Specifications For Unused Liquids Based On Synthetic Aromatic Hydrocarbons	Due for review 2029
47.	IS 6104 : 2024 IEC 62961:2018	Insulating Liquids ï¿½ Determination of Interfacial Tension with the Ring Method ï¿½ Method of Test (First Revision)	Due for review 2029
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50.	IS 9434 : 2019 IEC 60567 : 2011	Oil-Filled Electrical Equipment — Sampling of Gases and Analysis of Free and Dissolved Gases — Guidance (Second Revision)	May,2024

Annex 5

Standards due for review

S.No	IS NO Year	Title	Reaffirmation Details	Latest IEC
1.	IS 12475 (Part 1) : 1988	Specification for gassing of insulating liquid under electric stress and ionization: Part 1 methods of determination of gassing rate under hydrogen atmosphere	April, 2018	—
2.	IS 12475 (Part 2) : 1988	Specification for gassing of insulating liquids under electric stress and ionization: Part 2 method of determination of gassing rate under nitrogen atmosphere	April, 2018	—
3.	IS 15668 : 2006 IEC 61198: 1993	Mineral insulating oils - Methods for the determination of 2 - Furural and related compounds	June, 2021	IEC 61198: 1993
4.	IS 11697 : 1986	Guide for determination of lightning impulse electric strength of insulating liquids	October, 2021	—
5.	IS 12958 : 1990	Oxidation stability of inhibited mineral insulating oil by rotating bomb - Method of test	October, 2021	—
6.	IS 13067 : 1991	Impregnants for power capacitors - Specification	October, 2021	—
7.	IS 13155 : 1991	Method of test for carbontype analysis of mineral oils by infra - Red spectrophotometry	October, 2021	—
8.	IS 10593 : 2023 IEC 60599:2022	Mineral oil-filled electrical equipment in service - Guidance on the interpretation of dissolved and free gases analysis	Due for review 2028	IEC 60599:2022
9.	IS 12422 : 2023 IEC 61125:2018	Unused Hydrocarbon Based Insulating Liquids ï¿½ Test Methods for ï¿½ Evaluating the Oxidation Stability (Second Revision)	Due for review 2028	IEC 61125:2018
10.	IS 13072 : 2021 IEC 60376 : 2018	Specification of Technical Grade Sulphur Hexafluoride SF6 for Use in Electrical Equipment purposes	Due for review 2026	IEC 60376 : 2018
11.	IS 16085 : 2023 IEC 61181:2012 (Ed 2.1)	Mineral oil-filled electrical equipment - Application of dissolved gas analysis DGA to factory tests on electrical equipment	Due for review 2028	IEC 61181:2012 (Ed 2.1)
12.	IS 16899 : 2023 IEC 62975:2021	Guide for Acceptance and Maintenance of Natural Ester Fluids in Transformers (First Revision)	Due for review 2028	IEC 62975:2021
13.	IS 17053 : 2023 IEC 60480:2019	Guidelines for the Checking and Treatment of Sulfur Hexafluoride (SF6) Taken from Electrical Equipment and Specification for its Re-Use (First Revision)	Due for review 2028	IEC 60480:2019

14.	IS/IEC 60867 : 2024 IEC 60867:2022	Insulating Liquids Specifications For Unused Liquids Based On Synthetic Aromatic Hydrocarbons	Due for review 2029	IEC 60867:2022
15.	IS 6104 : 2024 IEC 62961:2018	Insulating Liquids ï¿½ Determination of Interfacial Tension with the Ring Method ï¿½ Method of Test (First Revision)	Due for review 2029	IEC 62961:2018
16.	IS 6792 : 2023 IEC 60156: 2018	Insulating liquids - Determination of the breakdown voltage at power frequency - Test method	Due for review 2028	IEC 60156: 2018
17.	IS 6855 : 2023 IEC 60475:2022	Method of sampling insulating liquids	Due for review 2028	IEC 60475:2022

Annex 6

Review of Standards —Taking up Revision of pre-2000 standards

Sl. No.	Subject	Decision	Action Taken/Proposed as reported in last meeting	Decision taken in last meeting	Action Taking
1.	IS 6103: 1971-Method of test for specific resistance Resistivity of electrical insulating liquids	The committee had decided withdraw IS 6103: 1971 as IS 16840:2018-Insulating Liquids-Measurement of relative permittivity dielectric dissipation factor Tan and DC resistivity supersedes IS 6103:1971	Withdrawn. The committee may note	The committee noted	
2.	IS 6104:1971-Method of test for interfacial tension of oil against water by the ring method.	The committee has decided to adopt IEC 62961 and has instructed the Member Secretary to wide circulate the document for a duration of one month. If no comments are received during this period, the document will be finalized and sent for printing with the approval of the Chairperson.	Under Printing. The committee may note	The committee noted	
3.	IS 6262: 1971 Method of test for power factor and dielectric constant of electrical insulating liquids	The committee has decided to withdraw *IS 6262: 1971* as *IS 16840:2018 Insulating liquids - Measurement of relative permittivity di electric dissipation factor Tan and D Cesistivity* supersedes IS 6103: 1971.	Withdrawn. The committee may note	The committee noted	
4.	IS 9960: 1981 Specification for electrical grade castor oil for use as capacitor impregnate.	The Committee decided to withdraw as the standard is obsolete.	Withdrawn. The committee may note	The committee noted	
5.	IS 11549: 1986 Specification or impregnating oils and	The Committee decided to withdraw as the standard is obsolete.	Withdrawn. The committee may note	The committee noted	

	compounds for paper insulated cables up to 33 KV				
6.	IS 11697:1986 Guide for determination of lightning impulse electric strength of insulating liquids	The committee has decided to reprint the document and wide circulate it for a duration of one month. If no comments are received during this period, the document will be finalized and sent for printing with the approval of the Chairperson.	The committee may consider circulating the draft as P-Draft for 30 days and then wide circulate.	The committee decided to circulate the draft as P-Draft for one month and then wide circulate for a duration of one month	
7.	IS 12026: Part 1: 1986 determination of The aromatic hydrocarbon content of new insulating oils Part 1 adsorption chromatographic Method.	The committee has decided to withdraw IS 12026 Part 1 as the standard is obsolete.	Withdrawn. The committee may note	The committee noted.	
8.	IS 12026: Part 2: 1986 Guide for the determination of the aromatic hydrocarbon content of new insulating oils Part 2 infra -Red spectrophotometricmethod	The committee has decidedto withdraw *IS 12026 Part 2* as *IS 13155: 1991 Method oftest for carbon type analysis of mineral oils by infra – Red spectrophotometry* supersedes *IS 12026 Part 2*	Withdrawn The committeemay note.	The committee noted.	
9.	IS 12177: 1987 Methods of tests for oxidative ageing of electrical insulating petroleum oils by open beaker method	The committee has decided to reprint IS 12177: 1987 and wide circulate for a duration of one month. If no comments are received during this period, the document will be finalizedand sent for printing with the approval of the Chairperson.	The committee may consider circulating thedraft as P-Draftfor 30 days and then wide circulate.	The committee decided to circulate thedraft as P-Draftfor one monthand then widecirculate for a duration of one month	
10.	IS 12475: Part 1: 1988 Specification or gassing of insulating liquid under electric stress and ionization	The committee has decided to reprint IS 12475 Part 1& 2and wide circulate for a duration of one month. If nocomments are received during this period, the	The committee may consider circulating the draft as P-Draftfor 30 days and then wide circulate.	The committee decided to circulate thedraft as P-Draftfor one	

	Part 1 methods of determination of gassing rate under hydrogen atmosphere	document will be finalizedand sent for printing with theapproval of the Chairperson.		monthand then widecirculate for a duration of one month.	
11.	IS 12475: Part 2: 1988 Specification or gassing of insulating liquids under electric stress and ionization Part 2 method of determination of gassing rate under nitrogen atmosphere				
12.	IS 12958: 1990 Oxidation stability of inhibitedmineral insulating oil by rotating bomb-Method of test	The committee decided to rename the title as '*Oxidation stability ofinhibited mineral insulating oil by Pressure Vessel - Method of test'* & update scope & significance as per ASTM D2112-01a. The committee decided to send revised draft for WideCirculation for a period of 1Month. If no comments arereceived during this period,the document will be finalized and sent for printing with the approval of the Chairperson.	The committee may consider circulating the draft as P-Draftfor 30 days and the wide circulate.	The committee decided to circulate thedraft as P-Draftfor one monthand then widecirculate for a duration of one month	
13.	IS 13067: 1991 Impregnates for power capacitors - Specification	The committee has decided to reprint IS 13067: 1991 andcirculate it widely for a duration of one month. If no comments are received during this period, the document will be finalizedand sent for printing with theapproval of the Chairperson.	The committee may consider circulating thedraft as P-Draftfor 30 days and then wide circulate.	The committee decided to circulate thedraft as P-Draftfor one monthand then widecirculate for a duration of one month	

14.	IS 13155: 1991 Method of test for carbon type analysis ofmineral oils by infra – Red spectrophotometry	The committee has decided to reprint IS 13155: 1991 andcirculate it widely for a duration of one month. If no comments are received during this period, the document will be finalizedand sent for printing with the approval of the Chairperson.	The committee may consider circulating thedraft as P-Draftfor 30 days and then wide circulate.	The committee decided to circulate thedraft as P-Draftfor one monthand then widecirculate for a duration of one month	

Annex 7

REVIEW ANALYSIS OF INDIAN STANDARD

1. **Sectional Committee No. & Title:** ETD 03
2. **IS No:** 9434: 2019
3. **Title:** Oil-Filled Electrical Equipment — Sampling of Gases and Analysis of Free and Dissolved Gases — Guidance (Second Revision)
4. **Date of review:** 10 October 2024
5. **Review Analysis**

i) Status of standard(s), if any from which assistance had been drawn in the formulation of this IS.

Standard (No. & Title)	Whether the standard has since been revised	Major changes	Action proposed
IEC 60567 : 2011	Yes revised in 2023	This edition includes the following significant technical changes with respect to the previous edition: a) a new normative Annex F relating to DGA analysis of insulating liquids other than mineral oils (esters and silicones) has been added; b) Clause 4 to Clause 11 and informative Annex A to Annex E remain devoted to mineral oils; c) two new mercury-free gas extraction methods are described in Annex B (low pressure vacuum extraction and mechanical oscillation).	NA

ii) Status of standards referred in the IS

Referred standards (No. & Title)	IS No. of this standards since revised	Changes that are of affecting the standard under review	Action proposed
IS 6855 : 2017 Method of sampling insulating liquids (second revision)	Yes revised in 2023	This edition includes the following significant technical changes with respect to the previous edition: a) addition of a new Annex C on sampling of oil from bushings, at the request of IEC subcommittee 36A, in order to transfer to IEC 60475 the corresponding contents of IEC TR 61464 relating to oil sampling from bushings; b) deletion of NOTE 2 in 4.2.1.2.	NA
IS 10593 : 2018 Mineral oil-filled electrical equipment in service — Guidance on the interpretation of dissolved and free gases analysis (third revision)	Yes revised in 2023	This edition includes the following significant technical changes with respect to the previous edition: a) revision of Clause A.5 on bushings, at the request of IEC subcommittee 36A, in order to transfer to IEC 60599 the corresponding contents of IEC TR 61464 [1]1 relating to DGA in bushings and include the new information on DGA in bushings available in CIGRE Technical Brochure 771 (2019) [2]; b) revision of Clause A.3 on wind turbine transformers, in order to include in IEC 60599 the new information on DGA in wind turbine transformers available in CIGRE Technical Brochure 771 (2019) [2].	NA
IS 15393 (all parts) : 2003 Accuracy (trueness and precision) of	No	No	NA

measurement methods and results			

iii) Any other standards available related to the subject & scope of the standard being reviewed (International/regional/other national/association/consortia, etc. or of new or revision of existing Indian Standard)

Standard (No. & Title)	Provisions that could be relevant while reviewing the IS	Action proposed
Nil	Nil	Nil

iv) Technical comments on the standard received, if any

Source	Clause of IS	Comment	Action proposed
Nil	Nil	Nil	Nil

v) Information available on technical developments that have taken place (on product/processes/practices/use or application/testing/input materials, etc)

Source	Development	Relevant clause of the IS under review that is likely to be impacted (Clause & IS No.)	Action proposed
Nil	Nil	Nil	Nil

vi) Issues arising out of changes in any related IS or due to formulation of new Indian Standard

Related IS and its Title (revised or new)	Provision in the IS under review that would be impacted & the clause no. or addition of new clause/provision	Changes that may be necessary in the Standards under review	Action proposed
Nil	Nil	Nil	Nil

vii) Any consequential changes to be considered in other IS

Related IS to get impacted	Requirements to be impacted

1. **Any other observation:** NIL

2. **Recommendations:** Committee decided to reaffirm IS 9434: 2019 as the base IEC 60567: 2023 is not revised

Annex 8
Report on BIS project ETD 0108

I am writing to provide an update on the progress of our project titled "Collection and Analysis of Dissolved Gas Analysis (DGA) Data for Ester-Based Transformer Fluids and Conclude Method for Interpretation of DGA for Fault Identifications of Ester Fluid Filled Transformers" (Project Code: ETD0108).

According to the schedule for the first month, the following tasks were to be completed:

i. Literature review.

ii. Identification and collection of transformer details that use natural and synthetic ester oil in India,across all available ratings.

The date of release for the first installment was set for 25-06-2024. However, I was informed aboutthe transfer of the installment on 08-07-2024, which is when we became aware of the release. Duringthis period, we have made significant progress:

We have successfully recruited one project staff member. (attached Reference: F.No: NITMZ/RP- 33/2024/1283, dated 10-07-2024) on 10th July 2024 and he joined on 20th July 2024 but could not continue due to his personal problem.

We have requested BIS to send a request to various CPRI and test labs to provide the DGA data of ester oil-filled transformers. We have specifically requested the following additional data:

(a) The rating of the transformer and the date of commissioning.
(b) Whether the transformer is retro-filled or freshly filled with ester oil.
(c) If retro-fitted, the date of retro-filling.
(d) The type of ester used, along with the supplier's name, if possible.

BIS has communicated the same on 29th July 2024 to Dr. Ann Pamla Cruz; Mr. Pankaj Chawla; Ms Manjusha Nambiar; enquiry@gelab.co.in. Ms. Nambiar from ERDA has already communicated that 'All the data/information mentioned in the trailing mail will be available with utilities/power plants/ester oil manufactures and suppliers, as a part of record of their transformer health monitoring'.

The PI of the project had also written an email seeking data from one of the utility sector (powergrid)on 8th June 2024 to which the official called me over phone to request me to contact the supplier / manufacturer of the oil.

Hence, as a part of this project it is required by the team, to identify and collect DGA data from utilities and other end users. PI is in the process of contacting the manufacturer of Ester Oil e.g. M/s APAR, M/s SAVITA OIL, M/s KRISHI OILS Ltd and other CPRI labs (already contacted Kolkata CPRI lab).

The Literature review is in progress.

We are committed to the progress of this project according to the outlined schedule and will continue to keep you informed of any significant developments in terms of various related IS e.g., IS 16659 (Fluids for Electrotechnical Applications — Unused Natural Esters for Transformers and Similar Electrical Equipment), 16081 (INSULATING LIQUIDS — SPECIFICATIONS FOR UNUSED SYNTHETIC ORGANIC ESTERS FOR ELECTRICAL PURPOSES).

03/09/24

(Saibal Chatterjee)
PI. Department of electrical Engineering,
NIT Mizoram

Annex 9
Comments received from ERDA

RE: Request for Review and Approval of Progress Report for R&D Project ETD 0108

MA manjusha.nambiar@erda.org
Thu, 12 Sep 2024 11:46:08 AM +0530

To "ETD DEPARTMENT" <eetd@bis.gov.in>, "pthomas64" <pthomas64@gmail.com>, "Dr.P.Thomas" <thomas@cpri.in>, "ashish.nema" <ashish.nema@adani.com>, "damodar.sahasrabuddhe" <damodar.sahasrabuddhe@adani.com>, "tcsm.gupta" <tcsm.gupta@apar.com>, "corporate" <corporate@apar.com>, "skmahajan" <skmahajan@bhel.in>, "corporatestandards" <corporatestandards@bhel.in>, "dvaryani" <dvaryani@bhel.in>, "kashinaths" <kashinaths@bharatpetroleum.in>, "khalidzubairmoh" <khalidzubairmoh@bharatpetroleum.in>, "Pravatanalini" <psamal@beeindia.gov.in>, "Dheeraj Pandey" <dheeraj.pandey96@beeindia.gov.in>, "uday.sanvatsarkar" <uday.sanvatsarkar@cgglobal.com>, "DR ARUN RAM PRASATH R T" <arunramprasathrt@nplindia.org>, "Manish Kumar Tamrakar" <tamrakarm@nplindia.org>, "madhuree_Hage" <madhuree_Hage@cargill.com>, "Naveen_Jain" <Naveen_Jain@cargill.com>, "nitin" <nitin@ceedeevacuum.net>, "hrd" <hrd@ceedeevacuum.net>, "suhas" <suhas@ceedeevacuum.net>, "Om Prakash Suman" <suman.om@gov.in>, "CEHETD" <hetdcea@nic.in>, "Sadasiva Murthy" <ssmurthy@cpri.in>, "Dr. Ann Pamla Cruz" <pamla@cpri.in>, "pankaj.chawla" <pankaj.chawla@erda.org>, "enquiry" <enquiry@gelab.co.in>, "akjain" <akjain@hpcl.in>, "lalit.yadav" <lalit.yadav@hpcl.in>, "rishabh.joshi" <rishabh.joshi@ieema.org>, "chairman.eim" <chairman.eim@ieema.org>, "saxenad" <saxenad@indianoil.in>, "tripathic" <tripathic@indianoil.in>, "raikavita" <raikavita@indianoil.in>, "sklal" <sklal@ntpc.co.in>, "koushikdas" <koushikdas@ntpc.co.in>, "gunjan.agrawal" <gunjan.agrawal@powergrid.in>, "dsdhanak" <<dsdhanak@savita.com>>, "sgjagdale" <sgjagdale@savita.com>, "ppphatak" <ppphatak@savita.com>, "ishwaridutt.kabdal" <ishwaridutt.kabdal@se.com>, "abhishek.tomar" <abhishek.tomar@se.com>, "rshinde34" <rshinde34@hotmail.com>, "barin.de" <barin.de@gmail.com>

Dear Sir,

My comments on the report are -

- A brief write-up including conclusions drawn based on Literature survey may be provided for reference.
- For collection of the data, in addition to PGCIL, you may also contact several state electricity companies (particular Transmission companies).

Thanking you with Best Regards,

Manjusha. S. Nambiar | Assistant Manager - Advanced Materials (TM1) - R&D +91 8238005037 www.erda.org
ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION
ERDA Road, G.I.D.C., Makarpura,
Vadodara - 390010, Gujarat, India
Toll Free No.: 1800 233 2668
T: +91 265 2642942/64/2377; Extn.: 310

From: ETD DEPARTMENT [mailto:eetd@bis.gov.in]
Sent: 04 September 2024 16:48
To: pthomas64; thomas; ashishnema; damodarsahasrabuddhe; tcsmgupta; corporate; skmahajan; corporatestandards; dvaryani; kashinaths; khalidzubairmoh; psamal; dheerajpandey96; udaysanvatsarkar; arunramprasathrt; tamrakarm; madhuree_Hage; Naveen_Jain; nitin; hrd; suhas; sumanom; hetdcea; ssmurthy; pamla; Pankaj Chawla; Manjusha Nambiar; enquiry; akjain; lalityadav; rishabhjoshi; chairmaneim; saxenad; tripathic; raikavita; sklal; koushikdas; gunjanagrawal; dsdhanak; sgjagdale; ppphatak; ishwariduttkabdal; abhishektomar; rshinde34; barinde
Subject: Request for Review and Approval of Progress Report for R&D Project ETD 0108

Dear Madam/Sir,

This has reference to the following R&D project as approved by the ETD 03 sectional committee in its 23rd meeting:

Project number: ETD 0108
Title of the Project: Collection and Analysis of Dissolved Gas Analysis (DGA) Data for Ester Based Transformer Fluids and conclude method for interpretation of DGA for Fault Identifications of Ester Fluid Filled Transformers

The project has been allocated to NIT Mizoram after following the due procedures. Please find enclosed the technical proposal as submitted by the Project leader 'Prof. Saibal Chatterjee, NIT Mizoram' along with the progress report as per the plan of work and methodologies mentioned therein.

As per the R&D guidelines laid down by BIS, the progress report requires review and acceptance by the sectional committee to release the second installment of the allocated funds.

In this context, all committee members are requested to review the progress report and share their feedback, if any, latest by **12 September 2024**.

Given no comments/feedback received, kindly allow us to presume your approval on the same.

Thanks & regards,

Meghna Mudgal
Scientist 'C'/Deputy Director
Member Secretary (ETD 03)
विद्युत तकनीकी विभाग | Electrotechnical Department
भारतीय मानक ब्यूरो | Bureau of Indian Standards
उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय | Ministry of Consumer Affairs, Food & Public Distribution
भारत सरकार | Government of India
मानक भवन, 9 बहादुरशाह ज़फर मार्ग | Manak Bhawan, 9 Bahadur Shah Zafar Marg
नई दिल्ली - ११०००२ | New Delhi - 110002
दूरभाष Phone: +91 011 23231192, 2360 8271
ईमेल e-Mail: eetd@bis.gov.in | वेबसाइट Website: www.bis.gov.in

Annex 14

Publications and work program of IEC TC 10

Annex 14

publications and work program of, IEC TC 10

S.No	Project Reference	Title	Document Reference	Init. Date	Current Stage Date	Current Stage	Next Stage Date	Next Stage	Working Group	Designated expert from india in the WG/MT
1.	IEC 60156 ED4	Insulating liquids - Determination of the breakdown voltage at power frequency - Test method	10/1241/FDIS	2019-12	2024-08	PRVD	2024-08		MT 30	—
2.	IEC 60465 ED3	Specification for unused insulating mineral oils for cables with oil ducts	10/1151/RR	2021-07	2021-07	ACD	2023-12+	CD	MT 42	—
3.	IEC 60666 ED3	Detection and determination of specified additives in mineral insulating oils	10/1153/RR	2021-07	2021-07	ACD	2025-12	CD	MT 43	—
4.	IEC 61039 ED3	Classification of insulating liquids	10/1204/CDV	2021-07	2024-08	RFDIS	2024-11	CFDIS	MT 36	Mr Chakravarthula Srinivasa Narasimhan
5.	IEC 61203 ED2	Synthetic esters - Guidelines for maintenance and use in electrical equipment	10/1203/CDV	2019-12	2024-09	RFDIS	2024-11	CFDIS	MT 36	—
6.	IEC 63359 ED1	Fluids for electrotechnical application: Specifications for the re-use of mixtures of gases alternative to SF₆	10/1218/CD	2020-12	2024-09	TCDV	2024-11	CCDV	WG 41	—

7.	IEC 63360 ED1	Fluids for electrotechnical application - Specification of gases alternative to SF₆ to be used in electrical power equipment	10/1219/FDIS	2020-12	2024-04	PRVD	2024-04		WG 41	Mr T.C.S.M. Gupta
8.	IEC 63585 ED1	Interpretation of Dissolved Gas Analysis in natural and synthetic esters	10/1246/CD	2024-06	2024-09	CD	2024-11	PCC	WG 45	

Annex 15

Details of WG/MT under IEC TC 10

Working Group	Title	Title & Scope	Expert from India
WG 41	Mixtures of gases alternative to SF6 and their re-use	Mixtures of gases alternative to SF6 and their re-use To prepare two International Standards/Technical Reports on: Fluids for electrotechnical application: Mixtures of gases alternative to SF6; Fluids for electrotechnical application: Specifications for the re-use of mixtures of gases alternative to SF6.	—
WG 45	Interpretation of DGA analysis in natural and synthetic esters	Interpretation of DGA analysis in natural and synthetic esters To prepare a standard on interpretation of DGA analysis in natural and synthetic esters	Mr T.C.S.M. Gupta
WG 46	Retrofilling mineral oil immersed transformers with alternative insulating liquids	Retrofilling mineral oil immersed transformers with alternative insulating liquids To prepare a guide for retrofilling mineral oil immersed transformers with alternative insulating liquids	Mr Rajaram Ramchandra Shinde
MT 20	Maintenance of IEC 60599 and IEC 60475	Maintenance of IEC 60599 and IEC 60475 To maintain IEC 60599 and IEC 60475	—
MT 22	Maintenance of IEC 60422	Maintenance of IEC 60422 To revise and to amend IEC 60422	—

MT 23	Maintenance of IEC 60836 and IEC 60944	Maintenance of IEC 60836 and IEC 60944 To revise IEC 60836.	—
MT 24	Maintenance of IEC 60590, IEC 60814, IEC 61198 and IEC 61619	Maintenance of IEC 60590, IEC 60814, IEC 61198 and IEC 61619	—
MT 25	Maintenance of IEC 60567 and IEC 61181	Maintenance of IEC 60567 and IEC 61181	—
MT 26	Maintenance of IEC 60480 and IEC 60376	Maintenance of IEC 60480 and IEC 60376 To revise and amend IEC 60480 and IEC 60376.	—
MT 27	Maintenance of IEC 60588, IEC 61039 and IEC 61100	Maintenance of IEC 60588, IEC 61039 and IEC 61100	—
MT 28	Maintenance of IEC 62021	Maintenance of IEC 62021 To maintain IEC 62021	—
MT 30	Maintenance of IEC 60156, IEC 60628, IEC 60897 and IEC/TR 61294	Maintenance of IEC 60156, IEC 60628, IEC 60897 and IEC/TR 61294 To maintaine IEC 60156, IEC 60247, IEC 60628, IEC 897, IEC 61620 and IEC/TR 61294	—
MT 31	Maintenance of IEC 60970	Maintenance of IEC 60970 To maintain IEC 60970.	—
MT 36	Maintenance of IEC 61099, IEC 61203 and 62770	Maintenance of IEC 61099, IEC 61203 and 62770	Mr Chakravarthula Srinivasa Narasimhan

		To maintain IEC 61099, IEC 61203 and IEC 62770	
MT 38	Maintenance of IEC 60296	Maintenance of IEC 60296 To maintain IEC 60296	Mr T.C.S.M. Gupta
MT 39	Maintenance of IEC 60867	Maintenance of IEC 60867 To revise IEC 60867	—
MT 42	Maintenance of IEC 60465	Maintenance of IEC 60465 Revise IEC 60465, Specification for unused insulating mineral oils for cables with oil ducts	—
MT 43	Maintenance of IEC 60666	Maintenance of IEC 60666 To revise IEC 60666, Detection and determination of specified additives in mineral insulating oils	—
ahG 47	Vocabulary updating	Vocabulary updating To update definitions related to insulating liquids, to be periodically sent to TC 1	—
JMT 60076-26	Functional requirements of insulating liquids for use in power transformers Managed by TC 14	Functional requirements of insulating liquids for use in power transformers linked to TC 10, TC 15, TC 112 Maitenance and improvement of IEC TR 60076-26	—

ANNEXA 16

Balloting Done on IEC documents since 01/05/2023

SI.No	DOC No	Title	Last	Date
1.	10/1233/FDIS	IEC 60422 ED5: Mineral insulating oils in electrical equipment - Supervision and maintenance guidance	10-05-2024	In Favour
2.	10/1218/CD	Fluids for electrotechnical application: Specifications for the re-use of mixtures of gases alternative to SF_6	17-05-2024	No Comment
3.	10/1241/FDIS	IEC 60156 ED4: Insulating liquids - Determination of the breakdown voltage at power frequency - Test method	02/08/2024	Vote Comment Attach

Annex 17

IEC TC 10 Publication

S.No	Reference	Title
1.	IEC 60156:2018	Insulating liquids - Determination of the breakdown voltage at power frequency - Test method
2.	IEC 60156:2018 RLV	Insulating liquids - Determination of the breakdown voltage at power frequency - Test method
3.	IEC 60247:2004	Insulating liquids - Measurement of relative permittivity, dielectric dissipation factor (tan d) and d.c. resistivity
4.	IEC 60296:2020	Fluids for electrotechnical applications – Mineral insulating oils for electrical equipment
5.	IEC 60376:2018	Specification of technical grade sulphur hexafluoride (SF₆) and complementary gases to be used in its mixtures for use in electrical equipment
6.	IEC 60422:2024	Mineral insulating oils in electrical equipment - Supervision and maintenance guidance
7.	IEC 60465:1988	Specification for unused insulating mineral oils for cables with oil ducts
8.	IEC 60475:2022 CMV	Method of sampling insulating liquids
9.	IEC 60475:2022	Method of sampling insulating liquids
10.	IEC 60480:2019	Specifications for the re-use of sulphur hexafluoride (SF₆) and its mixtures in electrical equipment
11.	IEC 60567:2023 CMV	Oil-filled electrical equipment - Sampling of free gases and analysis of free and dissolved gases in mineral oils and other insulating liquids - Guidance
12.	IEC 60567:2023	Oil-filled electrical equipment - Sampling of free gases and analysis of free and dissolved gases in mineral oils and other insulating liquids - Guidance
13.	IEC 60588-1:1977	Askarels for transformers and capacitors. Part 1: General

14.	IEC 60588-2:1978	Askarels for transformers and capacitors. Part 2: Test methods
15.	IEC 60588-3:1977	Askarels for transformers and capacitors. Part 3: Specifications for new askarels
16.	IEC 60588-4:1979	Askarels for transformers and capacitors. Part 4: Guide for maintenance of transformer askarels in equipment
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