

FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

118-119, First Floor, Sushant Tower, Sector – 56, Gurugram – 122011, Haryana, India.



SCOPE OF ACCREDITATION

(Annexure to Certificate of TL – 101)

Validity

06.04.2023 to 16.06.2024

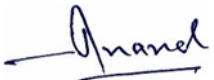
Last Amended on 25.09.2023

Extension of scope (CHEMICAL TESTING)

Laboratory based Testing

Group: Pollution & Environment

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	Waste water (Effluents /Sewage)	Selenium (as Se)	IS 3025 (Part 56) (AAS Method): 2003: RA 2019	Atomic Absorption Spectrometer
		Arsenic (as As)	IS 3025 (Part 37)-(AAS Method RA 2022)	
		Cadmium	IS 3025 (Part 41) -1992 (AAS Method): RA 2019	
		Chromium (As Cr)	IS 3025 (Part 52) : 2003 (AAS Method) RA : 2019	
		Copper(Cu)	IS 3025 (Part 42) : 1992 (AAS Method) RA : 2019	
		Fluoride (As F)	APHA 23rd Edition:2017 Method 4500-F-D (SPANDS Method)	UV Visible Spectrometer
		Iron (As F)	IS 3025 (Part 53) : 2003 (Phenanthroline Method) RA : 2019	


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		Lead (As Pb)	IS 3025 (Part 47) : 1994 (AAS Method) RA : 2019	Atomic Absorption Spectrometer	
		Zinc	IS 3025 (Part 49) : 1994 (AAS Method) RA : 2019		
		Manganese (as Mn)	APHA 23rd Edition:2017 Air Acetylene Flame Method 3111 C		
		Mercury (as Hg)	IS 3025 (Part 48) : 1994 (AAS Method) RA : 2019		
		Nickel	IS 3025 (Part 54) : 2003 (AAS Method) RA : 2019		
		Silver (as Ag)	APHA 23rd Edition:2017 Air Acetylene Flame Method 3111 C		
		Dissolved Oxygen (DO)	IS 3025 (Part 38):1989 : RA 2019		-----
		Biological Oxygen Demand (BOD), 3 days at 27°C	IS 3025 (Part 44):1993: RA 2019		-----
		Chemical Oxygen Demand (COD)	IS 3025 (Part 58):2006: RA 2017		-----


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		Chloride (as Cl)	IS 3025 (Part 32) (Argentometric Method):1988 : RA 2019	--
		Ammonia (NH ₃)	IS 3025 (Part 34)1988: RA : 2019	UV Visible spectrometer
		Nitrite (AS NO ₂)	APHA 23rd Edition:2017 Method 4500-NO ₂ -B Colorimetric Method	
		Nitrite (AS NO ₃)	IS 3025 (Part 34) : 1988 RA : 2019	
		Phosphate (As PO ₄)	IS 3025 (Part 31) : 1988 RA : 2021	
		Oil & Grease	IS 3025 (Part 39) Partition Gravimetric Method:2021	-----
		pH Value at 25°C	IS 3025 (Part 11) Electrometric Method:2022	-----
		Specific conductance at 25°C	IS 3025 (Part 14)2013: RA : 2019	-----
		Phenolic Compounds (as C ₆ H ₅ OH)	IS 3025 (Part 43)1992: RA: 2019	UV Visible Spectrometer
		Residual Chlorine	IS 3025 (Part 26)2021	-----


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		Sulphate	IS 3025 (Part 24)1986: RA : 2019	UV Visible Spectrometer
		Sulphide (As H ₂ S)	IS 3025 (Part 29)1986: RA : 2019	
		Total Hardness	IS 3025 (Part 21)2009: RA : 2019	----
		Total Alkalinity as Calcium Carbonate	IS 3025 (Part 23)1986: RA : 2019	
		Total Dissolved Solids	IS 3025 (Part 16)1984: RA : 2017	---
		Total Solids (Total Residue)	IS 3025 (Part 15)1984: RA : 2019	
		Total suspended solids (Filterable Residue)	IS 3025 (Part 17):2022	
		Turbidity	IS 3025 (Part 10)1984: RA : 2017	Turbidity Meter


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Group-Metals and alloys

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	Copper	Copper	IS 440:1964 R.A.2018	Copper Purity Test Apparatus
		Phosphorus		-----
		Arsenic		-----
		Antimony		-----
		Bismuth		UV Visible spectrometer
		Iron		UV Visible spectrometer
		Lead		-----
		Nickel		-----
		Oxygen		Apparatus for Determination of Oxygen
		Selenium		-----
		Tellurium		
		Tin		
2	Copper & Copper Alloys	Aluminium	BSEN 15079:2015	
		Antimony		
		Arsenic		


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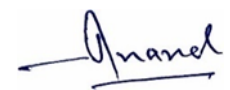
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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Cobalt		Optical Emission Spectrometer
		Iron		
		Lead		
		Manganese		
		Nickel		
		Phosphorus		
		Silicon		
		Sulphur		
		Tin		
		Chromium		
		Silver		
		Zinc		
		Cadmium		
3	Aluminium & Aluminium alloys	Antimony	ASTM: E1251-17a	
		Arsenic		
		Beryllium		
		Bismuth		
		Boron		
		Calcium		
		Chromium		
		Cobalt		
		Copper		
		Gallium		
		Iron		
		Lead		
		Lithium		
		Magnesium		


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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Manganese		Optical Emission Spectrometer
		Nickel		
		Phosphorus		
		Silicon		
		Sodium		
		Strontium		
		Tin		
		Titanium		
		Vanadium		
		Zinc		
		Zirconium		
4	Wrought Aluminium Alloys	Copper	IS 11035:1984 R.A.2019	
		Magnesium		
		Silicon		
		Iron		
		Manganese		
		Zinc		
		Chromium		
		Titanium		
5	Aluminium Alloy Redraw Rods	Silicon	IS 504-1:2002	UV-Visible Spectrometer
		Magnesium	IS 504-6:2002	-----
		Iron	IS 504-2:2002	UV-Visible Spectrometer
		Copper	IS 504-3:2002	
		Manganese	IS 504-5:2002	-----


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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Chromium	IS 504-8:2002	
		Zinc	IS 504-4:2002	UV-Visible Spectrometer
		Lead	IS 504-1:2002	
		Tin	IS 504-9:2002	-----
6	Plane Carbon & Low Alloy Steel	Aluminium	IS 8811:1998 RA 2018	Optical Emission Spectrometer
		Arsenic		
		Boron		
		Carbon		
		Chromium		
		Cobalt		
		Copper		
		Manganese		
		Molybdenum		
		Nickel		
		Niobium		
		Phosphorus		
		Silicon		
		Sulphur		
		Tin		
		Titanium		
		Vanadium		
		Zirconium		
		Nitrogen		
		Magnesium		
		Lead		
		Tungsten		
		Calcium		


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7	Austenitic & Ferric Stainless Steel	Aluminium	IS 9879:1998 RA 2021	Optical Emission Spectrometer
		Arsenic		
		Boron		
		Carbon		
		Chromium		
		Cobalt		
		Copper		
		Manganese		
		Molybdenum		
		Nickel		
		Niobium		
		Phosphorus		
		Silicon		
		Sulphur		
		Tin		
		Titanium		
		Vanadium		
		Zirconium		
Nitrogen				
Magnesium				
Lead				
Tungsten				
Calcium				


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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
8	Austenitic Stainless Steel	Chromium	ASTM: E-1086-2022	Optical Emission Spectrometer
		Nickel		
		Molybdenum		
		Manganese		
		Silicon		
		Copper		
		Carbon		
		Phosphorous		
		Sulphur		
		Aluminum		
		Arsenic		
		Boron		
		Calcium		
		Carbon		
		Chromium		
		Cobalt		
		Copper		
		Manganese		
		Molybdenum		
		Nickel		
		Niobium		
		Nitrogen		
		Phosphorous		


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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used	
		Silicon	ASTM: E-415-2021	Optical Emission Spectrometer	
		Sulphur			
		Tin			
		Titanium			
		Vanadium			
		Zirconium			
9	Cast Iron	Carbon	ASTM E 1999-18		
		Chromium			
		Copper			
		Manganese			
		Molybdenum			
		Nickel			
		Phosphorous			
		Silicon			
		Sulphur			
		Tin			
		Titanium			
		Vanadium			
		Carbon			IS 15338:2003
		Manganese			
		Phosphorous			
		Sulphur			
		Silicon			
		Copper			
		Chromium			

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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Nickel	IS 15338:2003	
		Aluminium		
		Molybdenum		
		Vanadium		
10	Painted & Coated metals	Salt Spray Corrosion Test	ASTM B 117: 2019 JIS Z 2371: 2015	Salt Spray Corrosion Test Assembly


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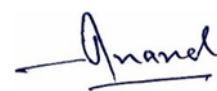


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Group: Textile and Wool

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	azo colorants accessible with and without extracting the fibers	2 Amino 4 nitro toluene	ISO 14362-1-2017	Gas Chromatography Mass Spectrometer
		2 Amino naphthalene		
		2 Anisidine		
		2,4 Diamino toluene		
		2,4,5-Trimethylaniline		
		2,4-Di-amino Anisole		
		2,4-Xylidine		
		2,6-Xylidine		
		3,3' Dichloro benzidine		
		3,3 Dimethoxy benzidine		
		3,3 Dimethyl benzidine		
		3,3-Dimethyl 4,4 Diaminodiphenylmethane		
		4 Amino azo-toluene		
		4 Amino bi phenyl		
		4 chloro 2 methyl aniline		
		4 Chloro aniline		
		4,4 Diamino diphenyl Methane		
4,4 Methylene bis (2 chloroaniline)				


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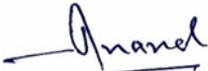
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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		4,4' - Oxydianiline		
		4,4' Methylene dianiline		
		4,4-Thiodianiline		
		Aniline		
		Benzidine		
		O-Toluidine		
		p-Cresidine		
		P-phenyl diamine		
		Banned Amines - p-Amino azobenzene		
2	Textile in any form	Formaldehyde	ISO 14184-1(2011)	UV-Visible Spectrometer
			ISO 14184-2(2011)	
		pH	ISO 3071(2020)	-----
3	Textile Products	Butyl benzyl phthalate (BBP)	ISO 14389(2022)	Gas Chromatography Mass Spectrometer
		Di-butyl phthalate (DBP)		
		Diisobutyl- phthalate (DIBP)		
		Phthalate - Di-n-octylphthalate		
		Phthalate -Bis(2-Ethylhexyl) phthalates (DEHP)		
		Phthalate -Di-iso-decyl-phthalate (DIDP)		
		Phthalate -Diisononyl phthalate (DINP)		


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Group: Toys and Children's Products

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	Children's Metal Products (Including Children's Metal Jewelry)	Lead content	CPSC- CH-E1001-08.3	Atomic Absorption Spectrometer
2	Nonmetal Children Products		CPSC-CH-E1002-08.3 CPSC-CH-E1002-09.1	
3	Toys and Children's Products	Antimony (Sb)	IS 9873-3(2020)	Gas Chromatography Mass Spectrometer
		Arsenic (As)		
		Barium (Ba)		
		Bis (2-ethylhexyl) phthalate(DEHP)	IS 9873-6(2021)	
		Bis (2-ethylhexyl) phthalate(DEHP)	IS 9873-9(2017)	
		Butyl benzyl phthalate (BBP)	IS 9873-6(2021)	
		Butyl benzyl phthalate (BBP)	IS 9873-9(2017)	
		Cadmium (Cd)	IS 9873-3(2020)	
		Chromium (Cr)		
Di-butyl phthalate (DBP)	IS 9873-6(2021)	Atomic Absorption Spectrometer		

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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Di-butyl phthalate (DBP)	IS 9873-9(2017)	Gas Chromatography Mass Spectrometer
		Di-iso-decyl phthalate (DIDP)	IS 9873-6(2021)	
		Di-iso-decyl phthalate (DIDP)	IS 9873-9(2017)	
		Di-iso-nonyl phthalate (DINP)	IS 9873-6(2021)	
		Di-iso-nonyl phthalate (DINP)	IS 9873-9(2017)	
		Di-n-octyl phthalate (DNOP)	IS 9873-6(2021)	
		Di-n-octyl phthalate (DNOP)	IS 9873-9(2017)	
		Lead (Pb)	IS 9873-3(2020)	
		Mercury (Hg)		
		Selenium (Se)		

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Group: Leather and Leather Products

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	Leather	2 Amino 4 nitro toluene	ISO 17234-1-2020	Gas Chromatography Mass Spectrometer
		2 Amino naphthalene		
		2 Anisidine		
		2,4 Dimamino toluene		
		2,4,5-Trimethylaniline		
		2,4-Di-amino Anisole		
		2,4-Xylidine		
		2,6-Xylidine		
		3,3' Dichloro benzidine		
		3,3 Dimethoxy benzidine		
		3,3 Dimethyl benzidine		
		3,3-Dimethyl 4,4 Diaminodiphenylmethane		
		4 Amino azo benzene		
		4 Amino azo benzene	ISO 17234-2-2011	
		4 Amino azo-toluene	ISO 17234-1-2020	
4 Amino bi phenyl				
4 Amino phenylthio ether				


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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		4 chloro 2 methyl aniline	ISO 17234-1-2020	Gas Chromatography Mass Spectrometer
		4 Chloro aniline		
		4,4 Diamino diphenyl Methane		
		4,4 Methylene bis (2 chloroaniline)		
		4,4' – Oxydianiline		
		4,4' Methylene dianiline		
		4,4-Thiodianiline		
		Aniline		
		Antimony	ISO 17072-2-2022	Atomic Absorption Spectrometer
		Arsenic		
		Cobalt		
		Cadmium		
		Chromium		
		Copper		
		Lead		
		Mercury		
		Nickel		

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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Benzidine	ISO 17234-1-2020	Gas Chromatography Mass Spectrometer
		Chromium VI contents	ISO 17075-1-2017	UV-Visible Spectrometer
		Formaldehyde	ISO 17226-1-2021	Spectrometer
		O-Toluidine	ISO 17234-1-2020	Gas Chromatography Mass Spectrometer
		p-Cresidine		
		P-phenyl diamine		
		pH Test	ISO 4045:2018	----

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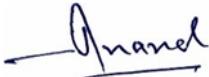


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Group: Trace Element analysis in containers for food items

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	Materials and articles in contact with foodstuffs. Plastics substances subject to limitation	Aluminium	EN 13130-1-2004	Atomic Absorption Spectrometer
		Antimony		
		Arsenic		
		Barium		
		Chromium		
		Cobalt		
		Copper		
		Iron		
		Lead		
		Lithium		
		Manganese		
		Nickel		
		Zinc		
2	Packaging Materials And Packages For Foodstuffs	Sensorial test	DIN 10955	-----


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Group: Plastic and Resins

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	Plastics	Cadmium content	BS EN 1122-2001	Atomic Absorption Spectrometer
2	Polymer products	Poly aromatic hydrocarbons(PAH)- Anthracene	AFPS GS 2019:01 PAK	Gas Chromatography Mass Spectrometer
		Poly aromatic hydrocarbons(PAH)- Benzo(a)pyrene		
		Poly aromatic hydrocarbons(PAH)- Benzo(b)fluoranthene		
		Poly aromatic hydrocarbons(PAH)- Benzo(e)pyrene		
		Poly aromatic hydrocarbons(PAH)- Benzo(g,h,i)perylene/ 1,12- Benzoperylene		

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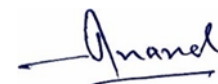
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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Poly aromatic hydrocarbons(PAH)- Benzo(j)fluoranthene	AFPS GS 2019:01 PAK	Gas Chromatography Mass Spectrometer
		Poly aromatic hydrocarbons(PAH)- Benzo(k)fluoranthene		
		Poly aromatic hydrocarbons(PAH)- Chrysene		
		Poly aromatic hydrocarbons(PAH)- Indeno(1,2,3-c,d)pyrene		
		Poly aromatic hydrocarbons(PAH)- Naphthalene		
		Poly aromatic hydrocarbons(PAH)- Phenanthrene		
		Poly aromatic hydrocarbons(PAH)- Pyrene		


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		Poly aromatic hydrocarbons(PAH)-10 Dibenzo(a,h)anthracene / 1,2:5,6-Dibenzanthracene	AFPS GS 2019:01 PAK	Gas Chromatography Mass Spectrometer
		Poly aromatic hydrocarbons(PAH)-12 Fluoranthene		
		Poly aromatic hydrocarbons(PAH)-4 Benzo(a)anthracene / 1,2- benzanthracene		
	Polymers	Bis (2-ethylhexyl) phthalate (DEHP)	IEC 62321-8-2017	
		Butyl benzyl phthalate (BBP)		
		Diisobutyl phthalate (DIBP)		
		PBB's and PBDE's - Decabrombiphenyl (B-209)	IEC 62321-6-2015	
		PBB's and PBDE's- 2,2',3,3',4,4',5,5'- Octabromobiphenyl (BB-194)		


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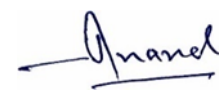
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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		PBB's and PBDE's- 2,2',3,3',4,4',5,5',6- Nonabromobiphenyl (BB-206)	IEC 62321-6-2015	
		PBB's and PBDE's- 2,2',3,3',4,4',5,5',6- Nonabromodiphenyl ether(BDE-206)		
		PBB's and PBDE's- 2,2',3,4,4',5,6- Heptabromodiphenyl ether (BDE-181)		
		PBB's and PBDE's- 2,2',3,4,4',5,5'- Heptabromobiphenyl (BB-180)		
		PBB's and PBDE's - 2,2',3,4,4',5,5',6- Octabromodiphenyl ether (BDE-203)		
		PBB's and PBDE's - 2,2',4,5'- Tetrabromobiphenyl (B- 049)		


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S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		PBB's and PBDE's - 2,2',4,5',6-Pentabromobiphenyl (B-103)	IEC 62321-6-2015	
		PBB's and PBDE's - 2,2'3,3'4,4'-Hexabromodiphenyl ether (BDE-128)		
		PBB's and PBDE's - 2,2'4,4'5,5'-Hexabromobiphenyl(BB-153)		
		PBB's and PBDE's - 2,4,6-Tribromobiphenyl (BB-30)		
		PBB's and PBDE's - 3,3',4,4'-Tetrabromodiphenyl ether (BDE-77)		
		PBB's and PBDE's - 3,3'4,4',5-Pentabromodiphenyl ether (BDE-126)		
		PBB's and PBDE's -3-Bromobiphenyl (B-002)		


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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		PBB's and PBDE's -4,4'- Dibromobiphenyl (BB-15)	IEC 62321-6-2015	
		PBB's and PBDE's -4,4'- Dibromodiphenyl ether (PBDE-15)		
		PBB's and PBDE's -4- Bromodiphenyl ether (PBDE-3)		
		PBB's and PBDE's - Decabromodiphenyl ether (BDE-209S)		
		PBB's and PBDE's-3,3',4- Tribromodiphenyl ether(BDE-035S)		
		Di-butyl phthalate (DBP)		
	Polymers, Electronic Metals	Cadmium (Cd)	IEC 62321-3-1(2013)	Atomic Absorption Spectrometer
			IEC 62321-5(2013)	
		Chromium (Cr)	IEC 62321-3-1(2013)	
			IEC 62321-5(2013)	
			IEC 62321-7-1(2017)	
		Di-butyl phthalate (DBP)	IEC 62321-8(2017)	
		Lead (Pb)	IEC 62321-3-1(2013)	
			IEC 62321-5(2013)	
	Mercury (Hg)	IEC 62321-3-1(2013)		
		IEC 62321-4:2013 +AMD 1:2017		


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Group: AYUSH Products

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	Herbs	Adenosine Cordycepin	TM-AP/01:2021	HPLC (High Performance Liquid Chromatography)


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SCOPE OF ACCREDITATION

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Group- Distribution Equipment Testing

S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1.	Outdoor/Indoor Type Oil Immersed Distribution Transformers up to and including 2500 kVA, 33 kV	Measurement of Winding Resistance	Cl.21.2 a of IS 1180 (Part 3):2021	Digital Micro- ohm Meter
		Measurement of Voltage ratio and check of phase displacement	Cl.21.2 b of IS 1180 (Part 3):2021	Automatic Turn- Ratio Meter
		Measurement of Short Circuit Impedance (principal tapping, when applicable) and Load Loss at 50% and 100 % load	Cl.21.2 c of IS 1180 (Part 3):2021	Digital Power Meter
		Measurement of no-load loss and current	Cl.21.2 d of IS 1180 (Part 3):2021	Digital Power Meter
		Measurement of insulation resistance	Cl.21.2 e of IS 1180 (Part 3):2021	Digital Insulation Tester
		Induced over-voltage withstand test	Cl.21.2 f of IS 1180 (Part 3):2021	Digital Volt meter, Digital Frequency meter
		Separate source voltage withstand test	Cl.21.2 g of IS 1180 (Part 3):2021	AC High Voltage Test Set

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Pressure Test (Routine Test)	Cl.21.2 h of IS 1180 (Part 3):2021	--
		Ester Liquid leakage Test	Cl.21.2 j of IS 1180 (Part 3):2021	
		Lightning Impulse Test	Cl.21.3 a of IS 1180 (Part 3):2021	Impulse Generator, Analyzer, Impulse Current Shunt
		Temperature rise test	Cl.21.3 b of IS 1180 (Part 3):2021	Temp Data logger/16 Channel & Glass Thermometer
		Pressure test (Type Test)	Cl.21.3 d of IS 1180 (Part 3):2021	Pressure Gauge
		Determination of sound level	Cl.21.4 a of IS 1180 (Part 3):2021	Sound Level Meter
		No load current at 112.5 % voltage	Cl.21.4 c of IS 1180 (Part 3):2021	Digital Power Meter
		Paint adhesion test	Cl.21.4 d of IS 1180 (Part 3):2021	--
		Break down Voltage of transformer oil	Cl.21.4 e of IS 1180 (Part 3):2021	--

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SCOPE OF ACCREDITATION

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Extension of scope (Electrical Testing)

S. No.	Material/Products	Component/Parameter/Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Moisture content in transformer oil	Cl.21.4 e of IS 1180 (Part 3):2021	--
		Measurement of dimension and physical verification	Cl. 11,15.1,15.5,16 of IS 1180 (Part 3):2021	--
		Permissible flux density and over fluxing	Cl.6.9.1,6.9.2,7.9.1,7.9.2,8.9.1,8.9.2 of IS 1180 (Part 3):2021	--
		Vacuum test	Cl.21.5 of IS 1180 (Part 3):2021	--
2	Dry type power transformer as per IEC/IS 2026 (Part 11):2021	Measurement of Winding Resistance	Cl. 14.2.1 of IS 2026 (Part-11):2021	--
		Measurement of Voltage ratio and check of phase displacement	Cl. 14.2.2 of IS 2026 (Part-11):2021	Automatic Turn ratio meter
		Measurement of short circuit impedance and load Loss	Cl. 14.2.3 of IS 2026 (Part-11):2021	Digital Power meter
		Measurement of no load loss and current	Cl. 14.2.4 of IS 2026 (Part-11):2021	Digital Power meter
		Applied Voltage test (AV)	Cl. 14.2.5 of IS 2026 (Part-11):2021	AC High Voltage Test Set
		Induced over-voltage withstand test	Cl. 14.2.6 of IS 2026 (Part-11):2021	Digital frequency meter

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Partial discharge measurement	Cl. 14.2.7 of IS 2026 of IS: 2026 (Part-11): 2021	Partial discharge test
		Lightning Impulse test	Cl. 14.3.1 of IS 2026 of IS: 2026 (Part-11): 2021	Impulse current shunt, Capacitive Impulse Voltage Divider, Impulse Measuring & Analyzing System
		Temperature rise test	Cl. 14.3.2 of IS 2026 of IS: 2026 (Part-11): 2021	-
		Measurement of sound level	Cl. 14.4.2 of IS 2026 of IS: 2026 (Part-11): 2021	Sound Level Meter

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SCOPE OF ACCREDITATION

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Group-Insulating Oil Testing

S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	Natural Ester Fluid and Synthetic Ester Fluid	Viscosity	IS:1448(Part 25/sec 1):2018, ISO: 3104:2020,	Digital Kinematic Viscosity Bath, Low Temp Kinematic Viscosity Bath
		Pour point	IS:1448(Part 10/sec 2):2013, ISO: 3016:2019 ASTM D97-17b-2022	Automatic Cloud point & Pour point Apparatus, Cloud and Pour Point Apparatus
		Water Content	IEC:60814: 1997, IS 13567:2018 ASTM D1533-2020	Karl Fischer Titrator
		Breakdown Voltage	IS 6792:2017, IEC 60156:2018, ASTM D1816-12 (Reapproved 2019)	Automatic Oil Test Set
		Density	IS:1448(Part 16):2014, ISO 3675:1998	Liquid Glass bath (Density Bath) Refrigerated
		Dielectric dissipation factor (DDF)	IS: 6262:1971 IS 16086:2013(RA 2018) IEC: 61620:1998	Capacitance & Tan Delta Test set

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Particle Content	IS 13236:2013, IEC:60970: 2007	Particle counter
		Acidity (Neutralization Value)	IEC:62021-1:2003, IEC:62021-2:2007, ASTM D664-18	-----
		Interfacial Tension (IFT)	ASTM D971:2020, EN14210-2003	Digital Surface Interfacial Tensiometer
		Total Sulphur content	ISO: 14596:2007 ASTM D4294:2021 ASTM D129:2018	EDXRF
		Corrosive Sulphur	DIN: 51353:1985 ASTM D1275-15	--
		Potentially corrosive Sulphur	IS: 16310:2017, IEC: 62535:2008	
		DBDS	IS:16497(Part 1)2017, IEC:62697-1:2012	Gas Chromatography Mass Spectrometer
		Inhibitors	IS: 13631:2017, IEC: 60666:2010	
		Metal Passivator additives		
		2-Furfuryl Alcohol (2- Furfural and related compound content)	IS: 15668:2006 IEC: 61198:1993	HPLC

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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		5-Hydroxymethyl-2-Furfural (2-Furfural and related compound content)	IS: 15668:2006 IEC: 61198:1993	HPLC (High Performance Liquid Chromatography)
		2-Furfural (2-Furfural and related compound content)		
		2-Furyl Methyl Ketone (2 Acetyl Furan) (2-Furfural and related compound content)		
		5-Methyl-2-Furfural (2-Furfural and related compound content)		
		a. Total acidity After oxidation stability	IS: 12422:2017, IEC: 61125:2018	Oxidation Stability Test Apparatus,
		b. Sludge After oxidation stability		Oxidation Stability Test Apparatus,
		c. DDF at 90oC After oxidation stability		Capacitance & Tan Delta Test set
		Gassing Tendency	IEC: 60628:1985	Gassing Tendency Apparatus


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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Flash Point	IS:1448(Part 21)-2019, ISO: 2719:2016	Pensky Marten flash Point Tester
		PCA Content	IP: 346:2004	Weighing Balance
		PCB Content	IS: 16082:2013 IEC: 61619:1997, ASTM D4059-00 (Reapproved 2018)	Gas Chromatography Mass Spectrometer
		Color	ISO: 2049:1996, ASTM D1500-12 (Reapproved 2017)	Color Comparator
		Dielectric breakdown voltage, impulse conditions	ASTM D3300-20	Automatic Oil Test Set
		AC loss characteristics— dissipation factor and relative permittivity	ASTM D924 -15	Capacitance & Tan Delta Test set
		Kinematic viscosity	ASTM D445-21e2	Digital Kinematic Viscosity Bath, Low Temp Kinematic Viscosity Bath
		Flash point and fire point—Cleveland Open Cup Method	ASTM D92-18	Pensky Marten flash Point Tester
		Relative density (specific gravity)	ASTM D1298-12b (Reapproved 2017)	Liquid Glass bath (Density Bath) Refrigerated


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S. No.	Material/Products	Component/Parameter/ Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
		Volume resistivity (specific resistance)	ASTM D1169-19a	Resistivity (Million Mega Ohm Meter)
		Visual examination field test and color)	ASTM D1500-12 (Reapproved 2017), ASTM D1524-2022	Color Comparator
		Gassing of insulating oils under electrical stress and ionization	ASTM D2300-08 (Reapproved 2017)	Gassing Tendency Apparatus
		Acid and Base Number by Color indicator Titration	ASTM D974-2021	-----
		Dissolved Gas Analysis (Hydrogen)	IS: 10593:2018, ASTM D3612-02 (Reapproved 2017) IS 9434 (2019)	Gas Chromatography
		Dissolved Gas Analysis (Oxygen)		
		Dissolved Gas Analysis (Nitrogen)		
		Dissolved Gas Analysis (Carbon Monoxide)		
		Dissolved Gas Analysis (Carbon Dioxide)		
		Dissolved Gas Analysis(Methane)		
		Dissolved Gas Analysis(Ethane)		
		Dissolved Gas Analysis (Ethylene)		
		Dissolved Gas Analysis (Acetylene)		


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Group:- Cable Testing

S. No.	Material/Products	Component/Parameter / Characteristic tested	Test Method Specification against which tests are performed	Equipment Used
1	5 kV to 46 kV Extruded Electric Power Cables	Dicumyl Peroxide	TM-XLPE/02 By Gas Chromatography	Gas Chromatography Mass Spectrometer
		Alpha Alpha Methyl Styrene (2-Phenyl Propane)		
		Acetophenone		
		Alpha Cumyl Alcohol (2 phenyl Propane-2 ol)		
		Oxidation induction time (OIT)	ASTM D3895 (Optical Induction Time Tester)	Differential Scanning Calorimetry (Oxidation Induction Time Tester)


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