

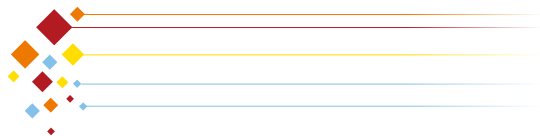
Staying Cool and Healthy

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Stay Ahead



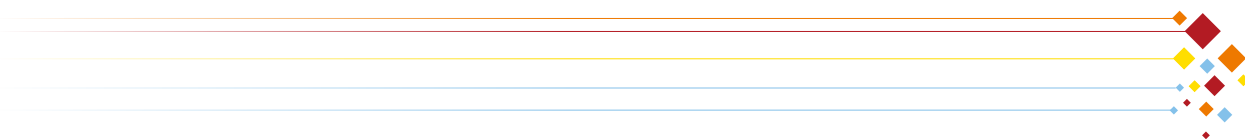
Transformer Oils

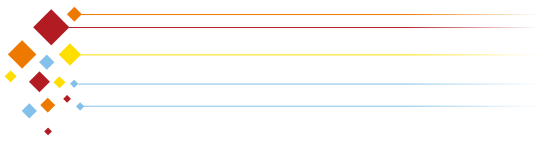
divyol
solutions within solutions



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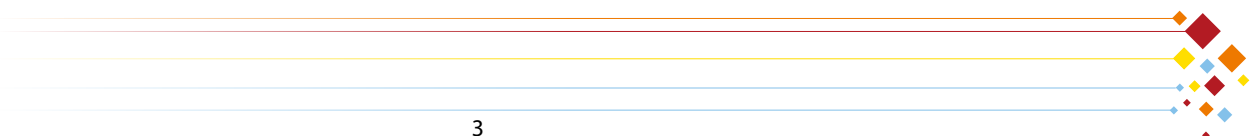


TRANSFORMER OILS



Setting benchmarks in insulation and cooling

Divyol Transformer Oils are manufactured from carefully selected base oils, refined to a high level of purity. Tested at the independent laboratories of CPRI, ERDA, DOBLE, and LABORELEC (all ISO/IEC 17025:2017 accredited labs), these inhibited and uninhibited mineral-based oils are used in transformers for insulation and cooling. Owing to their unique chemical properties, dielectric strength, and high-purity edge, they can be optimised to comply with stringent international standards relating to health, safety, and performance.



DIVYOL TRANS 1

TRANSFORMER OIL – IS 335:2018 TYPE I – UNINHIBITED

Divyol Trans 1 is specially manufactured from carefully selected new generation base oil, possessing excellent electrical properties and conforming to standards as per IS 335:2018 Type I – Uninhibited.

Sr. No.	Characteristics	Test Method	Limits		
1. Function					
1	Viscosity at -40 °C	IS 1448 (Part 25)	12 mm ² /s, max.		
2	Viscosity at 0 °C	IS 1448 (Part 25)	-		
3	Viscosity at -30 °C	IS 1448 (Part 25)	1800 mm ² /s, max.		
	Viscosity at -40 °C	IS 16084	-		
4	Pour point	IS1448 (Part 10/Sec 2)	-40 °C max.		
5	Water content	IEC 60814	1) 30 mg/kg max. for bulk supply 2) 40 mg/kg max. for drum supply		
6	Breakdown voltage	IS 6792	i) 30 KV min. delivered ii) 70 KV after treatment		
7	Density at 20 °C	IS 1448 (Part 16)	0.895 g/ml max.		
8	DDF at 90 °C	IS 16086 / IEC 60247	0.005 max.		
9	Particle content	IS 13236	No general requirement		
2. Refining / Stability					
10	Appearance	-	Clear, free from sediment and suspended matter		
11	Acidity	IEC 62021 -1	0.01 mg KOH/g max.		
12	Interfacial tension mN/m	ASTM D 971	No general requirement		
13	Total sulphur content	ISO 14596 or ASTM D 4294	No general requirement		
14	Corrosive sulphur	DIN 51353	Not corrosive		
15	Potentially corrosive sulphur	IS 16310	Not corrosive		
16	DBDS	IS 16497 (Part 1)	Not detectable (< 5 mg/kg)		
17	Inhibitors of IEC 60666	IS 13631	(U) Uninhibited oil; Not detectable (< 0.01%)		
18	Metal passivator additives of IEC 60666 to IS13631	IS 13631	Not detectable (< 5 mg/kg) or as agreed upon with the purchaser		
19	Other additives	-	-		
20	2-Furfural and related comp, content	IS 15668	Not detectable (< 0.05 mg/kg) for each individual compound		
3. Performance					
21	Oxidation stability	IS 12422 (method C)			
		Test duration (U) Uninhibited Oil: 164 hrs.			
		a) Total acidity		1.9.4 of IS 12422	1.2 mg KOH/g max.
		b) Sludge		1.9.4 of IS 12422	0.8% max.
	c) DDF at 90 °C	1.9.4 of IS 12422	0.500 max.		
22	Gassing tendency	IEC 60628:1985, Method A	No general requirement		
23	ECT	See 6.14	No general requirement		
4. Health, safety and environment					
24	Flash point	IS 1448 (Part 21)	135°C, min.		
25	PCA content	IP 346	3.0 %, max.		
26	PCB content	IS 16082 / ASTM-D-4059	Not detectable (< 2 mg/kg)		

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DIVYOL TRANS 2

TRANSFORMER OIL – IS 335:2018 TYPE II – UNINHIBITED

Divyol Trans 2 is a transformer oil specially manufactured from carefully selected new generation base oil, possessing excellent electrical properties and conforming to standards of IS 335:2018 Type II – Uninhibited.

Sr. No.	Characteristics	Test Method	Limits
1. Function			
1	Viscosity at -40 °C	IS 1448 (Part 25)	15 mm ² /s. max.
2	Viscosity at 0 °C	IS 1448 (Part 25)	1800 mm ² /s, max.
3	Viscosity at -30 °C	IS 1448 (Part 25)	-
	Viscosity at -40 °C	IS 16084	-
4	Pour point	IS 1448 (Part 10/Sec 2)	-10 °C max.
5	Water content	IEC 60814	1) 30 mg/kg max. for bulk supply 2) 40 mg/kg max. for drum supply
6	Breakdown voltage	IS 6792	i) 30 KV min. delivered ii) 70 KV after treatment
7	Density at 20 °C	IS 1448 (Part 16)	0.895 g/ml max.
8	DDF at 90 °C	IS 16086 / IEC 60247	0.005, max.
9	Particle content	IS 13236	No general requirement
2. Refining / Stability			
10	Appearance	-	Clear, free from sediment and suspended matter
11	Acidity	IEC 62021 - 1	0.01 mg KOH/g max.
12	Interfacial tension mN/m	ASTM D 971	No general requirement
13	Total sulphur content	ISO 14596 / ASTM D 4294	No general requirement
14	Corrosive sulphur	DIN 51353	Not corrosive
15	Potentially corrosive sulphur	IS 16310	Not corrosive
16	DBDS	IS 16497 (Part 1)	Not detectable (< 5 mg/kg)
17	Inhibitors of IEC 60666	IS 13631	(U) Uninhibited Oil; Not detectable (< 0.01%)
18	Metal passivator additives of IEC 60666 to IS13631	IS 13631	Not detectable (< 5 mg/kg) or as agreed upon with the purchaser
19	Other additives	-	-
20	2-Furfural & related comp, content	IS 15668	Not detectable (< 0.05 mg/kg) for each individual compound.
3. Performance			
21	Oxidation stability	IS 12422 (method C)	
		Test duration (U) Uninhibited Oil: 164 hrs.	
a)	Total acidity	1.9.4 of IS 12422	1.2 mg KOH/g max.
b)	Sludge	1.9.4 of IS 12422	0.8% max.
c)	DDF at 90 °C	1.9.4 of IS 12422	0.500 max.
22	Gassing tendency	IEC 60628:1985, Method A	No general requirement
23	ECT	See 6.14	No general requirement
4. Health, safety and environment			
24	Flash point	IS 1448 (Part 21)	135 °C, min.
25	PCA content	IP 346	3.0 % max.
26	PCB content	IS 16082 / ASTM D 405	Not detectable (< 2 mg/kg)

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DIVYOL TRANS 3

TRANSFORMER OIL – IS 335:2018 TYPE I – INHIBITED

Divyol Trans 3 is specially manufactured from carefully selected new generation base oil, possessing excellent electrical properties and conforming to specifications of IS 335:2018 Type I – Inhibited.

Sr. No.	Characteristics	Test Method	Limits
1. Function			
1	Viscosity at -40 °C	IS-1448 (Part 25)	12 mm ² /s, max.
2	Viscosity at 0 °C	IS-1448 (Part 25)	-
3	Viscosity at -30 °C	IS-1448 (Part 25)	1800 mm ² /s, max.
	Viscosity at -40 °C	IS-16084	-
4	Pour point	IS1448 (Part 10 Sec 2)	-40 °C max.
5	Water content	IEC 60814	1) 30 mg/kg max. for bulk supply 2) 40 mg/kg max. for drum supply
6	Breakdown voltage	IS 6792	i) 30 KV min. delivered ii) 70 KV after treatment
7	Density at 20 °C	IS 1448 (Part 16)	0.895 g/ml max.
8	DDF at 90 °C	IS 16086, IEC 60247	0.005 max.
9	Particle content	IS 13236	No general requirement
2. Refining / Stability			
10	Appearance	-	Clear, free from sediment and suspended matter
11	Acidity	IEC 62021 -1	0.01 mg KOH/g max.
12	Interfacial tension mN/m	ASTM D 971	No general requirement
13	Total sulphur content	ISO 14596 / ASTM D 4294	No general requirement
14	Corrosive sulphur	DIN 51353	Not corrosive
15	Potentially corrosive sulphur	IS 16310	Not corrosive
16	DBDS	IS 16497 (Part 1)	Not detectable (< 5 mg/kg)
17	Inhibitors of IEC 60666	IS 13631	(I) Inhibited Oil; 0.08 % - 0.40 %
18	Metal passivator additives of IEC 60666 to IS13631	IS 13631	Not detectable (< 5 mg/kg) or as agreed upon with the purchaser
19	Other additives	-	-
20	2-Furfural and related comp, content	IS 15668	Not detectable (< 0.05 mg/kg) for each individual compound
3. Performance			
21	Oxidation stability	IS 12422 (method C)	
		Test duration (I) Inhibited oil: 500 hrs.	
	a) Total acidity	1.9.4 of IS 12422	1.2 mg KOH/g max.
	b) Sludge	1.9.4 of IS 12422	0.8% max.
	c) DDF at 90 °C	1.9.4 of IS 12422	0.500 max.
22	Gassing tendency	IEC 60628:1985, Method A	No general requirement
23	ECT	See 6.14	No general requirement
4. Health, safety and environment			
24	Flash point	IS 1448 (Part 21)	135 °C, min.
25	PCA content	IP 346	3.0 %, max.
26	PCB content	IS 16082 / ASTM D 4059	Not detectable (< 2 mg/kg)

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DIVYOL TRANS 4

IS 335:2018 TYPE II – INHIBITED TRANSFORMER OIL

Divyol Trans 4 is specially manufactured from carefully selected right type of new generation base oil having excellent electrical properties and confirms to IS 335:2018 Type II – Inhibited.

Sr. No.	Characteristics	Test Method	Limits
1. Function			
1	Viscosity at -40 °C	IS-1448 (Part 25)	15 mm ² /s, max.
2	Viscosity at 0 °C	IS-1448 (Part 25)	1800 mm ² /s, max.
3	Viscosity at -30 °C	IS-1448 (Part 25)	-
	Viscosity at -40 °C	IS-16084	-
4	Pour point	IS1448 (Part 10 / Sec 2)	-10 °C max.
5	Water content	IEC 60814	1) 30 mg/kg max. for bulk supply 2) 40 mg/kg max. for drum supply
6	Breakdown voltage	IS 6792	i) 30 KV min. delivered ii) 70 KV after treatment
7	Density at 20 °C	IS 1448 (Part 16)	0.895 g/ml max.
8	DDF at 90 °C	IS 16086 / IEC 60247	0.005 max.
9	Particle content	IS 13236	No general requirement
2. Refining / Stability			
10	Appearance	-	Clear, free from sediment and suspended matter
11	Acidity	IEC 62021 -1	0.01 mg KOH/g max.
12	Interfacial tension mN/m	ASTM D 971	No general requirement
13	Total sulphur content	ISO 14596 or ASTM D 4294	No general requirement
14	Corrosive sulphur	DIN 51353	Not corrosive
15	Potentially corrosive sulphur	IS 16310	Not corrosive
16	DBDS	IS 16497 (Part 1)	Not detectable (< 5 mg/kg)
17	Inhibitors of IEC 60666	IS 13631	(I) Inhibited Oil; 0.08 % - 0.40 %
18	Metal passivator additives of IEC 60666 to IS13631	IS 13631	Not detectable (< 5 mg/kg) or as agreed upon with the purchaser
19	Other additives	-	-
20	2-Furfural and related comp. content	IS 15668	Not detectable (< 0.05 mg/kg) for each individual compound
3. Performance			
21	Oxidation stability	IS 12422 (method C) Test duration (I) Inhibited oil: 500 hrs.	
	a) Total acidity	1.9.4 of IS 12422	1.2 mg KOH/g max.
	b) Sludge	1.9.4 of IS 12422	0.8% max.
	c) DDF at 90 °C	1.9.4 of IS 12422	0.500 max.
22	Gassing tendency	IEC 60628:1985, Method A	No general requirement
23	ECT	See 6.14	No general requirement
4. Health, safety and environment			
24	Flash point	IS 1448 (Part 21)	135 °C, min.
25	PCA content	IP 346	3.0 %, max.
26	PCB content	IS 16082 / ASTM D 4059	Not detectable (< 2 mg/kg)

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DIVYOL TRANS 5

TRANSFORMER OIL – IS 335:2018 TYPE I – TRACE INHIBITED

Divyol Trans 5 is a Trace Inhibited Transformer Oil made from carefully selected new generation base oil, possessing excellent electrical properties. It meets Type I of IS 335:2018 (Fifth Revision) Standard – Table 2 - general specifications. It also conforms to IEC 60296: 2012 (Fourth Revision) Standard – (T - Trace Inhibited) – Table - 2 general specifications.

Sr. No.	Characteristics	Unit	Test Method	Guaranteed Data	
				Minimum	Maximum
1	Appearance		Visual inspection of oil sample in transmitted light under a thickness of 10 cm at ambient temperature	Clear, free from sediment and suspended matter	
2	Density at 20 °C	g/ml	IS 1448 (Part 16)		0.895
3	Kinematic viscosity at 40 °C	mm ² /sec	IS 1448 (Part 25)		12
4	Kinematic viscosity at -30 °C		IS 1448 (Part 25)		1800
	Flash point, pmcc	°C	IS 1448 (Part 21)	135	
5	Pour point	°C	IS 1448 (Part 10/Sec 2)		-40
6	Interfacial tension at 25 °C	mN/m	ASTM D 971	No general requirement 40 min	
7	Acidity	mg KOH/g	IEC 62021-1		0.01
8	Water content, bulk/drum, IBC	mg/kg	IEC 60814		30/40
9	Breakdown voltage		IS 6792		
	As delivered/after treatment	kV		30/70	
10	Dielectric dissipation factor (Tan δ) at 90 °C and 40 to 60 Hz		IS 16086		0.005
11	Corrosive sulphur silver strip, 100 °C, 18 hrs.		DIN 51353	Not corrosive	
12	Potentially corrosive sulphur		IS 16310	Not corrosive	
13	DBDS	mg/kg	IS 16497 (Part 1)	Not detectable (< 5 mg/kg)	
14	Total sulphur content	%	ISO 14596 / ASTM D 4294	No general requirement	
15	Inhibitors according to IS 13631 / IEC 60666	%	IS 13631	(T) Trace Inhibited Oil	
16	Metal passivator additives according to IS 13631 / IEC 60666	mg/kg	IS 13631	Not detectable (< 5 mg/kg)	
17	Other additives			Does not contain any additives other than antioxidant additive.	
18	Oxidation stability at 120 °C, 332 hrs.		IS 12422 (Method C)		
	Total acidity	mg KOH/g	1.9.4 of IS 12422		1.2
	Sludge	%	1.9.1 of IS 12422		0.8
	DDF at 90 °C		1.9.6 of IS 12422		0.500
19	Gassing tendency	µ L/min	IEC 60628, Method A	No general requirement	
20	PCA content	%	IP 346		3
21	PCB content	mg/kg	IS 16082	Not detectable (< 2mg/kg)	
22	2-Furfural and related compounds content	mg/kg	IS 15668	Not detectable (< 0.05 mg/kg) for each individual compound	
23	ECT		See 6.14 of IS 335:2018	No general requirement	
24	Particle content		IS 13236	No general requirement	

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DIVYOL TRANS 6

TRANSFORMER OIL – IS 335:2018 TYPE II – TRACE INHIBITED

Divyol Trans 6 is a Trace Inhibited Transformer Oil specially manufactured from carefully selected new generation base oil, possessing electrical properties and conforming to specifications of IS 335:2018 (Fifth Revision) Standard –Table 2 Type – II Trace Inhibited.

Sr. No.	Characteristics	Unit	Test Method	Guaranteed Data	
				Minimum	Maximum
1	Appearance		Visual inspection of oil sample in transmitted light under a thickness of 10 cm at ambient temperature	Clear, free from sediment and suspended matter	
2	Density at 20 °C	g/ml	IS 1448 (Part 16)		0.895
3	Kinematic viscosity at 40 °C	mm ² /sec	IS 1448 (Part 25)		15
4	Kinematic viscosity at 0 °C		IS 1448 (Part 25)		1800
	Flash point, pmcc	°C	IS 1448 (Part 21)	135	
5	Pour point	°C	IS 1448 (Part 10/Sec 2)		-10
6	Interfacial tension at 25 °C	mN/m	ASTM D 971	No general requirement 40 min.	
7	Acidity	mg KOH/g	IEC 62021-1		0.01
8	Water content, bulk/drum, IBC	mg/kg	IEC 60814		30/40
9	Breakdown voltage		IS 6792		
	As delivered/after treatment	kV		30/70	
10	Dielectric dissipation factor (Tan δ) at 90 °C and 40 to 60 Hz		IS 16086		0.005
11	Corrosive sulphur silver strip, 100 °C, 18 hrs.		DIN 51353	Not corrosive	
12	Potentially corrosive sulphur		IS 16310	Not corrosive	
13	DBDS	mg/kg	IS 16497 (Part 1)	Not detectable (< 5 mg/kg)	
14	Total sulphur content	%	ISO 14596 / ASTM D 4294	No general requirement	
15	Inhibitors according to IS 13631/IEC 60666	%	IS 13631	(T) Trace inhibited Oil (< 0.08 %)	
16	Metal passivator additives	mg/kg	IS 13631/IEC 60666	Not detectable (< 5 mg/kg)	
17	Other additives			Does not contain any additives other than antioxidant additive	
18	Oxidation stability at 120 °C, 332 hrs.		IS 12422 (Method C)		
	Total acidity	mg KOH/g	1.9.4 of IS 12422		1.2
	Sludge	%	1.9.1 of IS 12422		0.8
	DDF at 90 °C		1.9.6 of IS 12422		0.500
19	Gassing tendency	µ L/min	IEC 60628, Method A	No general requirement	
20	PCA content	%	IP 346		3
21	PCB content	mg/kg	IS 16082	Not Detectable (< 2 mg/kg)	
22	2-Furfural and related compounds content	mg/kg	IS 15668	Not Detectable (< 0.05 mg/kg) for each individual compound	
23	ECT		See 6.14 of IS 335:2018	No general requirement	
24	Particle content		IS 13236	No general requirement	

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DIVYOL TRANS 10 (IR) TRANSFORMER OIL – IEC 60296:2020 – INHIBITED

Divyol Trans 10 is an Inhibited Transformer Oil for railways, approved by RDSO and meeting the IEC 60296:2020 (CLW specifications) edition 5.0 Standard Table-3 general specifications. It possesses excellent electrical properties and also meets the ASTM D 1275 test requirements for corrosive sulphur.

Sr. No.	Characteristics	Unit	Test Method	Guaranteed Data	
				Minimum	Maximum
1	Appearance		Visual inspection of oil sample in transmitted light under a thickness of 10 cm at ambient temperature	Clear, free from sediment and suspended matter	
2	Colour		ISO 2049		1.5
3	Density at 20 °C	g/ml	ISO 3675 or IEC 12185		0.895
4	Kinematic viscosity at 40 °C	mm ² /sec	ISO 3104 or ASTM D 7042		12
	Kinematic viscosity at -30 °C				1800
5	Flash point, pmcc	°C	ISO 2719	135	
6	Pour point	°C	ISO 3016		-40
7	Interfacial tension at 25 °C	mN/m	ASTM D 971	40	
8	Acidity	mg KOH/g	IEC 62021-1 or IEC 62021-2		0.01
9	Water content, bulk/drum, IBC	mg/kg	IEC 60814		30/40
10	Breakdown voltage		IEC 60156		
	As Delivered / after treatment	kV		30/70	
11	Dielectric dissipation factor (Tan δ) at 90 °C and 40 – 60 Hz		IEC 60247 / IEC 61620		0.005
12	Corrosive Sulphur Silver strip, 100 °C, 18 hrs. Copper strip, 150 °C, 48 hrs.		DIN 51353 ASTM D 1275	Not corrosive Not corrosive	
13	Potentially corrosive sulphur		IEC 62535	Not corrosive	
14	DBDS	mg/kg	IEC 62697-1	Not detectable (< 5 mg/kg)	
15	Inhibitors according to IEC 60666	%	IEC 60666	(I) Inhibited oil (0.08% to 0.40%)	
16	Metal passivator additives according to IEC 60666	mg/kg	IEC 60666	Not detectable (< 5 mg/kg)	
17	Other additives			Does not contain any additives other than anti-oxidant additive	
18	Oxidation stability at 120 °C, 500 hrs.		IEC 61125 Method C		
	Total acidity	mg KOH/g	4.8.4 of IEC 61125:2018		1.2
	Sludge	%	4.8.1 of IEC 61125:2018		0.8
	DDF at 90 °C		4.8.5 of IEC 61125:2018		0.5
19	PCA content	%	IP 346		3
20	PCB content	mg/kg	IEC 61619	Not detectable (< 2mg/kg)	
21	2-Furfural and related compounds content	mg/kg	IEC 61198	Not detectable (< 0.05 mg/kg) for each individual compound	

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DIVYOL TRANS 20 AND 21 – STANDARD & PREMIUM TRANSFORMER OIL – IEC 296:82 CLASS I A & II A – INHIBITED

Divyol Trans 20 and 21 are Transformer Oils specially manufactured from carefully selected new generation base oils, possessing excellent electrical properties and conforming to specifications of IEC 296 - 1982 Class I and Class II Inhibited type. They also meet the ASTM D 1275 B test requirements for corrosive sulphur.

Sr. No.	Characteristics	Unit	Test Method	Specification of Divyol Trans 20 IC 296-I (IEC 296 Class I)	Specification of Divyol Trans 21 IC 296-II (IEC 296 Class II)
				Standard	Premium
1	Appearance		Representative sample of the oil shall be examined in transmitted light under a thickness of 10 cm at ambient temperature	Clear, free from sediment and suspended matter	Clear, free from sediment and suspended matter
2	Density at 20 °C max.	kg/dm ³	ISO 3675	0.895	0.895
3	Kinematic viscosity	mm ² /sec	ISO 3104		
	a) at 40 °C max.			11	11
	b) at -30 °C max.			No general requirement	1800
	c) at -15 °C max.			800	No general requirement
4	Flash point, pmcc min.	°C	ISO 2719	140	140
5	Interfacial tension at 25 °C min.	N/m	ISO 6275	0.04	0.04
6	Electric strength breakdown voltage (BDV)		IEC 156		
	a) As delivered min.	kV		30	30
	b) After treatment min.	kV		50	50
7	Dielectric dissipation factor max. tan Delta at 90 °C and 40 – 62 Hz		IEC 247	0.005	0.005
8	Corrosive sulphur copper strip, at 140 °C, for 19 hrs. copper strip, at 150 °C, for 48 hrs.		ISO 5662 ASTM D 1275 B	Non corrosive No general requirement	Non-corrosive
9	Anti oxidant additives	%	IEC 666 (Limit given as guideline only)	0.15 min – 0.40 max	
10	Oxidation stability at 100 °C, for 164 hrs.		IEC 74		
	Induction period	Hours	(Limit given as guideline only)	120	
11	Pour point max.	°C	ISO 3016	-30	-45
12	Neutralisation value max.	mg KOH/g	7.7 of IEC 296	0.03	0.03
13	Water content	ppm	IEC 733		
	a) Bulk max.			30	30
	b) Drum max.			40	40

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DIVYOL TRANS 30 AND 31 – STANDARD & PREMIUM TRANSFORMER OIL – IEC 296 CLASS I & II – UNINHIBITED

Divyol Trans 30 and 31 are Transformer Oils specially manufactured from carefully selected new generation base oils, possessing excellent electrical properties and conforming to standard specifications of IEC 296:1982 Class I and Class II Uninhibited type. They also meet the ASTM D 1275 B test requirements for corrosive sulphur.

Sr. No.	Characteristics	Unit	Test Method	Specification of Divyol Trans 30 IC 296-I (IEC 296 Class I)	Specification of Divyol Trans 31 IC 296-II (IEC 296 Class II)
				Standard	Premium
1	Appearance		Representative sample of the oil shall be examined in transmitted light under a thickness of 10 cm at ambient temperature	Clear free from sediment and suspended matter	Clear free from sediment and suspended matter
2	Density at 20 °C max.	kg/dm ³	ISO 3675	0.895	0.895
3	Kinematic viscosity	mm ² /sec	ISO 3104		
	a) at 40 °C max.			11	11
	b) at -30 °C max.			No general requirement	1800
	c) at -15 °C max.			800	No general requirement
4	Flash point, pmcc min.	°C	ISO 2719	140	140
5	Interfacial tension at 25 °C min.	N/m	ISO 6275	0.04	0.04
6	Electric strength breakdown voltage (BDV)		IEC 156		
	a) As delivered min.	kV		30	30
	b) After treatment min.	kV		60	60
7	Dielectric dissipation factor max. tan Delta at 90 °C and 40 to 62 Hz		IEC 247	0.005	0.005
8	Corrosive sulphur copper strip, at 140 °C, for 19 hrs. copper strip, at 150 °C, for 48 hrs.		ISO 5662 ASTM D 1275 B	Non corrosive, no General Requirement	Non corrosive Non corrosive
9	Anti oxidant additives	%	IEC 666	Not detectable	Not detectable
10	Oxidation stability at 100 °C, for 164 hrs.		IEC 74		
	a) Neutralisation Value max.	mg KOH/g		0.4	0.4
	b) Sludge max.	%		0.1	0.1
11	Pour point max.	°C	ISO 3016	-30	-45
12	Neutralisation value max.	mg KOH/g	7.7 of IEC 296	0.03	0.03
13	Water content	ppm	IEC 733		
	a) bulk max.			30	30
	b) drum max.			40	40

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DIVYOL TRANS 40 – STANDARD TRANSFORMER OIL – IEC 60296:2012 – UNINHIBITED

Divyol Trans 40 is an Uninhibited Transformer Oil specially manufactured from carefully selected new generation base oil, possessing excellent electrical properties and conforming to IEC 60296:2012 02 Edition 4.0 Standard Table 2 general specifications. It also meets the ASTM D 1275 B test requirements for corrosive sulphur.

Sr. No.	Characteristics	Unit	Test Method	Specifications
1	Appearance		Visual inspection of oil sample in transmitted light under a thickness of 10 cm at ambient temperature	Clear free from sediment and suspended matter
2	Density at 20 °C max.	g/ml	ISO 3675 or IEC 12185	0.895
3	Kinematic viscosity	mm ² /sec	ISO 3104	
	a) at 40 °C max.			12
	b) at -30 °C max.			1800
4	Flash point, pmcc min.	°C	ISO 2719	135
5	Interfacial tension at 25 °C min.	mN/m	EN 14210 or ASTM D 971 (where it is a general requirement)	No general requirement 40 min.
6	Electric strength breakdown voltage (BDV)		IEC 60156	
	a) As delivered min.	kV		30
	b) After treatment min.	kV		70
7	Dielectric dissipation factor max. tan Delta at 90° C and 40 to 60 Hz		IEC 60247 or IEC 61620	0.005
8	Corrosive sulphur Silver strip, at 100 °C, for 18 hrs. Copper strip, at 150 °C, for 48 hrs.	°C	DIN 51353 ASTM D 1275 B	Not corrosive
9	Potentially corrosive sulphur		IEC 62535	Not corrosive
10	DBDS	mg/kg	IEC 62697-1 (in preparation)	Not detectable (< 5 mg/kg)
11	Total sulphur content	%	IP 373 or ISO 14596	No general requirement
12	Inhibitors of IEC 60666 (Anti oxidant additives)	%	IEC 60666	(U) Uninhibited oil Not detectable (< 0.01 %)
13	Metal passivator additives of IEC 60666	mg/kg	IEC 60666	Not detectable (< 5 mg/kg)
14	Other additives			Does not contain any additives.
15	Oxidation stability at 120 °C, for 164 hrs.		IEC 61125 Method C	
	a) Total acidity max.	mg KOH/g	1.9.4 of IEC 61125:1992	1.2
	b) Sludge max.	%	1.9.1 of IEC 61125:1992	0.8
	c) Dielectric dissipation factor tan Delta at 90 °C max.		1.9.6 of IEC 61125 Amendment 1 (2004) + IEC	0.5
16	Gassing tendency	3 / PLQ	IEC 60628:1985 Method A	No general requirement
17	PCA content max.	%	IP 346	<3
18	PCB content	mg/kg	IEC 61619	Not detectable (< 2mg /kg)
19	2 – Furfural and related compounds content	mg/kg	IEC 61198	Not detectable (< 0.05 mg/kg) for each individual compound
20	Stray gassing		See 6.22 of IEC 60296	No general requirement
21	ECT		See 6.14 of IEC 60296	No general requirement
22	Particle content		IEC 60970	No general requirement
23	Pour point max.	°C	ISO 3016	-40
24	Acidity max.	mg KOH/g	IEC 62021-1 or IEC 62021-2	0.01
25	Water content	mg/kg	IEC 60814	
	a) Bulk max.			30
	b) Drum max.			40

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DIVYOL TRANS 41 – STANDARD TRANSFORMER OIL – IEC 60296:2020 – INHIBITED

Divyol Trans 41 is a highly hydro-treated paraffinic based Inhibited Transformer Oil with higher oxidation stability and lower sulphur content. It is specially manufactured from carefully selected new generation base oil, possessing excellent electrical properties and conforming to IEC 60296:2020 edition 5.0 Standard Table 3 general specifications. It also meets the ASTM D 1275 test requirements for corrosive sulphur.

Sr. No.	Characteristics	Unit	Test Method	Guaranteed Data	
				Minimum	Maximum
1	Appearance		Visual inspection of oil sample in transmitted light under a thickness of 10 cm at ambient temperature	Clear, free from sediment and suspended matter	
2	Colour		ISO 2049		0.5
3	Density at 20 °C	g/ml	ISO 3675 or IEC 12185		0.895
4	Kinematic viscosity at 40 °C	mm ² /sec	ISO 3104 or ASTM D 7042		12
	Kinematic viscosity at -30 °C				1800
5	Flash point, pmcc	°C	ISO 2719	135	
6	Pour point	°C	ISO 3016		-40
7	Interfacial tension at 25 °C	mN/m	ASTM D 971	43	
8	Acidity	mg KOH/g	IEC 62021-1 / IEC 62021-2		0.01
9	Water content, bulk/drum, IBC	mg/kg	IEC 60814		30/40
10	Breakdown voltage		IEC 60156		
	As delivered/after treatment	kV		30/70	
11	Dielectric dissipation factor (Tan δ) at 90 °C & 40 to 60 Hz		IEC 60247 or IEC 61620		0.005
12	Corrosive sulphur Silver strip, 100 °C, 18 hrs. Copper strip, 150 °C, 48 hrs.		DIN 51353 ASTM D 1275	Not corrosive Not corrosive	
13	Potentially corrosive sulphur		IEC 62535	Not corrosive	
14	Total sulphur content	%	ISO 14596 or ISO 8754		0.05
15	DBDS	mg/kg	IEC 62697-1	Not Detectable (< 5 mg/kg)	
16	Inhibitors according IEC 60666	%	IEC 60666	(I) Inhibited Oil (0.08 % – 0.4 %)	
17	Metal passivator additives	mg/kg	IEC 60666	Not detectable (< 5 mg / kg)	
18	Other additives			Does not contain any additives other than antioxidant additive	
19	Oxidation stability at 120 °C, 500 hrs.		IEC 61125 Method C		
	Total acidity	mg KOH/g	4.8.4 of IEC 61125:2018		0.3
	Sludge	%	4.8.1 of IEC 61125:2018		0.05
	DDF at 90 °C		4.8.5 of IEC 61125:2018		0.05
20	PCA content	%	IP 346		<3
21	PCB content	mg/kg	IEC 61619	Not detectable (< 2mg/kg)	
22	2-Furfural and related compounds content	mg/kg	IEC 61198	Not detectable (< 0.05 mg/kg) for each individual compound	
23	Stray Gassing under thermo-oxidative stress Hydrogen (H ₂) Methane (CH ₄) Ethane (C ₂ H ₆)	µl/l µl/l µl/l	Procedure in clause A.4 (oil saturated with air) in the presence of copper	Non-stray gassing (< 50) Non-stray gassing (< 50) Non-stray gassing (< 50)	

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DIVYOL TRANS 50 – PREMIUM TRANSFORMER OIL – IEC 60296:2020 – INHIBITED

Divyol Trans 50 IEC 60296 is an Inhibited Transformer Oil specially made for use in the power grid. It is manufactured from carefully selected new generation naphthenic base oil, possessing excellent electrical properties and conforming to IEC 60296:2020 naphthenic base inhibited type. It also meets IEC 60296:2012 standards as well as ASTM D 1275 B test requirements for corrosive sulphur.

Sr. No.	Characteristics	Unit	Test Method	Specifications
1	Appearance		Visual inspection of oil sample in transmitted light under a thickness of 10 cm at ambient temperature	Clear, free from sediment and suspended matter
2	Density at 20 °C max.	g/ml	ISO 3675 or IEC 12185	0.895
3	Kinematic viscosity	mm ² /sec	ISO 3104	
	a) at 40 °C max.			12
	b) at -30 °C max.			1800
4	Flash point, pmcc min.	°C	ISO 2719	135
5	Interfacial tension at 25 °C min.	mN/m	EN 14210 or ASTM D 971 (where it is used as general requirement)	No general requirement 40 min
6	Electric strength breakdown voltage		IEC 60156	
	a) As delivered min.	kV		30
	b) After treatment min.	kV		70
7	Dielectric dissipation factor max. tan Delta at 90 °C and 40 – 60Hz	kV	IEC 60247 or IEC 61620	0.005
8	Corrosive sulphur Silver strip, at 100 °C, for 18 hrs. Copper strip, at 150 °C, for 48 hrs.	°C	DIN 51353 ASTM D	Not corrosive
9	Potentially corrosive sulphur		IEC 62535	Not corrosive
10	DBDS	mg/kg	IEC 62697-1(in preparation)	Not Detectable (< 5 mg/kg)
11	Total sulphur content	%	IP 373 or ISO 14596	No general requirement
12	Anti oxidant additives	%	IEC 60666	(I) Inhibited Oil 0.08 min. to 0.40 max.
13	Metal passivator additives of IEC 60666	mg/kg	IEC 60666	Not detectable (< 5 mg/kg)
14	Other additives			Does not contain any additive other than anti oxidant additive
15	Oxidation stability at 120 °C, for 500 hrs.		IEC61125 Method C	
	a) Total acidity max.	mg KOH/g	1.9.4 of IEC 61125:1992	1.2
	b) Sludge max.	%	1.9.1 of IEC 61125:1992	0.8
	c) Dielectric dissipation factor tan Delta at 90 °C max.		1.9.6 of IEC 61125 Amendment 1 (2004) + IEC 60247	0.5
16	Gassing tendency	3/PLQ	IEC 60628:1985 Method A	No general requirement
17	PCA content max.	%	IP 346	3
18	PCB content	mg/kg	IEC 61619	Not detectable (< 2 mg/kg)
19	2-Furfural and related compounds content	mg/kg	IEC 61198	Not detectable (< 0.05 mg/kg) for each individual compound
20	Stray gassing		See 6.22 of IEC 60296	No general requirement
21	ECT		See 6.14 of IEC 60296	No general requirement
22	Particle content		IEC 60970	No general requirement
23	Pour point max.	°C	ISO 3016	-40
24	Acidity max.	mg KOH/g	IEC 62021-1 or IEC 62021-2	0.01
25	Water content	mg/kg	IEC 60814	
	a) Bulk max.			30
	b) Drum max.			40

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DIVYOL TRANS 51 – STANDARD TRANSFORMER OIL – IEC 60296:2020 TRACE INHIBITED

Divyol Trans 51 is a Trace Inhibited Transformer Oil manufactured from carefully selected new generation base oil, possessing excellent electrical properties and conforming to standards as per IEC 60296:2012 – Paraffinic Base Trace Inhibited type and IEC 60296: 2020, edition 5.0 Standard Table – 4 general specifications. It also meets the ASTM D 1275 test requirements for corrosive sulphur.

Sr. No.	Characteristics	Unit	Test Method	Guaranteed Data	
				Minimum	Maximum
1	Appearance		Visual inspection of oil sample in transmitted light under a thickness of 10 cm at ambient temperature	Clear, free from sediment and suspended matter	
2	Colour		ISO 2049		1.5
3	Density at 20 °C	g/ml	ISO 3675 or IEC 12185		0.895
4	Kinematic viscosity at 40 °C	mm ² /sec	ISO 3104 or ASTM D 7042		12
	Kinematic viscosity at -30 °C				1800
5	Flash point, pmcc	°C	ISO 2719	135	
6	Pour point	°C	ISO 3016		-40
7	Interfacial tension at 25 °C	mN/m	ASTM D 971	40	
8	Acidity	mg KOH/g	IEC 62021-1 / IEC 62021-2		0.01
9	Water content, bulk/drum, IBC	mg/kg	IEC 60814		30/40
10	Breakdown voltage		IEC 60156		
	As delivered/after treatment	kV		30/70	
11	Dielectric dissipation factor (Tan δ) at 90 °C & 40 to 60 Hz		IEC 60247 or IEC 61620		0.005
12	Corrosive sulphur silver strip, 100 °C, 18 hrs. copper strip, 150 °C, 48 hrs.		DIN 51353 ASTM D 1275	Not corrosive Not corrosive	
13	Potentially corrosive sulphur		IEC 62535	Not corrosive	
14	DBDS	mg/kg	IEC 62697-1	Not detectable (< 5 mg/kg)	
15	Inhibitors according to IEC 60666	%	IEC 60666	(T) Trace Inhibited Oil (≥ 0.01 % to < 0.08 %)	
16	Metal passivator additives	mg/kg	IEC 60666	Not detectable (< 5 mg/kg)	
17	Other additives			Does not contain any additives other than antioxidant additive	
18	Oxidation stability at 120 °C, 332 hrs.		IEC 61125 Method C		
	Total acidity	mg KOH/g	4.8.4 of IEC 61125:2018		1.2
	Sludge	%	4.8.1 of IEC 61125:2018		0.8
	DDF at 90 °C		4.8.5 of IEC 61125:2018		0.500
19	PCA content	%	IP 346		3
20	PCB content	mg/kg	IEC 61619	Not detectable (< 2mg/kg)	
21	2-Furfural and related compounds content	mg/kg	IEC 61198	Not detectable (< 0.05 mg/kg) for each individual compound	

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DIVYOL TRANS 56 – PREMIUM TRANSFORMER OIL – IEC 60296:2012 – UNINHIBITED

Divyol Trans 56 is an Uninhibited Naphthenic Mineral Insulating Oils specially made for transformers as per IEC 60296:2012. It is specially manufactured from carefully selected new generation naphthenic base oil, possessing excellent electrical properties.

Sr. No.	Characteristics	Unit	Test Method	Limits
1	Appearance	-	IEC 60296:2012	Clear, transparent, free from sediment and suspended matter
2	Density at 20 °C	gm/ml	ISO 3675 / IEC 12185	max. 0.895
3	Density at 29.5 °C	gm/ml	ISO 3675 / IEC 12185	-
4	Kinematic viscosity at 40 °C	mm ² /s	ISO 3104	max..12
5	Kinematic viscosity at -30 °C	mm ² /s	ISO 3104	max. 1800
6	Pour point	°C	ISO 3016	max. - 40
7	Water content	mg/Kg	IEC 60814:1997	max. 30a/40b
8	Breakdown voltage	KV	IEC 60156:1995 IEC 156 / BS 5874	min. 70
	After processing in lab/filling station prior to drumming.			
	As delivered in 210 Ltrs. capacity drums and before treatment			min. 30
9	Dielectric dissipation factor (40 Hz to 60 Hz): at 90 °C	tan Delta	IEC 60247:1978 IEC 61620	max. 0.005 max. 0.005
10	Acidity	mg KOH/g	IEC 62021 - 1 / 296	max. 0.01
11	Interfacial tension	mN/M	EN 14210 / ASTM D 971 / ISO 6295	min. 40
12	Corrosive sulphur	-	DIN 51353 / ISO 5662	Non-corrosive
	Corrosive sulphur	-	ASTM D 12758	Non-corrosive
13*	Potentially corrosive sulphur		IEC 62535	Non-corrosive
14*	DBDS (Dibenzylsulphide)	mg/kg	IEC 62697	Not detectable
15*	Total sulphur content	%	IP373 or ISO 14596	No general requirement
16	Presence of oxidation inhibitor	%	IEC 60666	< 0.01 % or not detectable
17*	Metal passivator additives	mg/kg	IEC 60666	Not detectable
18*	2-Furfural and related compounds content	mg/kg	IEC 61198	Not detectable
19	Oxidation stability at 120 °C for 164 hrs.			
	Total acidity	mg KOH/g	IEC 61125:1992	max. 1.2
	Sludge	% Wt	Method C	max. 0.8
	Dielectric dissipation factor at 90 °C			max. 0.5
20	Flash point, pmcc	°C	ISO 2719	min. 135
21*	Stray gassing	-	IEC 60296	No general requirement
22*	ECT		IEC 60296	No general requirement
23	Particle content	-	IEC 60970	No general requirement
24	Gassing tendency	-	IEC 60628 Method A	No general requirement
25*	Polycyclic aromatic content (DMSO)	% Wt	IP 346	max. 3.0
26*	PCB content	mg/Kg	IEC 61619:1997	Not detectable
27*	Carbon Type Analysis			
	1) CA	%	FTIR	4 to 11
	2) CP	%	FTIR	max. 50
	3) CN	%	FTIR	min. 42

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DIVYOL NATURAL ESTER BASED TRANSFORMER OIL – IS16659:2017 / IEC 62770:2013

Divyol Natural Ester based Transformer Oil is specially manufactured from carefully selected new generation base oil, possessing excellent electrical properties and conforming to IEC 62770:2013.

Sr. No.	Characteristics	Test Method	IEC 62770 Limits	Typical Values
Physical properties				
1	Appearance		Clear, free from sediment and suspended matter	Clear, free from sediment and suspended matter
2	Viscosity at 100 °C	ISO 3104	≤ 15 cSt	7.20 – 8.60
3	Viscosity at 40 °C	ISO 3104	≤ 50 cSt	32.38 – 34.50
4	Pour point	ISO 3016	≤ -10 °C	-14 – 18
5	Water content	IEC 60814	≤ 200 mg/kg	153
6	Density at 20 °C	ISO 3675 or ISO 12185	≤ 1000 kg/m ³	0.916
7	Flash point (pmcc)	ISO 2592	≥ 250 °C	> 290
8	Fire point	ISO 2719	≥ 300 °C	> 340
Electrical properties				
9	Dielectric breakdown voltage	IEC 60156 (2.5 mm gap)	> 35 kV at Delivery	> 70
10	DDF at 90 °C	IEC 60247	≤ 0.05	0.0050 – 0.0054
Chemical properties				
11	Soluble acidity	IEC 62021-3	≤ 0.06 mg KOH/g	0.020 – 0.026
12	Corrosive sulfur DBDS	IEC 62535 / ASTM D 1275B IEC 62697-1	Non-corrosive below detection limit	Non-corrosive Not detected
13	Total additives	IEC 60666 or other suitable methods	≤ 5%	0.1 – 0.2
14	Total acidity	1.9.4 of IEC 61125:1992	≤ 0.6 mg KOH/g	0.11 – 0.16
15	Viscosity at 40 °C	ISO 3104	≤ 30% increase over initial value	18.18 – 19.36
16	DDF at 90 °C	IEC 60247	≤ 0.5	0.04 – 0.06
17	Biodegradation	US EPA OECD 301 B, C or F US EPA OPPTS 835.311	Readily biodegradable	Readily biodegradable

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Gandhar Oil Refinery (India) Limited

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, GMP Certified, NABL Accreditation and Government Recognized Three Start Export House

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