

SCHEDULE-II**TECHNICAL SPECIFICATIONS AND GUARANTEED TECHNICAL PARTICULARS OF EHV GR.II NEW INSULATING TRANSFORMER OIL**

Insulating Oil for Transformers & Switchgears shall be as per ISS-335-1993 (fourth revision) incorporating up to date amendment and additional characteristics as incorporated below. It will be pure hydrocarbon mineral oil, clean and sufficiently free from moisture and of other foreign matter likely to impair its properties.

The test certificate for the materials giving the results of sample test as per relevant ISS will be required to be submitted along with the tender for our approval in support of the compliance of materials to the specifications and the guaranteed technical particulars mentioned below. The test results for the characteristics of the oil when tested in accordance with ISS 335-1993 (fourth revision) incorporating up-to-date amendment and additional characteristic required by us, shall be as here-under:-

S.No.	Schedule of characteristics (Clauses 5.1 & 9.1 of ISS)	Characteristics of transformer oil	Reference to test method as per IS 335-1993 with latest amendments
1	Appearance	The oil shall be clear and transparent & free from suspended matter or sediments.	A representative sample of the oil shall be examined in 100mm thick layer at 27 ° C.
2	Flash Point Pensky Marten (Closed) (Min.)	140 °C	IS: 1448/1970
3	Pour point (Max.)	(-) 6° C	IS: 1448/1970
4	Neutralization value		
(a)	Total acidity, Max.	0.03 mg KOH/g	IS: 1448/1967
(b)	Inorganic acidity/ Alkalinity	NIL	
5	Corrosive Sulphur IS: 335/1993	Non-corrosive	Annexure-B of ISS 335/1993
6	Electric Strength (Breakdown voltage) (Min.):		
(a)	New unfiltered oil	30 KV (rms)	IS: 335/1993
(b)	New oil after filtration	60 KV (rms) (If the above value is not attain, the oil shall be filtered)	IS: 335/1993
7	Dielectric dissipation factor (tan delta) at 90 °C (Max.)	0.002	IS: 6262-1971
8	Specific resistance (resistivity) (Min.)		
(a)	At 90 °C	35×10^{12} Ohm-cm.	IS: 6103/1971
(b)	At 27 °C	1500×10^{12} Ohm-cm.	
9	Oxidation stability:		
(a)	Neutralization value after oxidation, (Max.)	0.40 mg KOH/g	Annexure-C of IS:

S.No.	Schedule of characteristics (Clauses 5.1 & 9.1 of ISS)	Characteristics of transformer oil	Reference to test method as per IS 335-1993 with latest amendments
(b)	Total sludge after oxidation (Max.)	0.10% by weight	335/1993
10	S.K. Value	4% to 8%	Annexure-D of IS: 335/1993
11	Ageing characteristics after accelerated ageing (open beaker method with copper catalyst):		IS: 12177/1987 (Method-A)
(a)	Specific resistance (resistivity)		IS: 6103/1971
	(i) at 27°C (Min.)	2.5×10^{12} Ohm-cm	
	(ii) at 90°C (Min.)	0.2×10^{12} Ohm-cm	
(b)	Dielectric dissipation factor (Tan Delta) (Max.)	0.20	IS: 6262/1971
(c)	Total acidity (Max.)	0.05 mg KOH/g	IS: 1448/1967
(d)	Total sludge value	0.05% by weight	Annexure-A of IS:12177
12	Interfacial tension at 27 °C (Min.)	0.04 N/m	IS: 6104/1971
13	Water content (Max.)	50 PPM	IS: 13567/1972
14	Density at 29.5° C(Max.)	0.89 g/cm ³	IS: 1448/1977
15	Kinematic Viscosity at 27 ° C (Max.)	27 Cst	IS: 1448/1976
16	Present of Oxidation inhibitor	The oil shall contain antioxidant additives	IS: 13631/1992

Note:-(i) Offer received without type test certificate shall be rejected out rightly.

(ii) Better specification (i.e. BDV, & PPM) oil is also acceptable

Chief Engineer (S&P-EZ)
O/o CMD (EZ), MPPKVV Co. Ltd.,
Jabalpur

SCHEDULE III

PRICE VARIATION FORMULA

The following shall be applicable in respect of Price Variation:-

$$P = P_o + 1.2 (TB - TBo) + 4.8(D - Do)$$

Wherein

- P= Final ex-factory price inclusive of packing charges payable in Rs./KL after accounting for price variation in respect of either Base Oil (TOBS) or barrels or both.
- Po = Ordered Ex-factory price in Rs./KL.
- TBo= CIF price of Base Oil (TOBS) Rs./KL prevailing on the 1st working day of the calendar month, prior to the calendar month, in which tender is due for opening.
- Do = Price of drums prevailing on the 1st working day of the calendar month Prior to the calendar month in which tender is due for opening.
- TB = CIF price of TOBS prevailing as on first working day of the calendar Month, prior to the calendar month in which offer for inspection has been made.
- D = Price of drums prevailing on the first working day of the calendar Month, prior to the calendar month in which offer for inspection has been made.

The above prices are as published by IEEMA vide circular reference number IEEMA (PVC) TR-OIL.

For example, if the date of tendering falls in Nov.2000, the applicable prices of TOBS (TBo) and drums (Do) shall be prevailing as on 1st Oct.2000.

Similarly, if the date of offer falls in Nov.2000, the applicable prices of TOBS (TB) and drum (D) shall be as prevailing as on 1st Oct.2000.

Note:-

- (a) All prices of raw-materials are exclusive of modivatable excise/CV duty amount and exclusive of any other Central, State of local taxes, Octroi etc.
- (b) The details of prices are as under:-
 - (i) The price of TOBS(in Rs./KL)considered is the CIF price for N-60 Grade oil as published in ICIS-LOR bulletin for the first week of the previous month. This price is normally published in US dollars per gallon, which is converted in Rupees/KL, by IEEMA using multi-plying factors and the customs exchange rate prevailing on 1st working day of the previous month. This price is inclusive of import duty prevailing as on the 1st working day of previous month, but exclusive of modivatable CVD and other taxes.

- (ii) The price of drum in Rupees is the ex-works price as quoted by the drum manufacturer for drum of capacity of 210 Ltrs.
- (c) Price variation claims shall be limited to the schedule delivery period only.
- (d) The offers based on FIRM price basis or price variation with ceiling or on the basis of any other formula is liable to be rejected.
- (e) The price variation shall not be permitted on any other components except base oil and barrels as mentioned above.

Chief Engineer (S&P-EZ)
O/o CMD (EZ), MPPKVV Co. Ltd.,
Jabalpur