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GB/T 6451-2008

Replace GB/T 6451-1999, GB/T 16274-1996

**Specification and technical requirements for oil-immersed
power transformers**

油浸式电力变压器

技术参数和要求

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Contents

1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	6 kV, 10 kV voltage grades	1
	4.1 Performance parameters	1
	4.2 Technical requirements	4
	4.3 Test items	5
	4.4 Designation, lifting, installation, transportation and storage	6
5	20kV voltage grade	7
6	35kV voltage grade	7
	6.1 Performance parameters	7
	6.2 Technical requirements	10
	6.3 Test items	12
	6.4 Designation, lifting, installation, transportation and storage	13
7	66kV voltage grade	15
	7.1 Performance parameters	15
	7.2 Technical requirements	16
	7.3 Test items	18
	7.4 Designation, lifting, installation, transportation and storage	19
8	110kV voltage grade	21
	8.1 Performance parameters	21
	8.2 Technical requirements	24
	8.3 Test items	27
	8.4 Designation, lifting, installation, transportation and storage	28
9	220 kV voltage grade	29
	9.1 Performance parameters	29
	9.2 Technical requirements	33
	9.3 Test items	36
	9.4 Designation, lifting, installation, transportation and storage	37
10	330 kV voltage grades	39
	10.1 Performance parameters	39
	10.2 Technical requirements	42
	10.3 Test items	45
	10.4 Designation, lifting, installation, transportation and storage	46
11	500 kV voltage grades	48
	11.1 Performance parameters	48
	11.2 Technical requirements	50
	11.3 Test items	53
	11.4 Designation, lifting, installation, transportation and storage	54
Annex A (Normative) Test of using unit in consultation with the manufacturing unit		56
	A.1 Long no-load test	56
	A.2 Oil flow static test	56
	A.3 Partial discharge measurements when turning the oil pump	56

Foreword

This standard is a replacement of GB/T 6451-1999 *Specification and Technical Requirements for Three-phase Oil-immersed Power Transformers* and GB/T 16274-1996 *Specification and Technical Requirements for Oil-immersed Power Transformers 500 kV*.

This standard is a consolidation and revise of GB/T 6451-1999 *Specification and Technical Requirements for Three-phase Oil-immersed Power Transformers* and GB/T 16274-1996 *Specification and Technical Requirements for Oil-immersed Power Transformers 500 kV*.

This standard, in comparison with GB/T 6451—1999, has the major change as follows:

—Writing format has been modified in accordance with the provisions of GB/T 1.1--2000 *Directives for Standardization- Part 1: Rules for the Structure and Drafting of Standards*;

—Standard name is changed into *Specification and Technical Requirements for Oil-immersed Power Transformers*;

—Increased the content of 20 kV grade oil-immersed power transformer technical parameters and requirements;

—Increased the content of 500 kV grade oil-immersed power transformer technical parameters and requirements, and adjust and supplement the original capacity specifications of 500 kV grade transformer;

—Canceled the no-load loss and no-load current value stipulated in Group II of 35 kV, 66 kV and 110 kV grade transformers performance parameters table;

—Supplemented some capacity specifications on the basis of the original capacity specifications of 110 kV, 220 kV and 330 kV grade transformers;

—Adjusted the performance parameter of 6 kV, 10 kV, 35 kV, 66 kV, 110 kV, 220 kV and 330 kV grade transformers. Where the no-load loss and load loss of 6 kV, 10 kV and 35 kV grade were decreased by an average of about 10%; the no-load loss of 66 kV, 110 kV and 220 kV grade was decreased by an average of about 5% and the load loss was decreased by an average of about 10%; the no-load loss of 330 kV was grade decreased by an average of approximately 10% and the load loss was decreased by an average of about 5%. In addition, reduced the no-load current of various voltage grades accordingly;

—Unified changed and modified the technical requirements of various grades transformers.

Annex A of this standard may be regarded as normative Annex.

This standard is proposed by China Electrical Equipment Industrial Association.

The standard is under the jurisdiction of National Technical Committee on Transformers of Standardization Administration of China.

This standard is drafted by: Shenyang Transformer Research Institute, TBEA Shenyang Transformer Group Co., Ltd., Baoding Tianwei Baobian Electric Co., Ltd., Xi'an XD Transformer Co., Ltd., TBEA Hengyang Transformer Co., Ltd., Jinan Zhiyou Group Co., Ltd., Sanbian Sci-Tech Co., Ltd., TBEA Co., Ltd. Xinjiang Transformer Factory.

Main drafters of this standard: Zhang Zhongguo, Liu Dongsheng, Sun Shubo, Wang Changzheng, Chen Dongfeng, Wu Zeyu, Lin Rilei, Ma Xuping, Tao Dan, Sun Jun.

The issuances of previous versions of the standard replaced by this standard are as follows:

—GB/T 6451—1986, GB/T 6451—1995, GB/T 6451—1999;

—GB/T 16274—1996.

Specification and technical requirements for oil-immersed power transformers

1 Scope

This standard specifies the performance parameters, technical requirements, test items and signs, lifting, installation, transportation and storage of rated capacity of 30kVA and above, voltage grades of 6 kV, 10 kV, 20 kV, 35 kV, 66 kV, 110 kV, 220 kV, 330 kV and 500 kV and 500 kV three-phase and 500 kV single-phase oil-immersed power transformers.

This standard applies to oil-immersed power transformers with voltage grade of 6 kV-500 kV, rated capacity of 30kVA and above and rated frequency of 50 Hz.

2 Normative references

The articles contained in the following documents have become this standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard

GB 1094.1 Power transformers--Part 1: General (GB 1094.1-1996, eqv IEC 60076-1: 1993)

GB 1094.2 Power transformers--Part 2: Temperature rise (GB 1094.2-1996, eqv IEC 60076-2: 1993)

GB 1094.3 Power transformers--Part 3: Insulation levels, dielectric tests and external clearances in air (GB 1094.3-2003, eqv IEC 60076-3: 2000, MOD)

GB 1094.5 Power transformers—Part 5: Ability to withstand short circuit (GB 1094.5-2003, eqv IEC 60076-5: 2000, MOD)

GB/T 2900.15-1997 Electrotechnical terminology--Transformer, instrument transformer, voltage regulator and reactor (neq IEC50(421): 1990; IEC50(321): 1986)

GB/T 15164 Loading guide for oil-immersed power transformers (GB/T 15164-1994, idt IEC 60354: 1991)

JB/T 10088-2004 Sound level for 6kV~500kV power transformers

3 Terms and definitions

The terms and definitions specified in GB 1094.1 and GB/T 2900.15 apply to this standard.

4 6 kV, 10 kV voltage grades

4.1 Performance parameters

4.1.1 Rated capacity, voltage combinations, tapping range, connection symbol, no-load loss, load loss, no-load current and short-circuit impedance shall conform to provision in Table 1-Table 3.

Table 1 30kVA -1600kVA three-phase double-winding off-circuit-tap-changing power distribution transformer

Rated capacity kVA	Voltage combinations and tapping ranges			Connection symbol	No-load loss kW	Load loss kW	No-load current %	Short circuit impedance %	
	High voltage kV	High-voltage tapping range %	Low voltage kV						
30	6 6.3 10 10.5 11	±5	0.4	Dyn11 Yzn11 Yyn0	0.13	0.63/0.60	2.3	4.0	
50					0.17	0.91/0.87	2.0		
63					0.20	1.09/1.04	1.9		
80					0.25	1.31/1.25	1.9		
100					0.29	1.58/1.50	1.8		
125					0.34	1.89/1.80	1.7		
160					0.40	2.31/2.20	1.6		
200					0.48	2.73/2.60	1.5		
250					0.56	3.20/3.05	1.4		
315					0.67	3.83/3.65	1.4		
400					0.80	4.52/4.30	1.3		
500					0.96	5.41/5.15	1.2		
630				Dyn11 Yyn0	1.20	6.20	1.1		4.5
800					1.40	7.50	1.0		
1000					1.70	10.30	1.0		
1250	1.95	12.00	0.9						
1600	2.40	14.50	0.8						

Note 1: As for the transformers with rated capacity of 500kVA and below, the load loss value above the diagonal in the table applies to Dyn11 or Yzn11 connection groups and the load loss value below the diagonal applies to Yyn0 connection group.

Note 2: According to user needs, provide transformers with high voltage tapping ranges as $\pm 2 \times 2.5\%$.

Note 3: According to user needs, provide transformers with low voltage of 0.69 kV.

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