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国家绝缘子避雷器质量监督检验中心

CHINA NATIONAL CENTRE FOR QUALITY SUPERVISION

AND TEST OF INSULATORS AND SURGE ARRESTERS

检 验 报 告

TEST REPORT

Object **N95-3**
产 品 名 称 Pin Type Ceramic Insulator

Client
客 户 名 称 Bonle (Fuzhou) International CO., LTD.

Classification
检 验 类 别 Prototype Tests

中 国
XIAN P.R.CHINA

2009
22



年 04 月 22 日

Apr. 2009

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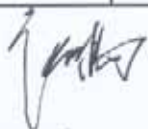
№ 090411J

TEST REPORT

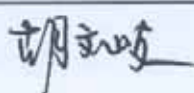
Page 1 of 8

Test Object	Pin Type Ceramic Insulator
Type	N95-3
Trade Mark	Bonle
Manufacturer	Bonle (Fuzhou) International CO., LTD.
Client	
Address	Taiyu Rd 91#, Fuwan Pian, Jinshan Industrial zone, Fuzhou, P. R. China (Post code: 350008)
Telephone	+86 591 88000107
Fax	+86 591 88000111
Test Classification	Prototype tests
Test Items	All test items see Page 2 of this report
Reception Date	13 Apr., 2009
Sample Number	17
Series	No.1~No.17
Test Date	13~17 Apr., 2009
Test basis	1 IEC 60383-1:1993 Insulators for overhead lines with a nominal voltage above 1,000V—Part 1: Ceramic or glass insulator units for a.c.systems—Definitions, test methods and acceptance criteria 2 The drawing of sample
Test Conclusion	The insulator passed all prototype test items and is deemed to meet the test basis satisfactory. Confirmed on 22 Apr., 2009
Remarks	The drawing number is HD2.802.024.

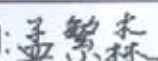
Approved:



Checked:



Reported:



CHINA NATIONAL CENTRE FOR QUALITY SUPERVISION AND TEST OF INSULATOR AND SURGE ARRESTERS

№ 090411J

TEST REPORT

Page 2 of 8

Test Items		
1	Routine Tests	Visual Inspection
2		Routine Electrical Test
3	Sample Tests	Verification of the Dimensions
4		Temperature Cycle Test
5		Mechanical Failing Load Test
6		Puncture Withstand Test
7	Type Tests	Porosity Test
8		Verification of the Dimensions
9		Lightning Impulse Withstand Voltage Test
10		Wet Power-frequency Withstand Voltage Test
11	Additional Test	Mechanical Failing Load Test
12		Radio Interference Voltage Test

CHINA NATIONAL CENTRE FOR QUALITY SUPERVISION AND TEST OF INSULATOR AND SURGE ARRESTERS

No 090411J

TEST REPORT

Page 3 of 8

Routine tests

1 Visual Inspection

Specimens No. 1~No. 17 had fair appearance. No defects exceeding standard permission were observed, met the test basis satisfactory.

2 Routine Electrical Test

All specimens withstood power-frequency sparking voltage for 3min satisfactory.

The results of routine tests met the test basis.

Sample Tests

The samples were selected randomly by manufacturer, according to the standard the sample size were $E_1=4$ and $E_2=3$.

3 Verification of the Dimensions

Units: mm

Specimen No	Spacing	The Max Dia	The Dia. of side groove	Creepage distance
5	119.4	102.0	61.3	233
6	119.4	103.8	61.0	231
7	120.2	104.1	59.6	230
Specifications	120±3	102±3	60±2.5	/

The results met the test basis.

4 Temperature Cycle Test

The temperature of hot water at 87°C was 70K higher than that of the cold water, specimens withstood 3 cycles of hot and cold bathing for 15min each. Specimens No. 1~No. 7 passed the temperature cycle test satisfactory.

5 Mechanical Failing Load Test

Specimen No	Bending load applied kN	Result
1	10	No breakage
2	10	No breakage
3	10	No breakage
4	10	No breakage
Specifications	10	No breakage

The results met the test basis.

CHINA NATIONAL CENTRE FOR QUALITY SUPERVISION AND TEST OF INSULATOR AND SURGE ARRESTERS

№ 090411J

TEST REPORT

Page 4 of 8

6 Puncture Withstand Test

6.1 Puncture withstand test

Specimen №	Voltage applied kV	Result
5	95	No puncture
6	95	No puncture
7	95	No puncture
Specifications	95	No puncture

The results met the test basis.

6.2 Puncture voltage test

Specimen №	Voltage applied kV	Result
5	146	Punctured
6	173	Punctured
7	162	Punctured

Provided datum only.

7 Porosity test

Ceramic fragments from the specimens (item 5) were immersed in a 1% alcohol solution of fuchsin (1g fuchsin in 100g methylated spirit). Under a pressure of 20MPa for 9h, No fragments had revealed any dye penetration.

The results of sample tests met the test basis.

Type Tests

8 Verification of the Dimensions

Units: mm

Specimen №	Spacing	The Max Dia.	The Dia. of side groove	Creepage distance
8	119.7	104.0	58.5	232
9	117.2	102.3	62.1	230
10	119.9	100.5	62.1	232
11	118.2	102.9	62.0	231
12	119.3	103.0	61.4	232
Specifications	120±3	102±3	60±2.5	/

The results met the test basis.

CHINA NATIONAL CENTRE FOR QUALITY SUPERVISION AND TEST OF INSULATOR AND SURGE ARRESTERS

№ 090411J

TEST REPORT

Page 5 of 8

9 Lightning Impulse Withstand Voltage Test

$t_d=18.5^{\circ}\text{C}$. $t_w=14.5^{\circ}\text{C}$. $P=96.4\text{kPa}$. The arcing distance: 132mm.

Voltage specified: 98kV. Correction coefficient $K=0.957$. Corrected voltage value: 93.8kV.

Specimen №	Voltage applied	Voltage applied kV	Result
8	Positive polarity 15 shots	99~103	No flashover
	Negative polarity 15 shots	100~104	No flashover
9	Positive polarity 15 shots	100~103	No flashover
	Negative polarity 15 shots	99~104	No flashover
10	Positive polarity 15 shots	100~104	No flashover
	Negative polarity 15 shots	100~104	No flashover
Specifications	15 shots	≥ 93.8	Flashover less than 2

The results met the test basis.

10 Wet Power-frequency Withstand Voltage Test

$t_d=18.5^{\circ}\text{C}$. $t_w=14.5^{\circ}\text{C}$. $t_{\text{water}}=17.0^{\circ}\text{C}$. $P=96.4\text{kPa}$. The arc distance $L=132\text{mm}$.

Resistivity of water $\rho_{17.0}=106.6\Omega \cdot \text{m}$. Corrected resistivity $\rho_{20}=98.1\Omega \cdot \text{m}$.

Precipitation rate: horizontal component is 1.23mm/min, vertical component is 1.44mm/min.

Specification: 34kV. Correction coefficient $K=0.971$. Corrected value: 33.0kV.

Specimen №	Withstand value kV	Duration s	Result
8	34	60	No flashover
9	34	60	No flashover
10	34	60	No flashover
Specifications	≥ 33.0	60	No flashover

The results met the test basis.

11 Mechanical failing load test

Specimen №	Bending load applied kN	Result
8	10	No damage
9	10	No damage
10	10	No damage
11	10	No damage
12	10	No damage
Specifications	10	No damage

The results met the test basis.

The results of type tests met the test basis.

CHINA NATIONAL CENTRE FOR QUALITY SUPERVISION AND TEST
TEST OF INSULATOR AND SURGE ARRESTERS

No 090411J

TEST REPORT

Page 6 of 8

Additional Test

12 Radio Interference Voltage Test

$t_d=19.0^{\circ}\text{C}$. RH=55%. P=96.7kPa.

Test frequency:1.0MHz. Background noise level: 6dB.

Specimen mounted: vertical as in service.

Specimen No.	Voltage applied kV	Result	
		dB	μV
8	10	42	125.9
9	10	42	125.9
10	10	41	112.2
Specifications	10	/	≤ 5500

The result met the test basis.

Test Performed: MENG fansheng WANG pinghe
ZHONG yandong HE yuanhua
ZHAO lei

CHINA NATIONAL CENTRE FOR QUALITY SUPERVISION AND TEST OF INSULATOR AND SURGE ARRESTERS

No 090411J

TEST REPORT

page 7 of 8

Annex 1: Typical Waveform of Impulse Voltage

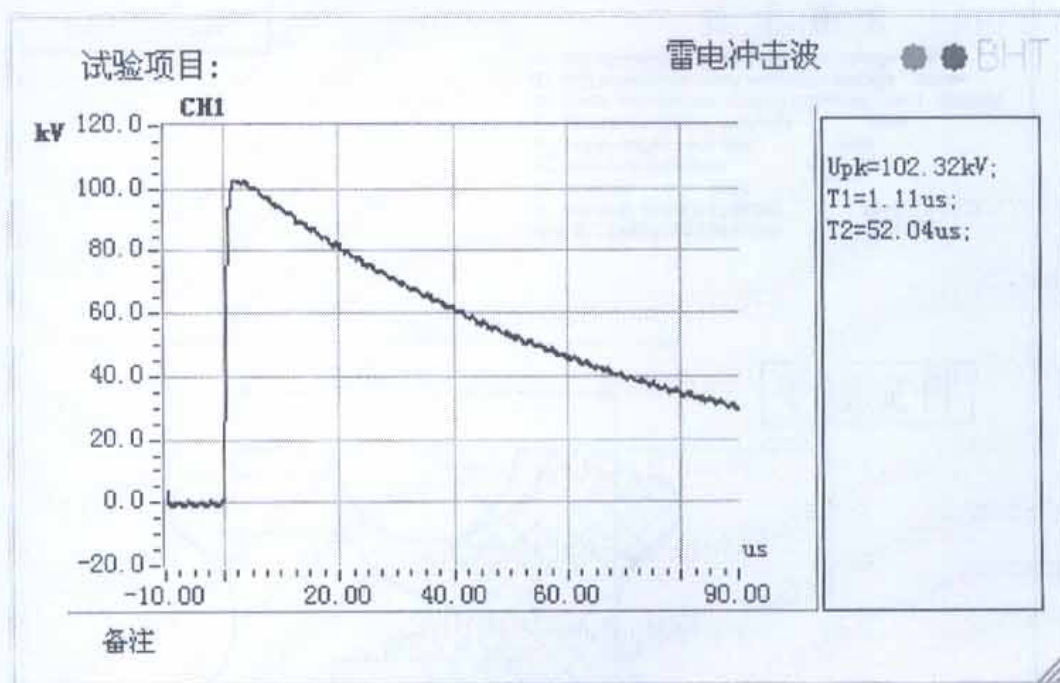


Fig 1: waveform of positive polarity lightning impulse voltage (withstand)

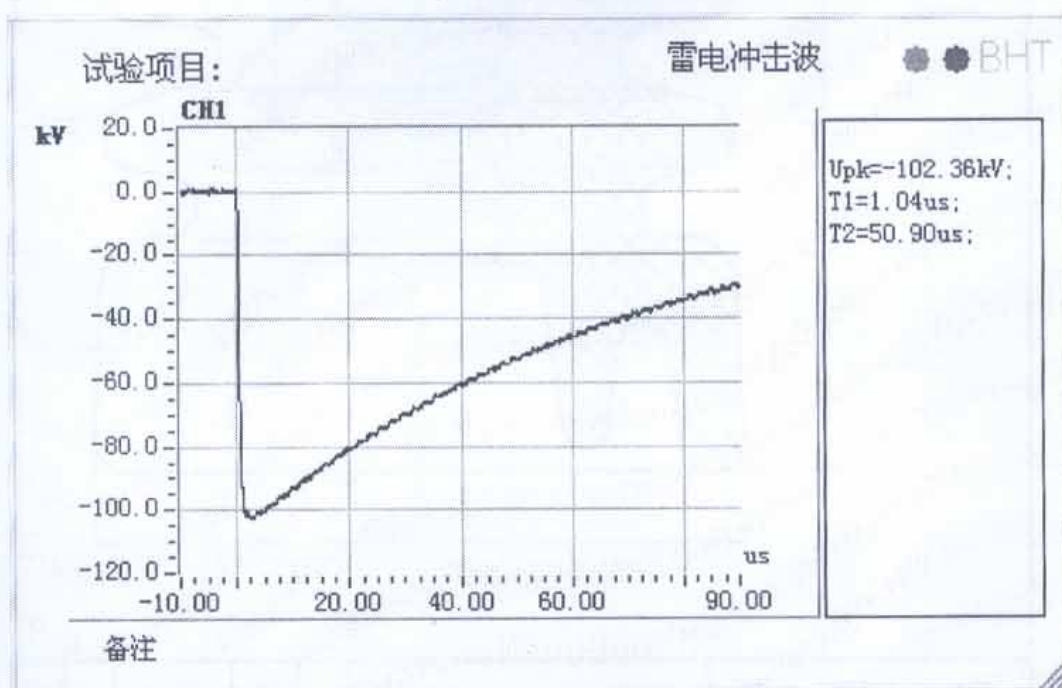


Fig 2: waveform of negative polarity lightning impulse voltage (withstand)

CHINA NATIONAL CENTRE FOR QUALITY SUPERVISION AND TEST OF INSULATOR AND SURGE ARRESTERS

No 090411J

TEST REPORT

page 8 of 8

Annex 2: The Drawing of Sample

