

PUBLIC POWER CORPORATION
ATHENS - GREECE

LOW VOLTAGE FUSES AND ACCESSORIES

SPECIFICATION N° GR-153

1. SCOPE

The present specification concerns the manufacture and testing at the suppliers factors of low voltage fuses and accessories for electric energy meters in order to be installed on electric panels and for use in three phase distribution system of 400V A.C, 50 Hz, included the follow:

- a) Fuse bases
- b) Screw covers
- c) Fuse elements
- d) Spiral adaptor, stopper and bushing

2. Constructions Standards, Characteristics and Tests

The fuse bases, screw covers, fuse links, spiral adaptor, stopper and bushing should be manufactured and Tested according to the standards of the last revision VDE 0635 concerning fuses 500V and their accessories. Their leading dimensions should be complying to the standards DIN 49321, 49322, 49325, 49327, 49360 and 49365, as they are described in the edition of VDE 0635/1.59. At the points where the present specification is not complying to the referring standards, then the present specification will be followed.

3. Fuse bases and screw covers

Three sizes of fuse bases and screw covers are specified with the following characteristics:

- 3.1. Size E 16/500V : Fuse's base 25A according to Din 49325 and screw cover according to DIN 49360 (BL.I) for spirem E 16.
The general perimeter of the fuse's group and the arrangement of the fastening holes of the fuse's base are as appear in the drawing 1124 (1).
- 3.2. Size E 33/500V : Fuse's base 63A according to DIN 49321 (BL.I) and screw cover according to DIN 49360 (BL.I) for spirem E 33.
The general perimeter of the fuse's group and the arrangement of the fastening holes of the fuse's base are as appear in the drawing 1124 (2).

3.3. Size R1 $\frac{1}{4}$ " 500V : Fuse's base 100A according to DIN R1 $\frac{1}{4}$ " .

The general perimeter of the fuse's group and the arrangement of the fastening holes of the fuse's base are as appear in the drawing 1124 (3).

3.4. The mechanical and electrical characteristics of the above mentioned bases and the fuse's screw covers should be according to the requirements of the last revision of the standards VDE 0635 for the type LS/500V.

4. Fuse elements

4.1. The following sizes and characteristics of fuse elements are specified.

4.1.1. Fast melting element : 6-10-16-20-25-30-35A

Delay melting element: 6-10-16-20-25-30-35A

In accordance to DIN 49360 (BL.2) for thread E 16 and the above characteristic currents.

4.1.2. Delay melting element : 35 - 50 - 63A

In accordance to DIN 49360 (BL.2) for thread E 33 and the above characteristic currents.

4.1.3. Delay melting element: 80 - 100A

In accordance to DIN 49365 (BL.2) for thread R1- $\frac{1}{4}$ " and the above characteristic currents.

4.2. All the above fuse elements must have time-current characteristic curves according to the last revision of the standards VDE 0635 for the type D. The time - current characteristic curve of the 30A fast melting elements and Delay time melting which are not standardized by the VDE 0635 will be as follow:

time - current characteris. curves	Nominal current In	2,5 In		3 In		4 In	
		MIN SEC	MAX SEC	MIN SEC	MAX SEC	MIN SEC	MAX SEC
fast melting elem.	30A	0,8	14	0,35	4,6	0,12	1,3
Delay melting el.	30A	23	145	8,0	34,0	1,9	6,1

6.2. Fuse elements: They will be marked indelibly by the Greek letters Δ.E.H. the manufacturer's trade mark, the type, the rated current and in case they are delay melting or fast melting elements. The fuse elements with delay melting elements from rated current 6A until 35A will be marked moreover with a red strip.

7. Packing

The fuse elements and the system of fuse's will be packed in suitable cardboard in group of the same size and current.

The above cardboard will be packed suitably to be transferred via railroad, steam navigation or via truck.

8. Information given by the Manufacturer

8.1. Maximum breaking capacity at power factors 0,1 - 0,2.

8.2. Time - current characteristic curves.

8.3. If fuses are in accordance to standards VDE 0635 and DIN 49321, 49325, 49327, 49360 and 49365.

8.4. External dimensions

8.5. Percentage influence of the variation of ambient temperature from 0 °C to 50 °C on the characteristic time-current curves.

9. Characteristics that guarantee the good performance of the material on site.

1. Critical characteristics: Are their not complied to given by the experience and the scientific terms to cause danger to person or to establishment. Critical characteristics of the subject of the present specification, constitute all the characteristics according to standards which control keeping the safety.

Especially the dielectric strength, incombustibility, supply arrangement in such a way to avoid short - circuit, they constitute critical characteristics.

2. Essential characteristics: These are characteristics which if not fulfilled limit essentially the normal use of the material.

In this case as essential characteristics can be considered the electrical characteristics, characteristic curves, morphological characteristics, construction rules, coefficient temperature.

The verification of fulfillment or not will be checked from the information given in the offer and by the check of the samples. If two essential characteristics are not fulfilled, the offer shall be rejected.

If one essential characteristic is not fulfilled the offer will be re-examined if it is possible to be improved to the desired limits.

3. Non essential characteristics:
Are these characteristics which cause lessening of the material use but not essential.
In this case as not - essential characteristics can be considered these which concern the establishment and general external finishing.
If one not - essential characteristic is not fulfilled the offer is accepted.
4. Remarks:
 1. The fulfillness or not of each paragraph shall be examined separately, always predominated the serious paragraphs.
 2. In the present paragraph, not fulfillness means that there is divergence of the specified limits, in any point of verification of the samples.

B. PART

10. Delivery Inspection

1. Sampling procedure with MILITARY STANDARD MIL-STD-105 D/29 APRIL 1963 "SAMPLING PROCEDURES AND TABLES FOR INSPECTION BY ATTRIBUTES". INSPECTION LEVEL II, for single or double sampling and with AQL = 2% acceptance or not acceptance as they determined by the MIL-STD.
2. SWITCHING PROCEDURES according to MIL-STD.