

**SPECIFICATION FOR
REWIRABLE FUSES (KITKAT FUSES) 100A & 200A
SPECIFICATION NO.: DIST/ A- KIT / 2005-06**

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ANNEXURE - D
TECHNICAL SPECIFICATION FOR
REWIRABLE FUSES (KITKAT FUSES) 100A & 200A
SPECIFICATION NO. : DIST/A- KIT / 2005-06

1. **SCOPE** :

This specification covers the manufacture, testing at works and supply of Porcelain Rewirable Fuses suitable for A.C.3 phase, 433 volts, 50Hz solidly grounded neutral system.

2. **WEATHER CONDITIONS** :

Material used in the construction of the fuse units shall be suitable for use under following weather conditions:

- | | | | |
|----|-------------------|---|------------------------|
| 1) | Temperature Range | : | 3 °C to 50 °C |
| 2) | Relative Humidity | : | 20% to 100% |
| 3) | Altitude | : | From 0 to 1000 Meters. |

3. **RATED VOLTAGE AND FREQUENCY** :

The fuses shall be suitable for continuous operation at A.C. 433 Volts plus 10% and a frequency of $50 \pm 3\%$ Hz.

4. **GENERAL REQUIREMENTS** :

Rewirable fuse unit:

- (a) The rewirable fuse unit shall be made of Electrical grade porcelain of fine grain, homogeneous, non-porous, chemically inert, of high mechanical and electrical strength and shall be thoroughly vitrified and smoothly glazed. The porcelain and the glaze shall be white or cream in colour. Any other colour shall be subject to the approval of our Chief Engineer (Dist.). The glaze shall cover at least those surfaces which are exposed when the fuse has been mounted in the intended manner.

The design and dimensions of fuses shall be in accordance with the drawing Nos.63.714 & 63.715 for 100A & 200A kitkats respectively.

- (b) The asbestos paper to be provided in the fuse base shall be fire proof and insulating. The thickness of asbestos paper shall be as given in the drawings.
- (c) The insulating compound shall conform to the requirements of B.S. 1858/57 or equivalent I.S.S.

5. **RATED CURRENT :**

The rated current shall be 100/200 Amps.

6. **CONTACTS:**

The contacts of the fuse base, fuse carrier and terminal block/strip shall be as under :

100A & 200A Kitkats

- i. Fuse carrier contacts (Male Contacts) Tinned Brass
- ii. Fuse Base Contacts (Female Contacts) Tinned Brass
with terminal.

Current carrying screws and washers shall be of tinned brass while the screws/washers not carrying current shall be of MS Electro galvanized.

Brass (tinned) used for contacts of Kit kats shall conform to IS as stated below

It shall conform to grade DCB-1/DCB-2 as per IS 1264/1981 (amended upto date)/IS 410 of 1977 (amended upto date). However, the metal composition as given below will be acceptable.

Copper %		Tin, Lead, Nickel, Iron, Aluminum, Manganese, and other Impurities put together in %.	Zinc %
Min.	Max.	Max.	
58.00	63.00	8.35	Remainder

The dimensions of the contacts and terminal block shall be as shown in the drawings for 100 & 200 Amp. Rewirable fuses.

7. **MARKING:**

Every fuse carrier base shall be clearly and indelibly marked with the following minimum information.

- a) Rated current.
- b) Rated Voltage.
- c) Manufacturer's name or trademark.
- d) The words 'M.S.E.D.C.L.'

8. **TESTING FACILITIES:**

The tenderer must clearly indicate what testing facilities are available in the works of manufacturer and whether the facilities are adequate to carry out the routine and type tests. These facilities should be available to MSEDCL Engineers if deputed to carry out or witness the tests in the manufacturer's works. If any test cannot be carried out in the manufacturer's works, the reason shall be clearly stated.

9. **ROUTINE TEST:**

Every rewirable fuse unit manufactured and to be supplied against MSEDCL's order will be subject to routine tests mentioned below:

High Voltage Test:

This test shall be carried out on fuse unit as per the procedure detailed in clause 9.8 of I.S.2086-1993 (amended up to date). The test voltage shall not be less than 2.5 kV A.C. with frequency 50 Hz and shall be maintained for one minute. There shall be no puncture of arcing during the high voltage test. Immediately following the test, the insulation resistance by 1kV megger as per Clause 9.7 of I.S.2086-1993 (amended upto date) shall be measured which shall not be less than 10 mega ohms.

10. **TYPE TESTS :**

The tests for rewirable fuses shall be carried out as per the procedure detailed in I.S.2086-1993. However, for the guidance of the tenderer, the different type tests are mentioned below:

- a) Visual examination.
- b) Test for dimensions.
- c) Test for mechanical endurance.
- a) Test for mechanical strength.
- b) Test for temperature rise: - As per Clause No.9.6 of I.S. 2086/1993, temperature rise of different parts of the kitkats when tested in an ambient temperature of 40 °C, should not exceed 55 °C.
- c) Insulation Resistance test
- d) High Voltage test.
- e) Test for breaking capacity.
- f) Test for water absorption.
- g) Test on ceramic material.
- h) Ignition test (for non-ceramic materials).
- i) Test for withdrawal force.

11. **VERIFICATION OF METALLIC COMPOSITION OF CONTACTS:**

MSEDCL reserves the right to draw the samples of metallic parts of kitkats for verification of metallic composition at the time of manufacture/from the lot offered for inspection. In addition to this, the sample will be drawn from the lots received by the consignees for verification of metallic composition. In the event of metallic composition does not conform to our specification, the MSEDCL reserves the right to cancel the order at the risk and cost of the supplier.

- 11a. The verification of metallic composition in respect of the lots received by the consignee shall be carried out & the procedure for verification shall be as under

1. MSEDCL's Chief Engineer (Distribution), Mumbai will select one of the Stores where from the inspected lots of kitkats are supplied by the supplier, as soon as the inspection approval is conveyed.
2. The sample of the kitkat shall be drawn from the selected Stores, in the presence of the authorized representative of the firm and also the concerned E.E. in charge of the Stores. Due notice shall be given to the supplier for drawal of samples and if the authorized representative of the supplier fails to attend the same, the same will be drawn in the absence of the representative of the supplier. Sealed samples drawn as above will then be sent to the Chief Engineer (Distribution), Mumbai by a special messenger by the Executive Engineer (Stores) in charge.
3. The samples so drawn will then be arranged for testing for metallurgical analysis as per the provisions of the contract by the Chief Engineer (Distribution), Mumbai.
4. In case the test results are found as per specification, the entire consignment supplied to the various Stores from the inspected lot shall stand accepted.
5. In order to expedite the testing of kitkat samples on inspection and test certificate approval by MSEDCL's inspecting officer, the supplier should intimate the following dispatch details to the C.E.(Distribution), MSEDCL, 5 floor, Prakashgad, Bandra(E), Mumbai-400 051 preferably by fax or telegram:
 - a) Quantity inspected for each item.
 - b) Item wise quantity dispatched to each consignee.

Apart from the post confirmation copy of the telegram/fax, the supplier should submit to the Chief Engineer (Distribution), Mumbai a zerox copy of the delivery challan or any other documents in proof of dispatches made.

On receipt of the above details, the C.E. (Distribution) will take further action in the matter.

12. **SOURCES FOR RAW MATERIAL:**

The tenderer shall state the names and addresses of the sources from whom materials for current carrying contacts will be purchased. In the event of placement of order, the supplier should furnish copies of the orders placed for materials for current carrying contacts alongwith the test certificates for the metal composition.

13. **TEST CERTIFICATES:**

Type Test reports (alongwith certified drawings/oscillograms etc. of the offered equipment) shall be furnished to prove that the equipments offered meet the requirements of the specification.

The equipment offered shall be fully type tested as per the relevant standards for all the type tests shown in clause 10 above. These shall be carried out at the testing laboratories accredited by National Accreditation Board for testing and calibration laboratories (NABL), New Delhi at the tenderer's own cost. The tenderer shall also furnish a copy Accreditation certificate issued by NABL to the testing laboratories. These type tests should have been carried out within five years prior to the date of opening of the tender.

The successful bidders will have to submit all the type test reports in accordance with Clause 10 of this specification, to C.E. (Distribution), MSEDCL, Mumbai for approval before commencement of supply. Commencement period quoted shall include time period required for getting the type tests reports approved from C.E.(Distribution) and no additional time period for the same will be granted. In case, the type test reports for offered kitkats are available with the bidder, the same may please be submitted separately as specified in Clause No XXII of section (I) 'Instructions to the tenderer'.

14. **SAMPLING AND REJECTION:**

The supplies are subject to acceptance as per clause number 9.0.3.2 of IS-2086/1993 (amended up to date)

15. **DRAWING:**

The design and dimensions of rewirable fuses shall be in accordance with the drawing No.CE(DIST)/MM-III/MSEDCL/kitkat/100/01Rev0 & CE(DIST)/MM-III/MSEDCL/ kit kat/200/02Rev 0 enclosed.

15 a. Please note that nuts, bolts and washers for cable connections are not in the scope of supply.

16. **STANDARD SPECIFICATION:**

Over and above the specific requirements mentioned above the fuses shall conform to the requirement of IS 2086-1993 as amended upto date. However, the dimensions should be as per our drawings.

17. **TOLERANCES TO THE DIMENSION OF REWIRABLE FUSES:**

- 1) Dimensional tolerances for
Porcelain Parts. $\pm 0.3\text{mm} + 0.01 \times \text{length}$
- 2) Dimensional Tolerance for all contacts/current carrying parts :
 - i. Upto and including 20 = ± 0.5
 - ii. Above 20 = ± 1
 - iii. For thickness = Negative tolerance is not permissible.

18. **SCHEDULES:**

18.1 The tenderer shall fill in the following schedules, which form part of the tender specification and offer.

Schedule `A' - Tenderer's Experience.

18.2 The tenderer shall submit the list of orders for similar type of equipments, executed or under execution during the last three years, with full details in the schedule of Tenderer's experience (Schedule `A') to enable the purchaser to evaluate the tender.

SCHEDULE - 'A'
SCHEDULE OF TENDERER'S EXPERIENCE

Tenderer shall furnish here a list of similar orders executed/under execution by him to whom a reference may be made by Purchaser in case considered necessary.

Sr. No	Name of Client & Description	Value of order	Period of supply and commissioning	Name & Address to whom reference may be made
1	2	3	4	5

NAME OF FIRM

NAME & SIGNATURE OF TENDERER

DESIGNATION

DATE

GUARANTEED TECHNICAL PARTICULARS

REWIRABLE FUSES (KITKAT FUSES) 100A & 200A

Sr. No.	Parameter Name	Parameter type
1.	Name of Manufacturer	Text
2.	Type of kitkat fuses	Text
3.	Rated normal voltage (433V)	Text
4.	Rated Current (100A, 200A)	Text
5.	Are the kitkat fuses manufactured as per IS-2086/1993 or latest revisions thereof	Boolean
6.	Is Porcelain used in the manufacture, sound, free from defects, thoroughly vitrified and smoothly glazed.	Boolean
7.	Current carrying contact material is of Tinned Brass as per IS 1264/1981 (amended up-to-date)/IS 410 of 1977 (amended up-to-date).	Text
8.	The dimensions of the insulators are as per the drawing specified in the specification.	Text
9.	Is Marking on the kitkat fuse as per specification	Boolean
10.	Weight of kitkat fuse (Kg)	Text
11.	The kitkat fuses are type tested for the type tests as per specifications & relevant IS and Type Test Reports enclosed.	Text
12.	Any other particulars which the bidder may like to give	File

SEAL & SIGNATURE OF THE TENDERER