



PRODUCT STANDARD

SWITCHGEAR ENGINEERING DIVISION

SG 12713 REV.02

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COPPER - CHROMIUM (CuCr) TERMINALS

1.0 INTRODUCTION

Copper Chromium terminals are used for current collection from the moving stem of Vacuum Interrupters in the assembly of VCB moving portion. These terminals provide a high conductive path for current and have spring characteristics for their easy assembly / disassembly functions.

The corrosion resistance of chromium copper alloys is better than that of pure copper because chromium improves the chemical properties of the protective oxide film. Chromium copper has excellent cold formability and good hot workability. It can be used in applications such as resistance welding electrodes, seam welding wheels, switch gears, cable connectors, circuit breaker parts, molds, spot welding tips, and electrical and thermal conductors that require strength. Chromium copper alloys are designated as UNS C18050 through C18600, the cast alloys are C81400 through C81540.

2.0 MATERIALS :

These terminals shall be chill castings in solution treated and precipitation hardened (at elevated temperatures) condition. The castings shall be free from microporosities and gross inclusions. The material shall be equivalent to following standards:

Grade	Standard
- CC1 - TF of (Group B)	BS EN 1982 : 2008
or	
- CuCrF35 of	DIN17655:1981

3.0 PROPERTIES :

CHEMICAL

Cr = 0.3 to 1.25 %, Cu = Remainder; Cu + Cr > 99.5%

PHYSICAL

Density = 8.9 ± 0.1 gm/cubic cm

MECHANICAL

Tensile strength	= 350 N/sq. mm (min)
0.2 % yield strength (Rp 0.2)	= 275 N/sq. mm (min)
Ultimate Elongation (A)	= 15 % (min)
Hardness	= 100 HB (min)

ELECTRICAL

Conductivity at 20°C = 80 % IACS(min)

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REV.	02	PRINTS TO:-		APPROVED –		
ALTD.	AA/RG	Issue Online		RKS		
APPD.	MAK			PREPARED	ISSUED	DATE
DATE.	26.03.14			SMM	RKK	17.07.95



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- 4.0. SUPPLY CONDITION OF MATERIAL /COMPONENTS:
Material/components shall be supplied on fully finished basis. No tools, jigs & fixtures will be provided by BHEL.
- 5.0 QA PLAN:
QA Plan shall be submitted alongwith offer & must be approved by BHEL. This shall include tests & measurements on raw material and semifinished /finished product, details of manufacturing process followed including tools, jigs & fixtures /gauges used at different stages to ensure quality of end product.
- 6.0 ACCEPTANCE CRITERIA:
- Suppliers to submit their inspection & test report as per approved QA Plan & detailed dimensional report as per drawing.
- TESTS AT BHEL :
Following tests shall be conducted for each lot of supply:
a) Hardness Test
b) Electrical conductivity test
c) Chemical composition.
The tests shall be conducted on 1% samples or min 3 numbers per supply lot.
- DIMENSIONAL CHECKS: As per drawings.
- Consignments duly packed as per Cl.no.8.0 discussed below.
- Identification marking as per Cl.no.7.0 discussed below.
- 7.0 IDENTIFICATION MARKING FOR TRACEABILITY :

Following markings shall be punched on the unmachined side of the terminal casting as indicated in the item drawing.
- Supplier's logo.
- Purchase Order Number.
- 8.0 PACKING-
Terminal shall be packed individually in bubble polythene and further packed in corrugated sheets to prevent any physical damage.