

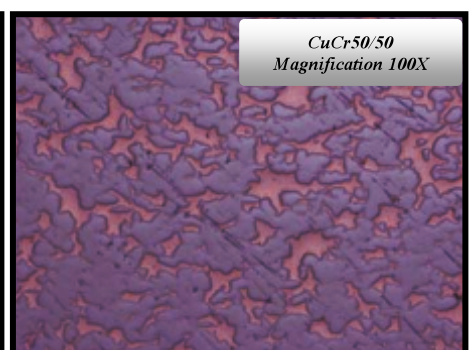
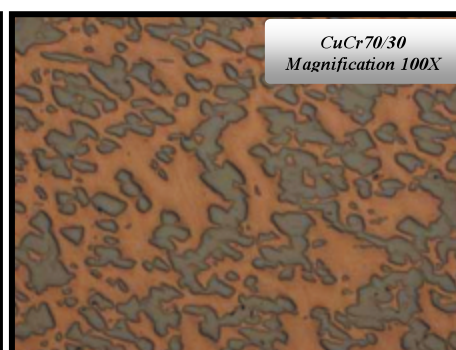
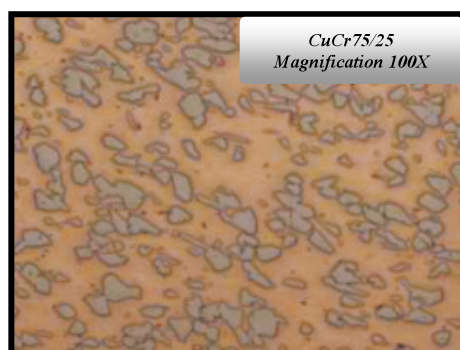
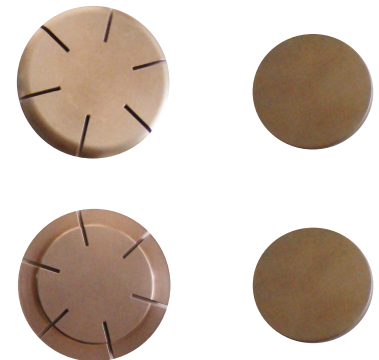
Copper Chromium Alloy Disc

For Vacuum Circuit Breakers

Chrome particle-reinforced copper matrix composite, commonly called Cu-Cr alloy, is a kind of alloy in which Cr particle with high hardness and high melting point embeds in Cu matrix with high electrical conductivity. The Cu-Cr alloys possess good heat and wear resistance properties along with the electrical properties and have great potential as a high-power and vacuum-high-pressure switch. These Cu-Cr alloys are important contact materials for vacuum interrupters. These alloys find wide use in high voltage applications because of their high voltage stress withstanding capabilities. They are also utilized in applications where there is a need for high strength and high thermal conductivity materials. The properties of the contact material are dependent on the chemical composition, structure, impurities and the surface conditions which are altered by switching arcs. The electrical/mechanical properties of the Cu-Cr alloy are highly dependent on the distribution of Cr in the matrix. Finer the Cr particles in the Cu matrix, Cu-Cr materials will exhibit better contact electrical properties. The microstructures of the as-cast Cu-Cr alloys consist of Cr dendrites distributed in Cu matrix and these microstructures cannot be modified or changed with any of the metallurgical treatments and hence many special preparation processes have been used to improve the microstructures of Cu-Cr contact alloys. The main methods of preparing Cu-Cr alloys include vacuum sintering & infiltration, mixing alloy powder and HIP and arc melting etc.

Modison manufactures Cu-Cr alloys with varied Cr compositions ranging from 25 wt% to 50 wt%. The alloys are manufactured in the form of discs by powder metallurgy with uncompromising quality norms.

| Cu-Cr | 75 -25 | 70 -30 | 50-50 |
|---------------------------------|---------------------------|---------------------------|---------------------------|
| Composition (wt %) | Cu(75±0.5), Cr(25±0.5) | Cu(70±0.5), Cr(30±0.5) | Cu(50±0.5), Cr(50±0.5) |
| Density(g/cc) | ≥ 8 | 8 | 7.5 |
| Electrical Conductivity (%IACS) | 50 | 45 | 35 |
| Hardness (HV) | 90 - 105 | >100 | 90 - 110 |



MODISON
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