New Material of Cu-Fe Alloy
(Colloy MC-10)
Copper alloy material COLLOY MC-10 is alloyed metal with Copper and Iron (10-30%) and Tin (2-9%). It is a new material with excellent mechanical properties as compared with conventional Phosphor-bronze, Bronze and Aluminum-bronze.

**MERIT POINT OF COLLOY MC-10**

1. Mechanical property is excellent.
   - Hardness of casting (185Hv)
   - Abrasion resistance (20% increase as comparing with Phosphor Bronze)
   - Heat resistance (450 °C)
2. Hot working (rolling, extruding, forging) is possible
3. Welding of dissimilar metal materials is possible
4. Improvement welding is possible
5. Material cost is low (Cost down)
**Main component**

<table>
<thead>
<tr>
<th>(Name of Commodity)</th>
<th>COLLOY –MC-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Element)</td>
<td>(Chemical Composition in wt.%)</td>
</tr>
<tr>
<td>Spec</td>
<td>Cu</td>
</tr>
<tr>
<td>Min</td>
<td>80%</td>
</tr>
<tr>
<td>Max</td>
<td>95%</td>
</tr>
</tbody>
</table>

**Mechanical Properties**

<table>
<thead>
<tr>
<th>(Spec)</th>
<th>Item</th>
<th>Tensile strength (N/mm²)</th>
<th>Elongation (%)</th>
<th>Hardness(Hv)</th>
<th>Hardness can be adjusted by heat treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td></td>
<td>250</td>
<td>12.0%</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td>600</td>
<td>23.4%</td>
<td>300</td>
<td></td>
</tr>
</tbody>
</table>

**Manufacturing process**

- Casting
- Extrusion
- Processing

**Product shapes**: Rod, Hollow Rod, Bus-bar, sheet by order
Organizaion photo of COLLOY MC-10
Hardness of casting (185 Hv)

Welding tensile strength of dissimilar metal materials (313 N/mm²)
20% increase in abrasion resistance as comparing with Phosphor-bronze

Occuring of cyanosis after 72 hours (same as Phosphor-bronze)
3. WELDING APPLICATION PROCESS

Manufacturing process of gear

Manufacturing of gear by welding of boss and worm gear