



## New antifriction alloys Fe-Cu-S-P

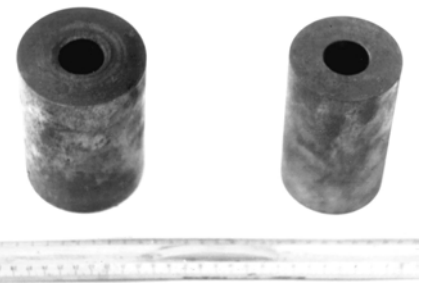
Novel antifriction alloys Fe-Cu-S-P are created. Such alloys are based on steel 20L alloyed with 9-11% of Cu, 0,9-1,1% of S, 0,9-1,1% of P, and also 9-11% of Cu, 1,4-1,6 of S, 0,9-1,1 P. Employing the system of alloying elements Cu-S-P provides the formation of specific non-metallic phases in the alloys (aside from inclusions with high Cu content) having the properties of solid lubricants ( $\text{MoS}_2$ , graphite) due to their physical, chemical and structural properties.

**Alloys ensure** wear-resistant properties of friction units 1,5-2 times as compared to БрО10Ф, БрО9Ц3С2, БрА9Ж4 under conditions of boundary lubrication at 5-30 MPa loads and sliding speed of 1,2 m/min. and necessary casting properties and do not call for complex manufacturing processes.

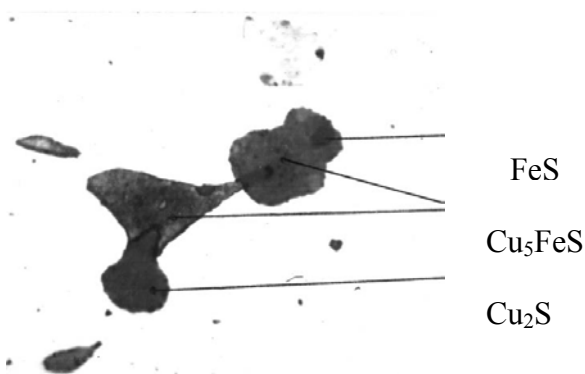
**Fe-Cu-S-P alloys are used** for slider bearings within a wide range of loads speed regimes in grinding machines, 100 tons presses, guillotine scissors at Ukrainian enterprises.



*Casting obtained in sand mould for slider bearings used in 3M151 grinding machines and H483 guillotine scissors.*

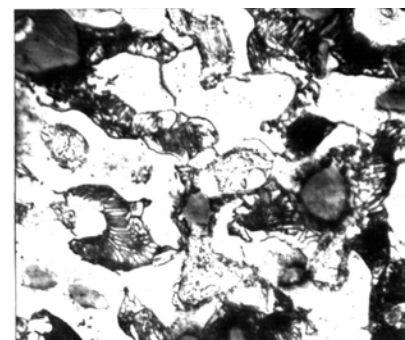


*Castings obtained in Lost-Foam for slider bearings used in K2130 100 ton press.*



### Sulphide inclusion

- 1- influence of content of copper on the changing of shrinkage of alloy (content of sulphur and phosphorus ~1%);
- 2 - influence of content of sulphur on changing of shrinkage of alloy (content of copper ~10%, of phosphorus ~1%);
- 3 – volume content of sulphide phases depending on content of copper (content of sulphur and phosphorus ~1%);
- 4 – volume content of sulphide phases depending on content of sulphur (content of copper ~10%, of phosphorus ~1%).



(x400)

### Structure of alloy

Fe+10%Cu+1%S+1%P