

# AMPCO METAL EDM recommendations



The group of alloys **AMPCO® 18, AMPCO® 21, AMPCO® M4** can be easily electro-eroded with values for settings of the EDM'ing machine, for longevity of the electrodes and time needed to EDM, very comparable to the values needed for the EDM'ing of tool steels used in the mold industry.

Wire EDM'ing of alloys **AMPCO® 18, AMPCO® 21, AMPCO® M4** can be done similar to tool steel with some slightly longer working time.

The group of alloys **AMPCOLOY® 940, AMPCOLOY® 944, AMPCOLOY® 95, AMPCOLOY® 88, AMPCOLOY® 83** with a very good thermal and electrical conductivity can also be easily electro-eroded, whereby the machining times are faster, but the wear of the electrodes is higher.

The alloy **AMPCOLOY® 972** can be used as copper electrode and with the use of the so-called « copper-copper technology table» settings on your EDM'ing machine, the wear of the electrodes can be reduced.

The polarity on modern EDM'ing machines is the normal positive + on the alloy **AMPCOLOY® 972** electrode and minus – on the **AMPCO®** or **AMPCOLOY®** part to be eroded.

On some older machines, this polarity might have to be reversed. It has to be tested in order to see what is the best setting.

**AMPCOLOY® 10W**, a copper-tungsten electrode can also be used for less wear but slower machining speed and greater difficulty when machining of the electrode may be encountered.

Conventional graphite electrodes can also be used, but are not so much appreciated due to the need of a good aspirating system to avoid dirty machining.

If the customer is using graphite electrodes on a daily basis, then copper infiltrated graphite electrodes type **POCO EDM C200** and **EDM C3** shall be used.

**POCO EDM C3** will be used for machining of fine details such as thin ribs with a fine surface finish in the range of VDI 14 to VDI 20.

**POCO EDM C200** will be used for machining of less fine details with lower surface finish in the range of VDI 24

**POCO EDM C3** and **C200** shall be only used in negative polarity.

When rough EDM machining, the recommended intensity is  $9 \text{ A/cm}^2$  (the higher the intensity, the less electrode wear will be).

Sparking time has a direct influence on the wear of the graphite electrode. For less than  $10 \text{ A/cm}^2$ , sparking time shall be in the  $6 \mu\text{s}$  range. For higher intensities, above  $15 \text{ A/cm}^2$ , sparking time shall be longer, in the  $12 \mu\text{s}$  range.

For a good stability when eroding, a pause time of approximately 3 times the sparking time is necessary.

Electrode wear will be divided by three for **AMPCOLOY®** alloys and the efficiency improved by 25% for **AMPCO®** and **AMPCOLOY®** alloys.

Use of « graphite-copper technology table » is recommended.

Machining as close as possible to the finished size with high speed cutting tools is recommended in any case.

Manufacturing several electrodes in the alloy **AMPCOLOY® 972** or graphite, or reshaping of such electrodes is common practice among our customers since manufacturing costs on high speed cutting machining centers are so low nowadays.