

Dated: October 12, 1987

Revised: October 2, 2002

INTRODUCTION

EurekaMatic No. 450 Alloy Cored Wire was developed for the replacement of large diameter welding electrodes. The advantages of wire welding outweigh those of electrode welding in that (1) cored wire welding is 95 - 97 percent efficient as opposed to electrode welding being only 60 percent efficient, (2) wire welding displays a much lower current density, therefore, allowing longer welding times without huge amounts of heat build up. **EurekaMatic No. 450** has very little slag to contend with, therefore, eliminating costly positioning time.

METALLURGICAL CHARACTERISTICS

EurekaMatic No. 450 Alloy Cored Wire is a carefully balanced alloy of Chromium, Molybdenum, Carbon, and Nickel. The all weld metal deposits are extremely tough and wear resistant. When this alloy is properly tempered, it can be conventionally machined, however, it is extremely tough. Typical as welded hardness is 44 – 48 HRC.

RECOMMENDED APPLICATIONS

EurekaMatic No. 450 may be used to completely flood or repair impressions of both hammer and press forging dies. It is also excellent for a tough build up when a higher hardness material is desired on the surface. Typical applications are crankshaft dies, connecting rods and yokes of both press and hammer forging operations.

PREPARATION AND WELDING PROCEDURE

1. Use a stiff wire wheel to remove all surface dirt, scale, or any fatigued metal.
2. All cracks and heat checks must be removed entirely. This can be accomplished by grinding or machining and or air carbon arc gouging.
Note: If air carbon arc gouging is to be utilized. Then preheating prior to gouging will be necessary. In stock removal, allow at least 1/2" per side and deeper of the impression to guard against dilution or admixture with the base metal.
3. Select a preheat temperature according to the base metal (heat for one hour per inch maximum cross sectional thickness at temperature.)
4. Select D.C. reverse polarity.
5. Select the proper diameter wire according to job size or repair area.
6. Select the proper combination of voltage and amperage to effectively weld so as not to overheat or disturb the base. **(See chart under welding parameters)**
7. Utilize good welding techniques – peening thoroughly after each welding session to offset shrinkage and welding stress in the crater of the weld.
8. Control interpass temperature as close as possible to preheat temperature.
9. After welding, **post heat** at the temperature used to preheat to equalize thermal gradients.
10. After post heating, slow cool the die by covering it with heat resistant blankets (Kaowool, Cerawool) to 150°F. minimum.
11. Return the die or component to the furnace for tempering. Temper the die or component according to the temper chart of the welding alloy for desired hardness.

PREPARATION AND WELDING PROCEDURE

(continued)

12. Remove from furnace and slow cool. (Same as Step 8)
13. Double temper. (Highly recommended)

WELDING PARAMETERS

Type	Size	Amp Range	Volts
450 FACW	1/16"	180 – 260	25 – 29
450 ACW	3/32"	500 – 575	32 – 33
	1/8"	650 – 850	32 – 34

- Use 75% Argon, 25% Co2 shielding gas at 60 - 90 C.F.H.*
*Cubic Foot per Hour

MACHINING INFORMATION

- Weld deposits of **Eurekamatic No. 450 Alloy Cored Wire** are not extremely hard when properly tempered but are very tough, which is necessary for long die life.
- When machining **Eurekamatic No. 450 Alloy Cored Wire** with conventional high-speed tools, observe the following:
 - Keep the pressure on the tool at all times.
 - Keep chips removed from the point of the tool.
- To insure tough but machinable deposits, double temper the welded unit at 1050 ° F. for one (1) hour per inch of thickness. If a lower hardness is desired, then utilize the tempering charts on page 5.

MECHANICAL PROPERTIES

Single Tempered at 1000°F

44 – 46 HRC

Tested at 700°F.

Tensile Strength P.S.I.	Yield Strength P.S.I.	Elongation %	Reduction in Area %
166,500	129,500	9.6	30.5

Charpy "V" Notch Impact

Double tempered at 1050°F.; 38 – 40 HRC; tested at 450°F.

Energy Foot Pounds: 20.7

TEMPERING DATA

The hardness values and tempering temperatures assigned to Eureka's products are only approximations and should only be referred to as a guide.

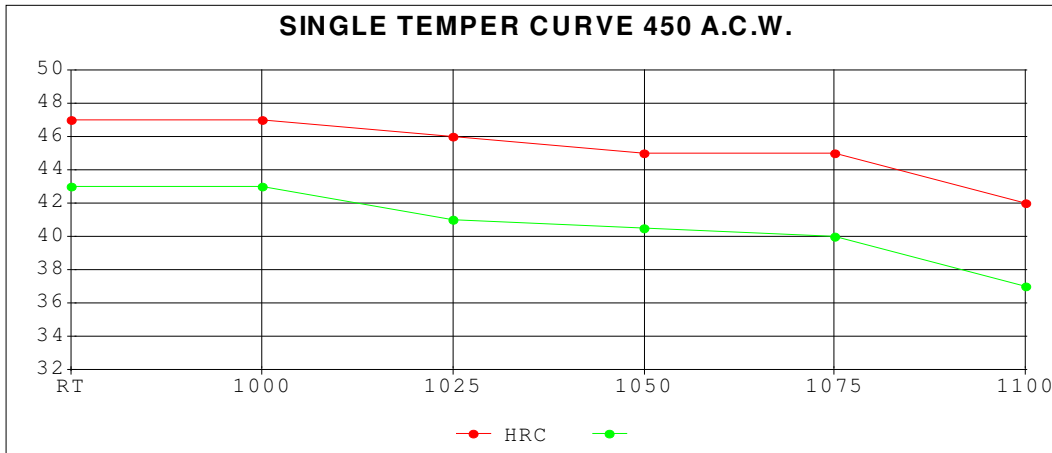
The hardness values and tempering temperatures displayed in the charts on page 5 were obtained under optimum conditions. The values your staff obtain will vary according to the procedures and use of equipment that may be utilized, therefore, a hardness range is given rather than a specific value.

To read the tempering charts on page 5, follow temperature line up to lower and upper intersecting points and read approximate hardness range.

TEMPERING DATA

(Continued)

EUREKA WELDING ALLOYS



Temperature °F.

EUREKA WELDING ALLOYS

