Eureka Welding Alloys
2000 E. Avis Drive
Madison Heights, MI 48071

ISO 9001
Certified

Product: Eureka No. 635 Electrode

Dated: October 21, 1987
Revised: August 22, 2000

INTRODUCTION

Eureka No. 635 Electrodes were developed for the forging industry's need for a companion to **Eurekamatic No. 635 Alloy Cored Wire.** They are utilized for partial repair and for finishing die surfaces to eliminate low spots and undercuts where flood welding has been performed. They are also used where the Eurekamatic process is not practical.

METALLURGICAL CHARACTERISTICS

Eureka No. 635 Electrode deposit is a carefully balanced Nickel, Chromium, Molybdenum combination designed such that its physical and mechanical properties correspond with standard die block. This alloy displays high impact properties and moderate abrasion resistance. Typical as welded hardness is 35 – 41 HRC.

RECOMMENDED APPLICATIONS

Eureka No. 635 Electrodes are generally used to fill obsolete impressions that are no longer utilized. This allows for die block reclamation and minimizes die inventory. It is also useful for full impression repair where standard block properties are acceptable, such as; a low volume forging where high production is not encountered. Forge components can be successfully repaired such as rams, sow blocks, die holders, etc. where additional hardness is needed.

PREPARATION AND WELDING PROCEDURE

1. Impressions or surfaces to be welded must be free of scale, dirt, or any other foreign matter.

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PREPARATION AND WELDING PROCEDURE

(continued)

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 three layers (3/8") of weld metal 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 electrode according to job size or repair area.

6. Select the lowest amperage needed to effectively weld so as not to overheat or disturb the base.

7. Utilize short 3" – 4" stringer beads – peening thoroughly after each pass 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 same 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.

12. Remove from furnace and slow cool (same as Step 8).

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PREPARATION AND WELDING PROCEDURE

(continued)

13. Double temper (highly recommended).

WELDING PARAMETERS

Type	Size	Amp Range
635	3/32”	@ 90 – 95
	1/8”	@ 110 – 125
	5/32”	@ 140 – 155
	3/16”	@ 170 – 185
	1/4”	@ 220 – 240
	5/16”	@ 365 – 385
	3/8”	@ 440 -- 460

MECHANICAL PROPERTIES

Single Tempered at 1000°F.
35 – 36 HRC
Tested at 700°F.

Tensile Strength P.S.I.	Yield Strength P.S.I.	Elongation %	Reduction in Area %
142,000	102,500	11.7	28.9

Charpy “V” Notch Impact
Double tempered at 1025°F.; 34 – 36 HRC; Tested at 450°F.

Energy Foot Pounds
35.3

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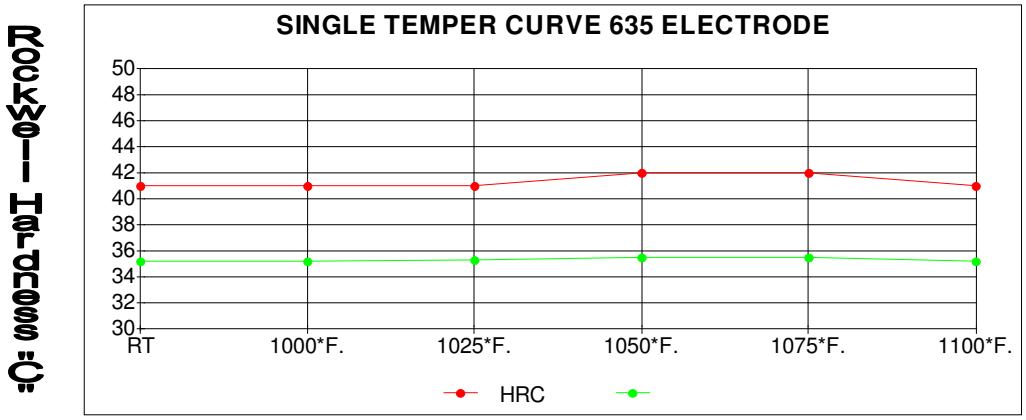
TEMPERING DATA

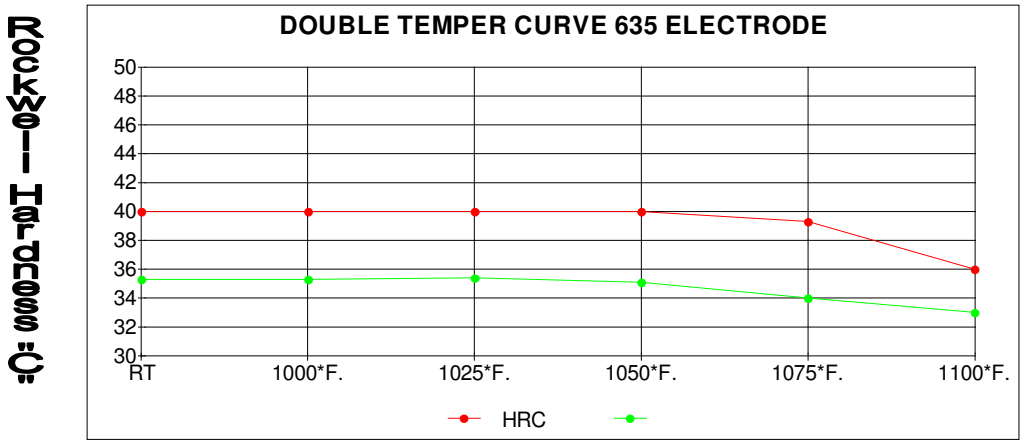
The hardness values and tempering temperatures assigned to Eureka's product are only approximations and should only be referred to as a guide.

The hardness values and tempering temperatures displayed on the chart on this page were obtained under optimum conditions. The values your staff obtains 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 this page follow temperature line to lower and upper intersecting points and read approximate hardness range.



Tempering Temperature °F.



Tempering Temperature °F.

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