

Dated: April 12, 1990

Revised: November 11, 2000

INTRODUCTION

Eureka N2 Low Alloy Electrodes were developed for the forging industries needs for companion to **Eurekamatic N2 Alloy Cored Wire**. They are utilized for partial repair and for finishing dies and component 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 N2 Low Alloy Electrodes represent an ideal combination of alloys (Chromium, Molybdenum, and Nickel) which display excellent resiliency, high strength and resistance to cracking. It is very machinable as deposited.

RECOMMENDED APPLICATIONS

This alloy is an excellent choice for finishing hammer and press components, such as rams, sow blocks, shanks, die holders, bolster plates, etc. that have been welded with Eurekamatic Process using **Eurekamatic N2 Alloy Cored Wire**. It is also used as an underlay and to fill up deep cracks in impressions where the Eurekamatic Process cannot be utilized because of narrow areas where conventional machining will be used that will not be part of a working area, **I.E.** flash lands, ribs, etc. to reduce welding material cost.

PREPARATION AND WELDING PROCEDURE

1. Impressions or surfaces to be welded must be free of scale, dirt, or any other foreign matter.
2. All cracks and heat checks must be removed entirely. This can be accomplished by grinding or machining and or air carbon arc gouging.

PREPARATION AND WELDING PROCEDURE

(continued)

- 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**).
 13. Double temper (**highly recommended**).

WELDING PARAMETERS

D.C. Reverse Polarity

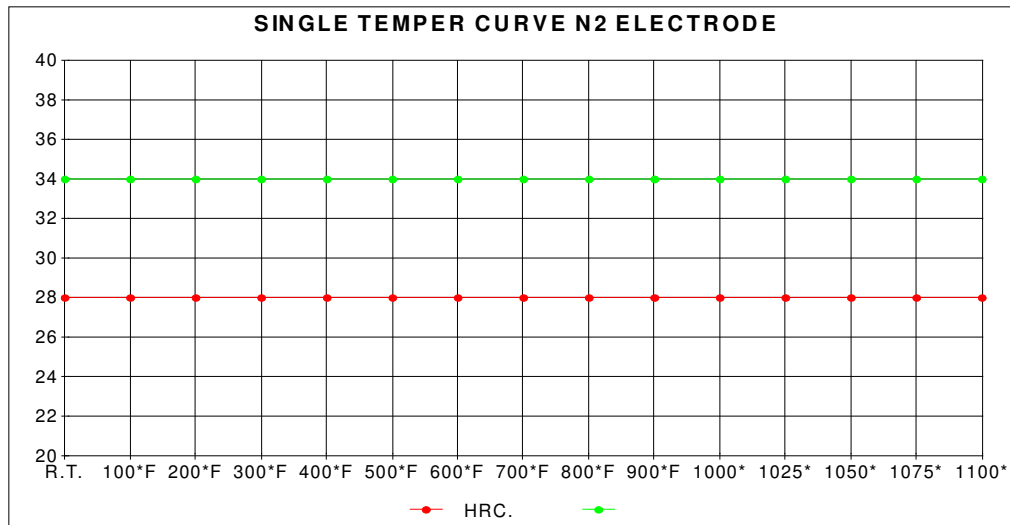
Type	Size	Amp Range
N2	3/32"	@ 80 – 95
	1/8"	@ 110 – 125
	5/32"	@ 140 – 155
	3/16"	@ 170 – 185
	1/4"	@ 220 – 240

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 following charts 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.

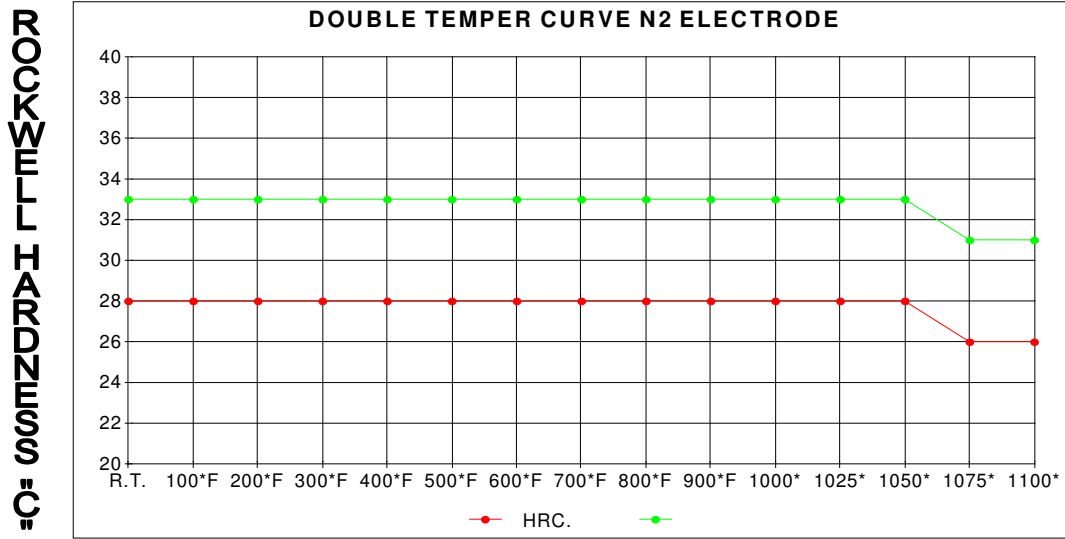
ROCKWELL C



Tempering Temperature °F.

TEMPERING DATA

(Continued)



Tempering Temperature °F.

MECHANICAL PROPERTIES

Double Temper at 1075°F.

Test Temperature	Tensile Strength P.S.I.	Yield Strength P.S.I.	Elongation %	Reduction in Area %	Charpy "V" Notch Ft. Lbs.
70°F.	157,000	118,000	17.0	52.6	21.0
450°F.	150,000	128,000	15.2	45.6	23.4
700°F.	141,000	120,000	14.8	49.8	25.5
1112°F.	101,000	88,000	10.2	36.6	16.5

MECHANICAL PROPERTIES

(Continued)

Double Tempered at 1112°F.

Test Temperature	Tensile Strength P.S.I.	Yield Strength P.S.I.	Elongation %	Reduction in Area %	Charpy "V" Notch Ft. Lbs.
70°F.	148,000	112,000	14.7	38.4	26.5
450°F.	122,000	105,000	15.8	48.0	27.9
700°F.	110,000	94,000	16.2	51.0	30.0
1100°F.	80,000	76,000	21.0	61.9	18.3