

Dated: October 21, 1987

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INTRODUCTION

Eureka No. 70-A Bare Rods were designed specifically for the repair of the "O" series or oil hardening grades of tool steel. More specifically, its chemistry is comparable to an A.I.S.I. O-1, O-2 steel.

This alloy is generally used when a complete anneal and rehardening of an O-1 steel will be encountered. This allows the deposit to be softened, conventionally machined, and then rehardened without any cracking difficulties.

METALLURGICAL CHARACTERISTICS

Eureka No. 70-A "all weld metal deposits" display a Rockwell "C" hardness range of 60 -62. This rod displays excellent toughness and shock resistance with moderate wear characteristics. The chemical analysis of **Eureka No. 70-A** is compatible for use with types O-1 and O-2 and will respond to both of these harden and temper cycles. Weld deposits also display good non-warping and good size retention after hardening.

RECOMMENDED APPLICATIONS

Eureka No. 70-A Bare Rod is excellent for: **(1)** repair of damaged tools and dies in the oil hardened class, especially those of "Manganese-Chromium" types; **(2)** repair of existing oil hardened tools steel where the deposit must be annealed to facilitate machining and then be rehardened and tempered for service use; **(3)** compositely fabricated units utilizing a mild, medium, or high carbon base and facing the work surfaces only, resulting in lower tooling costs; **(4)** flange dies or form dies where only moderate abrasion is encountered.

PREPARATION AND WELDING PROCEDURES

- Impressions or surfaces to be welded must be free of scale, dirt, or any other foreign matter.
- All cracks and heat checks must be removed entirely.
- Allow for a minimum of three (3) passes of weld metal to guard against dilution or admixture with the base metal.

Parameters:

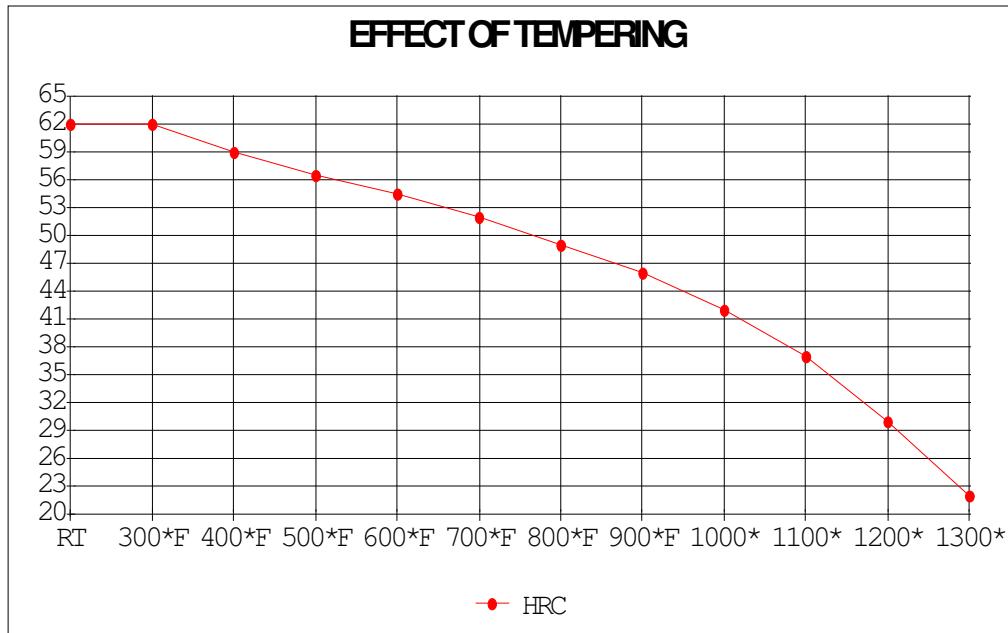
- Select the D.C. reverse polarity.
- Identify base material.
- Prepare section for welding, i.e., (grind, cut, machine, etc.)
- Select preheat temperature according to base metal. (Heat for one (1) hour per inch of maximum cross sectional thickness at temperature.)
- Select D.C. straight polarity.
- Select the proper diameter filler metal according to job size.
- Select the lowest amperage needed to effectively weld so as not to overheat or disturb the base.
- Utilize short 3" - 4" stringer beads -- peening thoroughly after each pass to offset shrinkage and welding stress in the crater of the weld deposit. Peening refines the grain structure as is found in a forged alloy; producing denser and tougher weld deposits.
- Control interpass temperature, confine to under maximum preheat temperature.
- After welding, post heat to maximum preheat temperature for one (1) hour per inch of cross sectional thickness.

HEAT TREATMENT AND TEMPERING INFORMATION

Heat Treatment

| Temperature for: | |
|-------------------|--------------------|
| Forging | 1500°F. -- 1700°F. |
| Annealing | 1425°F. -- 1450°F. |
| Hardening and Oil | 1425°F. -- 1500°F. |
| Tempering | 300°F. -- 500°F. |

ROCKWELL C



Tempering Temperature °F.