

Royal 116-E

Shielded Metal Arc Welding
(SMAW) Stick Electrode

Hard-Facing Alloy

AC/DCEP
All Position



"The Royal Line"

CROWN ALLOYS COMPANY

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Premium Cobalt Based Hard-Facing Electrode

Typical Applications

Royal 116-E is the most commonly used cobalt alloy. It is resistant to wear (abrasion), galling, erosion, cavitation, impact and corrosion AND it can retain these properties at high temperatures. Many surfacing alloys are softened permanently when heated to elevated temperatures. **Royal 116-E** is an exception since it retains its hardness and oxidation resistance up to 1100°F. In fact, **Royal 116-E** is typically used in the temperature range between 400°F – 1100°F. **Royal 116-E** can be fabricated to exceptional levels of surface finish with a low coefficient of friction to yield excellent sliding wear for metal-to-metal applications. **Royal 116-E** is the perfect choice for hot shear blades, extrusion screws, fluid flow valves, roll bushings, valve bearing surfaces, machine valves and seats, hot punches, saw guides, hot bed rack arm pads, scraper knives, hot trimming dies, agitators, digesters, valve trim in steam engines, pump shafts and bearings, and erosion shields. **Royal 116-E** bonds to all weldable steels, including stainless steels.

Specifications

AWS A5.13/A5.13M

E CoCr-A

- Hardness 38 – 42 (Rockwell C)
- Machinability Good (using carbide tools)

Procedure

Clean area to be surfaced. In many cases, preheating or a postheating is not necessary. However, if the base alloy has a significant carbon content or is very thick, then it is imperative to preheat according to the following table:

Base Metal	Preheat	Postheat
Thin sections of low Carbon Steel (up to 0.40% C)	Not required	Air cool
Thick sections of low Carbon Steel (up to 0.40% C)		
Thin sections of high Carbon Steel (over 0.40% C)	200°F - 600°F	Slow cool
Thin sections of low Alloy Steel (up to 10% alloy)		
Thick sections of High Carbon Steel (over 0.40% C)	300°F - 600°F	Slow cool
Thick sections of Low Alloy Steel (up to 10% alloy)		
Air-Quench Steels	1100°F - 1200°F	Slow cool
Thin sections of High Chromium-Nickel (Austenitic) Stainless Steel	Not Required	Air cool
Thick sections of High Chromium-Nickel (Austenitic) Stainless Steel	200°F - 500°F	Slow cool
Thick sections of High Chromium (Martensitic) Stainless Steel (410, 416, 420, etc.)	400°F - 600°F	Maintain 400°F-600°F for 4 hrs. per inch thickness, then reduce heat 90°F/hr till cool
Thick sections of High Chromium (Ferritic) Stainless Steel (430, 442, 446, etc.)	200°F - 600°F	Maintain 200°F-600°F for 4 hrs. per inch thickness, then reduce heat 90°F/hr till cool
High Temperature Nickel Alloys (400, 600, 601, 625, 718, etc.)	200°F - 500°F	Stress relieve

Welding current (see table below) can be set at either DC reverse polarity (DCEP) or AC. However, DCEP always ensures the best weldability and penetration and is therefore preferred. Try to run the **Royal 116-E** as cool as possible. Start welding at the low end of the amp range and increase amps until a smooth and stable arc is established. Apply a weave bead that is ¾" to 1.5" wide. Cool according to the table above.

Sizes, Amps and Part Numbers

Diameter	Amps DC+ (DCEP)	Amps AC	Part Numbers	
			1# Package	5# Package
1/8	80 – 110	90 – 120	RT116/EO-BP	RT116/EO
5/32	120 – 150	135 – 160	RT116/EP-BP	RT116/EP
3/16	150 – 180	160 – 195	RT116/EQ-BP	RT116/EQ
1/4	190 – 250	220 – 270	RT116/ER-BP	RT116/ER



!!!! WARNING !!!!



WELDING FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH.

BEFORE USING THIS PRODUCT THE WELDER (END-USER) MUST READ AND UNDERSTAND THE COMPLETE PRODUCT WARNING LABEL AND THE NEW 16 SECTION SAFETY DATA SHEET (SDS).

THE SAFETY DATA SHEET (SDS) WHICH OUTLINES THE POTENTIAL HEALTH HAZARDS AND SAFETY INFORMATION RELATED TO THIS PRODUCT CAN BE DOWNLOADED FROM THE SDS PORTION OF THIS WEBSITE. IT IS ALSO AVAILABLE FROM YOUR EMPLOYER AND WELDING SUPPLY DISTRIBUTOR.

DO NOT PROCEED WITH USE OF THIS PRODUCT UNTIL YOU READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) AND PRODUCT WARNING STATEMENT.

BE SURE TO CONSULT THE LATEST VERSION OF THE SDS.

SEE THE PRODUCT WARNING LABEL AND SDS FOR COMPLETE WARNING INFORMATION.

