



# Tube-Alloy<sup>®</sup> AP-O MAIN LINE

OPEN ARC HARD SURFACING WIRE

Build-Up

Replaces HS-156A

260-B INDEX: 990129







## DESCRIPTION:

**Tube-Alloy AP-O** is a self-shielded, flux-cored wire that deposits a high chromium austenitic manganese alloy. As a result of the higher chromium content in the weld metal, AP-O is much more versatile than standard austenitic manganese filler metals. It can be used for build-up and overlay of austenitic manganese (Hadfield) as well as carbon and low alloy steels. It can also be used for joining of manganese steel to itself or to carbon and low alloy steels. The deposit offers the ultimate in impact resistance and upon work-hardening, has good abrasion resistance. It also offers improved corrosion resistance compared to mild steel and is an excellent base for more abrasion-resistant carbide alloys such as Tube-Alloy 240-O and Tube-Alloy 255-O. Tube-Alloy AP-O is not limited to a maximum number of layers of build-up.

## OPERATIONAL CHARACTERISTICS:

Tube-Alloy AP-O has a steady arc with a globular transfer. Spatter and noise levels are minimal, with a complete, easily removed slag cover. It operates well in automatic applications without slagging between passes. Out-of-position welding is limited to a horizontal shelf technique.

## RELATIVE WEAR RESISTANCE:

 abrasion	
 impact	
 heat	
Low <b>Microstructure</b> High (Austenitic)	

## TYPICAL WELD METAL PROPERTIES\* (CHEM PAD):

### Weld Metal Analysis

Carbon (C)	0.40
Manganese (Mn)	16.50
Silicon (Si)	0.30
Chromium (Cr)	13.00
Iron (Fe)	Bal.

## TYPICAL MECHANICAL PROPERTIES\* (AS WELDED):

Tensile Strength	124,000 psi (856 MPa)
Yield Strength	83,000 psi (573 MPa)
Elongation % in 2"	40%
<b>Hardness</b>	
As Deposited	18 - 24 Rc
Work Hardened	50 - 55 Rc
Abrasion resistance	Fair
Impact resistance	Excellent
Machinability	Difficult
Cannot be flame cut	
Nonmagnetic	

\*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and McKay expressly disclaims any liability incurred from any reliance thereon. No data is to be construed as a recommendation for any welding condition or technique not controlled by McKay.



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## RECOMMENDED OPERATING PARAMETERS:

Diameter Inches	Diameter mm	Type of Power	Stick-Out		Optimum Amps	Volts	Deposition Rate	
			Inches	mm			Amps	lb/hr
1/16	1.6	DCEP	1-1 1/2	25-38	225-275	23-25	200	6
					<b>275-350</b>	<b>24-27</b>	250	10
					350-400	26-29	300	14
7/64	2.8	DCEP	1 1/2 - 2	38-51	350-400	24-27	300	11
					<b>400-450</b>	<b>26-29</b>	350	14
					450-500	28-32	400	18

Start with **middle range** and adjust accordingly. Higher amperages will increase deposition rate, dilution, and heat input to base metal. Increasing voltage will widen and flatten bead profile, but excessive voltage will result in porosity. Too much electrical stick-out may result in increased spatter, too little may result in internal porosity.

## AVAILABLE DIAMETERS AND PACKAGES:

Diameter Inches	Diameter mm	25-lb. Spool	60-lb. Coil	100-lb. Auto-Pak	250-lb. Auto-Pak
7/64	2.8	-	S600139-062	S600139-097	S600139-065

## APPLICATIONS:

Similar to those of Tube-Alloy 218-O, especially where the base metal verification is questionable, or where contamination may be an issue.

- Bucket Teeth and Lips
- Crusher Jaws and Cones
- Dragline Buckets
- Dredge Cutter Head and Teeth
- Grizzly Bars and Fingers
- Gyrotory Crusher Mantles and Cones
- Hammer Mill Hammers
- Hydroelectric Turbines
- Impactor Crusher Bars
- Muller Tires
- Pulverized Hammers
- Sizing Screens

Material Safety Data Sheets on any McKay product may be obtained from McKay Customer Service. Because McKay is constantly improving products, McKay reserves the right to change design and/or specifications without notice.

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