

# WIRES - TECHNICAL & APPLICATION DATA

## Technical Data Sheet 99E

ISSUE: 11/09-8

SUPERCEDES: 03/96-7

---

### APPLICATIONS

When flamesprayed molybdenum exhibits excellent adhesion to steels and is used as a bond coat where other methods of preparation are impossible or undesirable. With Metallisation Spraying Equipment coating hardness can be controlled over a wide range. Coatings exhibit good bearing properties and high resistance to galling, scuffing and "pick-up" as well as good wear and abrasion resistance. Molybdenum is not recommended for use above 400°C (752°F).

### WIRE DETAILS

Wire Size : 2.0mm, 2.3mm (11g B&S), 3.17mm (1/8") & 4.76 (3/16")  
Composition : Molybdenum 99.9% min. purity

### PHYSICAL PROPERTIES OF COATING\*

Adhesion : up to 37.92 MPa (5,500 psi). When sprayed under the correct conditions, molybdenum is self-bonding to ferrous and aluminium based alloys. This bond is normally higher than the cohesive strength of the deposit, therefore when tested to destruction rupture occurs within the deposit.

Density : 8.86 – 9.84 gm/cc  
Melting Point : 2500°C (4532°F) Approx  
Hardness : 250 - 800 Hv 10  
Microhardness : 800 - 1700 Hv 300

\* The physical properties shown above are given as a guide only. In practice, the values achieved are dependent on the spraying parameters, the equipment used, surface preparation etc.

## TYPICAL PERFORMANCE FIGURES\*

PERFORMANCE	FLAME SPRAYING
Throughput	1.8 Kg/Hr
Efficiency	80% Approx
Weight of Wire Required	0.98 Kg/m <sup>2</sup> /100μ

\* The above data is given as a general guide only. Reference should be made to the Operating Equipment Manual for greater detail.

## TYPICAL SPRAYING PARAMETERS

(See Equipment Manuals for details)

### a) Combustion Gas Spraying Metallisation Mark 61 and 66E Pistols

FUEL GAS	MIXING BLOCK NOZZLE AIR NIPPLE	GAS PRESSURE	OXYGEN PRESSURE	FLOWMETER SETTINGS	AIR PRESSURE
Acetylene	Ref Pistol Manual	1.03 bar	1.5 - 1.9 bar	Ref Pistol Manual	4.5 bar

Refer to MK61 manual for Air Motor requirements.

## FINISHING

Sprayed molybdenum coatings must be finished by grinding. Where used as a bond coat no further treatment is required prior to the application of subsequent coatings.

## SERVICE LIMITATIONS

Although Molybdenum has a very high melting point, one of its oxides is volatile at comparatively low temperature. Catastrophic oxidation of molybdenum may occur in oxidising atmospheres at elevated temperatures and even where the atmosphere is not oxidising the presence of oxide in a gas-sprayed deposit renders the use of the coating above 400°C to be inadvisable.

**To comply with Health and Safety Legislation you are recommended to consult the MSDS referring to this material.**