

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

VALVE INSERT, Mo-Cr-V-Co-Ni-Fe ALLOY

WSE-M1A324-A1

1. SCOPE

The material defined by this specification is a Molybdenum-Chromium-Vanadium-Cobalt-Nickel-Iron alloy casting.

2. APPLICATION

This specification was released originally for exhaust valve seat inserts.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 CHEMICAL COMPOSITION, weight % (ASTM A 751/ASTM E 1019/ASTM A 484)

Total Carbon	2.0 - 2.5
Silicon	1.5 max
Manganese	1.0 max
Molybdenum	10.0 - 14.0
Chromium	14.0 - 18.0
Vanadium	1.3 - 1.7
Cobalt	5.5 - 7.5
Nickel	1.0 - 2.0
Iron	Balance

3.3 HEAT TREATMENT

2 1/2 h at 693 °C followed by air cool.

3.4 HARDNESS (ASTM E 18/ISO 4498)

50 - 60 HRC

Date	Action	Revisions
2002 09 26	Revised	Updated and renumbered
1991 09 10	NEO1E10127076022	Released C. Webster

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3.5 MICROSTRUCTURE

The microstructure shall consist of a uniform distribution of Molybdenum-Chromium Vanadium Carbides in a fine lamellar pearlite. The dendrite areas which are of light color shall have a fine dispersion of Chromium-Molybdenum Carbides which can be detected at high magnification, 1000X.

3.6 SURFACE CONDITION

Surfaces shall be free of scale and rust. Nicks, cracks, burrs and depressions shall not exceed 0.25 mm in any direction. Visual inspection is to be performed under white light without aid of magnification.