E-1 High-Alloy Steel Casting Material

Introduction

ASTM A128/A128M Grade E-1 is an austenitic manganese steel casting grade. It is a molybdenum-bearing grade. The specification defines its composition and heat treatment for castings.

Manufacturing Process

Investment Casting
Shell Molding Casting
Sand Casting

Equivalent Materials

Not Available

Reference Standards

Standard	Standard Title	Edition	Specification
ASTM A128/A128M	Steel Castings, Austenitic Manganese	93(2003)	E-1

Physical Properties

Not Available

Chemical Composition

Element	Requirement
C	0.7–1.3 %
Si	<= 1.00 %
Mn	11.5–14.0 %
P	<= 0.07 %
Mo	0.9–1.2 %

Heat Treatment

ASTM A128/A128M:93(2003)

Heat Treatment	Operation	Temperature	Holding Time	Cooling
Default delivery heat treatment	heat treatment	>= 1800°F [1000°C]	Hold until the temperature is uniform throughout the casting.	Quench in a suitable medium, normally water

A different delivery condition may be used by agreement between the purchaser and manufacturer.

Mechanical Properties

Additional Mechanical Properties

ASTM A128/A128M — 93(2003)

Other Mechanical Properties

Condition: Supplementary S50, only when specified

Property	Requirement
Cold Bend Angle	150 °

When S50 is specified, test one specimen from each heat. Cold-bend it around a 1 in. [25.4 mm] pin without breaking it into two pieces. Surface cracks alone are acceptable if it remains in one piece. Cast specimens separately from the same heat in a 1/2 × 3/4 in. [13 × 19 mm] section, 12 in. [300 mm] long. Heat treat and test without machining or grinding except to remove surface irregularities or decarburization. Use the same heat treatment as for the casting, considering section size. Unless the purchaser specifies otherwise, the manufacturer may treat the specimens separately or with the castings. Reheat treatment and retest may be repeated at most twice. After reheating, perform two bend tests per heat. The source note does not recommend this test for the special alloy grades.

Applies only when Supplementary Requirement S50 is specified

Welding Conditions

ASTM A128/A128M — 93(2003) · Clause 7.1–7.2 / normative

Property	Requirement
Weld Repair Deposit	Weld deposits are generally austenitic steel. On wearing surfaces use austenitic manganese steel weld metal.

Use welding procedures and welders capable of producing sound welds. Apply the same inspection quality standards as for the castings.

Applications

Austenitic manganese steel ASTM A128/A128M Grade E-1 belongs to a family used for heavy-section castings for mining and other equipment exposed to impact and wear. Foundry experience with this grade includes heavy sections. Assess the casting geometry and bearing or impact loads before specifying it.

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Casting Quality Industrial

As a professional manufacturer in China, We Casting Quality focus on Metal Parts OEM industry, and provide solutions and services in Metal Casting field as following:

Sand Casting

Investment Casting, Lost Wax process

Shell Casting

Lost Form Casting

Permanent Mold Casting

CNC Machining

CAD Design

Tools/Mold Design

Material Supplied

Cast Iron Castings (Grey Iron, Malleable Iron, Ductile Iron)

Carbon Steel and Alloy Steel Castings

Stainless Steel and Duplex Stainless Steel Castings

Aluminum Castings

Bronze and Brass Castings

Titanium and Cobalt Alloy Castings

What We Can Do

Design Ability

Our engineers will help you to improve the designs based on casting technology, then The simulation software will be processed to verify the casting pouring system. Pro/E, Solidworks, AutoCAD and ProCast are available in Casting Quality Industrial.

Saving Cost

Some manufacture processes may lead high cost. We will analyses the designs and advise the suitable methods to our customers. The best solution will be adopted.

Quality Control

From the raw material selecting to bulk production processing, all procedures will follow PPAP program if necessary. The certificates will be provided including chemistry, hardness, mechanical property or NDT testing.

Production Capacity

The max iron/steel castings can reach 30tons in weight, meanwhile the minus casting is around 1gram only.

We also have prototyping and 3D scanning ability for sample plan.

Logistic Service

The products will be delivered directly to customer’s workshop, which will save plenty of work for clients.

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