32510 [22010] Malleable Cast Iron Casting Material

Introduction

ASTM A47/A47M Grade 32510 [22010] is a ferritic malleable iron casting grade. Its tensile requirements are based on separate test bars and are stated independently in inch-pound and SI units.

Manufacturing Process

Sand Casting
Shell Molding Casting
Lost Foam Casting

Equivalent Materials

Not Available

Reference Standards

Standard	Standard Title	Edition	Specification
ASTM A47/A47M	Ferritic Malleable Iron Castings	99	32510 [22010]

Physical Properties

Property	Value	Applicable Conditions
Matrix Structure	Temper carbon nodules in a ferritic matrix, free of excessive pearlite, massive carbides and primary graphite.	

Sources: ASTM A47/A47M:99

Chemical Composition

No specified chemical composition limits in ASTM A47/A47M

Heat Treatment

After permitted weld repair — Castings repaired by welding must be reannealed so their microstructure complies with Section 8.

If required after initial tensile testing — If initial tensile testing shows that reheat treatment is needed, the entire casting lot and its representative test specimens must undergo reheat treatment together before retesting.

Supplementary requirement S5 (when specified) — When hot-dip zinc coating to ASTM A153 is specified, prevent galvanizing embrittlement by using a suitable composition, cooling from the anneal, or applying subsequent heat treatment.

Surface condition after heat treatment (when agreed) — Where the purchaser and producer agree, a maximum decarburization limit for any as-cast surface after heat treatment may be specified in writing. Assess it by visual depletion of combined carbon after polishing and nital etching, at 100× magnification.

Test specimen condition — Separately cast bars from the same lot are heat treated in the same production furnaces and cycles as the castings. If critical sections differ appreciably from the central specimen section, the specimen tempering time may be adjusted to obtain similar microstructure, hardness, or both. Test and report specimen hardness with the tensile results in that case.

Typical manufacturing practice (informative) — Annealing is a typical manufacturing operation for ferritic malleable iron. The standard does not prescribe a specific heat treatment schedule, temperature, holding time or cooling parameters.

When required hardness is not met — Castings outside the required hardness range may be reheat treated and retested.

Typical manufacturing practice (informative): Informative values; not mandatory acceptance limits.

Sources: ASTM A47/A47M:99

Mechanical Properties

Primary Mechanical Properties

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Property	Requirement
Tensile Strength	>= 50000 psi [340 MPa]
Yield Strength	>= 32500 psi [220 MPa]
Elongation	>= 10 %

Separately cast test bar

Separately cast test bars come from the same lot and are heat treated in the same production furnaces and cycles as the castings. If critical casting sections differ appreciably from the specimen central section, the specimen tempering time cycle may be adjusted to obtain similar microstructure, hardness, or both. In that case, test and report specimen hardness with the tensile results.

Elongation gauge length: 2 in. [50 mm]

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Condition: Typical Brinell hardness

Informative

Property	Value
Brinell Hardness	<= 156 HB

Typical indentation diameter 4.8 mm (Table 2)

Informative reference value

not an acceptance requirement

Welding Conditions

Not Available

Applications

Ferritic malleable iron ASTM A47/A47M Grade 32510 is specified for general engineering castings. Published piping product literature lists this grade as an optional material for certain specialized castings. Confirm applicability for the particular component using the supplier’s product submittal.

CASTING QUALITY

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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:

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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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