



Austenitic Ductile Iron in ASTM A439

Austenitic Ductile Iron, also known as austenitic nodular iron or austenitic spheroidal iron, is characterized by having its graphite substantially in a spheroidal form and substantially free of flake graphite. It contains some carbides and sufficient alloy content to produce an austenitic structure.

www.castingquality.com

Reference Casting Standards:

ASTM A439: Standard Specification for Austenitic Ductile Iron Castings



Austenitic Ductile Iron castings can be produced in Casting Quality Industrial:

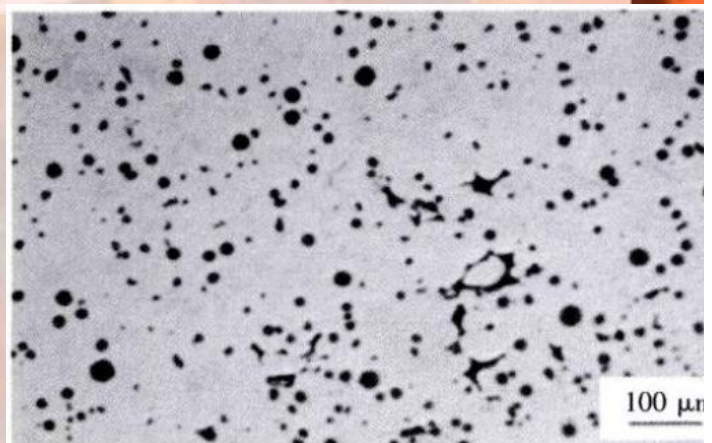
- n Sand Casting
- n Shell Casting
- n Lost Form Casting
- n Precision Lost Wax Investment Casting

ASTM A439 Austenitic Ductile Iron Chemical Requirements:

ASTM A439	C max	Si	Mn	P ≤	Ni	Cr	Others
A439 Type D-2	3.00	1.50-3.00	0.70-1.25	0.08	18.00-22.00	1.75-2.75	
A439 Type D-2B	3.00	1.50-3.00	0.70-1.25	0.08	18.00-22.00	2.75-4.00	
A439 Type D-2C	2.90	1.00-3.00	1.80-2.40	0.08	21.00-24.00	0.50 max	
A439 Type D-3	2.60	1.00-2.80	1.00 max	0.08	28.00-32.00	2.50-3.50	(Mo: 0.7- 1.0)
A439 Type D-3A	2.60	1.00-2.80	1.00 max	0.08	28.00-32.00	1.00-1.50	
A439 Type D-4	2.60	5.00-6.00	1.00 max	0.08	28.00-32.00	4.50-5.50	
A439 Type D-5	2.40	1.00-2.80	1.00 max	0.08	34.00-36.00	0.10 max	
A439 Type D-5B	2.40	1.00-2.80	1.00 max	0.08	34.00-36.00	2.00-3.00	
A439 Type D-5S	2.30	4.90-5.50	1.00 max	0.08	24.00-37.00	1.75-2.25	

ASTM A439 Austenitic Ductile Iron Heat treatment requirement: www.castingquality.com

Generally, the austenitic ductile iron castings may be stress relieved by heating to 1150 to 1200°F (621 to 650°C) for not less than 1 h nor more than 2 h per inch of thickness in the thickest section. Heating and cooling shall be uniform and shall not be more than 400°F (222°C)/h for castings less than 1 in. (25.4 mm) in maximum thickness, nor more than 400°F (222°C) divided by the maximum section thickness in inches for thicker castings. During the cooling cycle, castings may





be cooled in still air after the temperature has dropped to 600°F (315°C).

Whenever dimensional changes in high-temperature service are a problem, by agreement between the manufacturer and the purchaser, the castings may be stabilized by heating at 1600°F (870°C) for 1 h per inch of section, with a minimum of 1 h. Otherwise, the austenite which is super-saturated with respect to carbon may reject carbon during service and produce dimensional changes.

If necessary, the castings with chilled edges or excessive carbides may be annealed at 1750 to 1900°F (955 to 1040°C) for 1/2 to 5 h followed by uniform cooling, preferably in still air.

ASTM A439 Austenitic Ductile Iron Mechanical Requirements:

Casting Grade	Tensile Strength, min		Yield Strength, min		Elongation in 2in or 50mm, %, min	Brinell Hardness (3000kg)
	ksi,	Mpa	psi	Mpa		
A439 Type D-2	58	400	30	207	8.0	139-202
A439 Type D-2B	58	400	30	207	7.0	148-211
A439 Type D-2C	58	400	28	193	20.0	121-171
A439 Type D-3	55	379	30	207	6.0	139-202
A439 Type D-3A	55	379	30	207	10.0	131-193
A439 Type D-4	60	414	-	-	-	202-273
A439 Type D-5	55	379	30	207	20.0	131-185
A439 Type D-5B	55	379	30	207	6.0	139-193
A439 Type D-5S	65	449	30	207	10	131-193

ASTM A439 Austenitic Ductile Iron Typical mechanical property in high temperature (for reference only):

ASTM A439	Short-term property			Durability		
	Temperature	Tensile	Elongation	Temperature	Time	Tensile
D-2	500°C	250Mpa	2.0%	500°C	1000h	120Mpa

ASTM A439 Austenitic Ductile Iron Typical Casting Application

Turbo housing, exhaust manifold, Machinery, Iron Valve, truck, railway, gearbox etc.

As a professional casting manufacture, Qingdao Casting Quality Industrial pay much attention to the quality and technology, our products are much more casting and forging parts. We are mainly doing Sand Casting, Investment Casting (Lost Wax Casting or Precision Casting) and Die Casting. Today, its products are marketed globally through many countries.

Our Services

Casting Quality focus on Metal Parts industry, we provide professional service in Metal Casting field.

Sand Casting

Investment Casting

Shell Casting



CNC Machining

CAD Design

Tools/Mold Design

Many buyers from all over the world purchase products from China. But do you know the quality of products in China? Maybe you only pay the surface and price, but the inner quality is lost.

Housing Casting Design in Solidworks

What makes Casting Quality the best?

Innovation

Our engineers are more than just designers....they're pioneers. Our team use CAD/CAM to do the simulation of casting parts. Through the advanced technology, we can know the weight and structure. We also visited so many factories to know their difference and improve our products every year.

Quality

We're obsessed with quality. Casting Quality constantly strives to exceed our customers' expectations in durability and performance. In fact, we will control the whole process from the original material to the finished parts, include the technology. Uniquely-designed Quality Control System focuses on ensuring four product goals: 1) Eligible Chemistry, 2) Hardness 3) Property and 4) Affordable Pricing. The result is the best casting products value in the industry.

Service

We're in Qingdao, China, It has convenient transportation of road and sea. Courteous service is part of who we are, and we do it better than anyone in the industry. With Casting Quality you can expect friendly, knowledgeable, and prompt customer service.

Fulfillment

Shipping orders complete and on-time is of paramount importance to our customers. We will count the delivery date and result before accept your order. Casting Quality consistently ranks as one of the best in speed of delivery and fill rates.

SERVICE IN QINGDAO CASTING QUALITY INDUSTRIAL

- I SAND CASTING**
- I INVESTMENT CASTING**
- I SHELL CASTING**
- I PERMANENT MOLD CASTING**
- I CNC MACHINING**
- I CAD/CAM DESIGN**