HUISHIH FORGING

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HUISHIH Alloy Corporation

CUSTOMIZED PRODUCTS FOR SEVERE CONDITION

Melting & Forging of High Performance Alloy & Stainless Steel

Profile

HUISHIH Alloy Co., Ltd. is located in Shanghai, China and is an innovative enterprise professionally for the production and service of high performance alloys and stainless steels.

After years of development, HUISHIH Alloy has not only accumulated rich experience about the manufacturing of corrosion-resistant alloys, high-temperature alloys, and controlled-expansion alloys, but also has the integrated capabilities of vacuum induction melting, electroslag remelting, forging or rolling, heat treating, and machining.

ARL ADVANT'X Series XRF spectrometer from Thermo Fisher Scientific has been operated properly in HUISHIH Alloy, to ensure the accurate and reliable data of chemical composition for ladle analysis and product analysis. The other items incl. tensile test, Charpy V-notch impact test, hardness test, metallographic analysis and ultrasonic test can also be provided as per the client's requirements.

Our forgings made of Hastelloy alloy, Inconel alloy, Incoloy alloy, Monel alloy, and other special alloys, as well as ESR-grade stainless steel, are used especially for the severe condition of applications in oil and gas, chemical processing, marine engineering, power generation and etc.
No matter the grade of material or the shape and size of your parts, our facilities are designed to support both single-piece and high-volume manufacturing.

Advantages

Dedicated technical experts

We understand your need as a supplier with expert knowledge of your industry and your specific component requirements. Our services experts are ready to assist you in meeting your design challenges with clear communications on everything from material capabilities to project status. Our sales engineers, backed by our forging development team and superior metallurgy group, can provide you with the support you need to improve component manufacturability. We strive for product and process improvements that reduce your total supply chain cost and improve your speed to market.

Reliability

We constantly monitor the progress of production orders to provide the highest level of delivery reliability and communication. From initial purchase order to part delivery, your forgings will be attended by our excellent experts who care about the progress as much as you do. In addition, our scheduling system and abundant manufacturing capacity allow for daily entry of emergency orders for immediate production in rush or breakdown situations.

High-volume inventory

We maintain an extensive inventory of materials commonly used for your application, including 17-4PH, 2205, 316, 316L, N08825, N07718, N06625, and various modified grades tailored to meet API and customer-specific requirements. We have extensive experience working with stainless steel (austenitic, duplex, super duplex and PH grades) and nickel base alloy. This ready inventory and experience eliminate many of the delays associated with order processing.

Value-added options

We offer all downstream value-added processes including saw cutting, heat treating, rough-peeling and machining to parts. Combined with our advanced forging technology and the inherent advantages of forging process, our capabilities provide a superior value solution.

Accreditations and compliance

Certified to ISO 9001 and API 6A for NDT and heat treatment, we can provide virtually any forging with good quality. Our services team is well-versed in all the process requirements from the preparation of raw materials to the inspection before delivery. Our experience working with third-party agencies and quality auditors ensures the mill certificate is accurate, complete and on time.

You could send email to sales@huishih.com for more information.

Melting Process

We have accumulated rich production experiences from induction melting (VIM and AIM) to electroslag remelting (ESR).

The melting procedure from the classification, inspection, storage and bakeout of raw materials to the melting of alloys are controlled and recorded perfectly in HUISHIH Alloy.

The optimum proportion of chemical element in alloys we produced can acquire high performance, incl. corrosion resistance, heat resistance, and good economic performance.

ARL 3460 optical emission spectrometer and ARL ADVANT'X Series XRF spectrometer from Thermo Fisher Scientific are operated properly in HUISHIH, to ensure the accurate and reliable data for ladle analysis and the adjustment of chemical composition.

We can produce the defect-free ingots with low sulfur content, low non-metallic inclusion content, well-proportioned composition and excellent thermal plasticity by the electroslag-remelting of consumable electrode made by VIM, AIM and VOD.

Features of ESR-grade ingots

1. Non-metallic inclusion content decreased significantly
2. Residual deleterious elements such as sulfur, lead, tin, antimony, bismuth, etc. reduced effectively
3. Homogeneity of chemical composition improved, and the macro-segregation eliminated
4. Macrostructure defects such as center porosity and shrinkage eliminated
5. More dense crystal structure obtained, and its density increased by 0.33~1.37%
6. Structure anisotropy decreased, and the transverse mechanical properties improved significantly
7. Hot-working plasticity improved, especially for superalloys
8. Good surface of ingots applicable to be hot-worked directly

Our ESR furnace can implement the real-time monitoring and recording of electric parameter incl. voltage and current, to ensure the stability and traceability of the ingot quality.

Nearly all the ingots in HUISHIH Alloy are produced via ESR technology.

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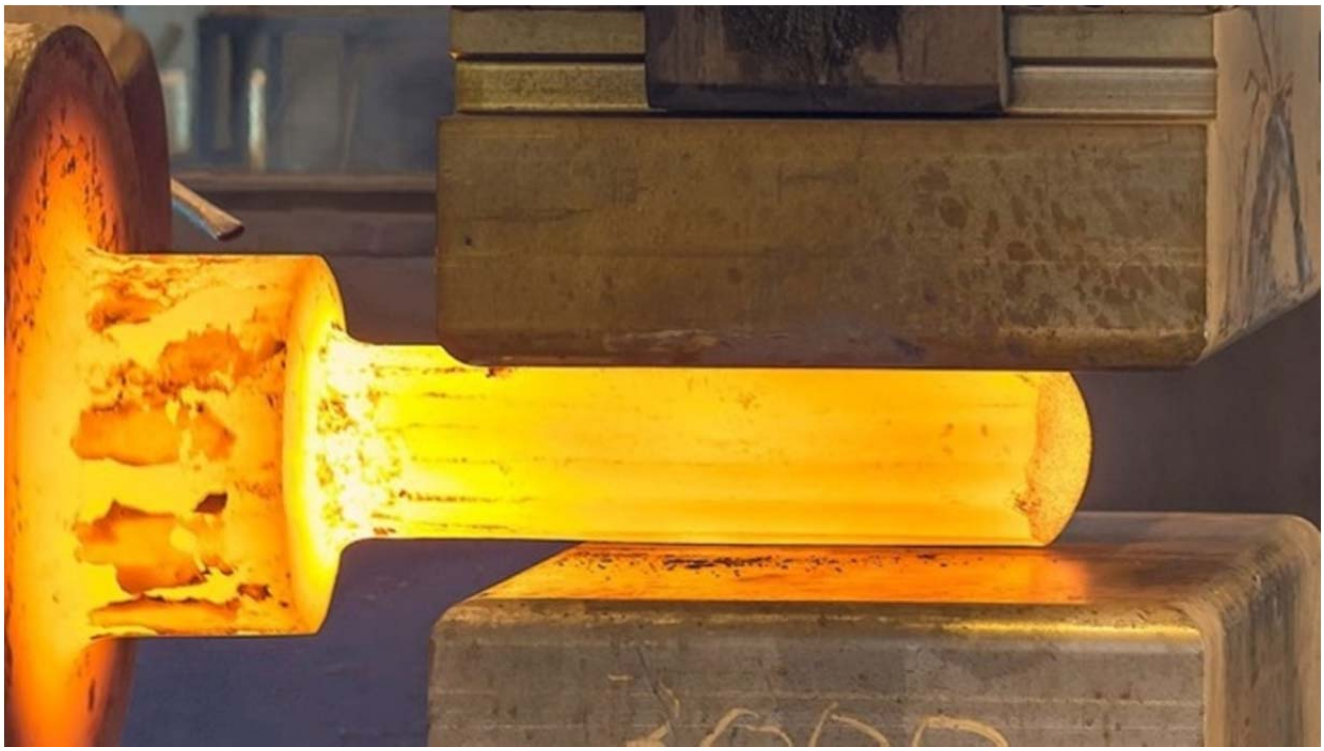
Forging Process



In the field of hot working of special alloy, we are dedicated to the production of various types of forgings, such as shafts, discs, rings, flanges, and the forgings with special shape.

High quality is derived from the strict control of the manufacturing process. Therefore, we conduct the strict monitoring and recording on each step in forging process, from the preparation of working instruction to the heating of steel ingots or billets, and the cooling after forging as well.

The low-sulfur fuel oil is used widely for heating by HUISHIH Alloy, in order to avoid the contamination by sulfur as a constituent deleterious to the quality of forgings. The furnace temperature is controlled and recorded automatically for the traceability of heating process.

Ultrasonic inspection is absolutely enforced for every batch of products in HUISHIH, for the avoidance of delivery and quality loss caused by the unqualified products containing dot or line defects.

The downstream processing, incl. heat treatment, rough-peeling or machining to parts, is an option as per your purchase specification.

Quality Assurance

As per the requirements of quality management system, we implement the standardized operation procedure and supervise the quality of each process. Therefore, the products with high performance can be provided to my customers, through the strict quality control and meticulous management.

The conventional test items as follow:

- Chemical composition analysis
- Tensile test
- Impact test
- Hardness test
- Determination of average grain size
- Determination of non-metallic inclusion content
- Ultrasonic examination
- Liquid penetrant inspection

Mill test certificate in accordance with the requirement of EN 10204 type 3.1 will be prepared.

The inspection by third-party, e.g. SGS, TÜV or SCT could be designated if necessary. The test certificate as per EN 10204 type 3.2 will be provided.

The production, examination and evaluation are much more rigorous for some specific materials with high reliability for the special application in gas turbine, nuclear power, marine engineering, high pressure hydrogen valves and etc.

Form & Size

HUISHIH has been forging components to meet the increasing demands of technical and industrial markets for more than 20 years. We offer a dramatic range of products designed to meet our clients' highest expectations for quality and performance, from bars, blocks, discs, flanges, spheres and sleeves to large valve components and seamless rolled rings in a variety of materials.




We are capable of supplying forged products fully heat treated, rough turned, finish machined and non-destructively tested according to customer requirements. When part geometry and quantities permit, semi-closed die forgings for near-net-shape parts can be manufactured.

Forged bar

2 to 16 inch diameter
50 to 400mm diameter

Forged block

2 to 16 inch thickness
50 to 400mm thickness

Forged disc

80 inch max. outside diameter and 3 inch min. thickness
2000mm max. outside diameter and 75 min. thickness

Forged sleeve

100 inch max. length and 3 inch min. wall
2500mm max. length and 75mm min. wall

Forged & rolled ring

100 inch max. outside diameter and 20 inch max. thickness
2500 mm max. outside diameter and 500 mm max. thickness

Forged sphere

NPS 4 to 48 inch and class 150 to 2500 LBS

Forged Flange

ASME B16.5	NPS 1/2 to 24 inch and class 150 to 2500 LBS
ASME B16.47 Series A	NPS 26 to 60 inch and class 150 to 900 LBS
ASME B16.47 Series B	NPS 26 to 60 inch and class 75 to 900 LBS
BS EN 1092-1	DN 10 to 2000 and PN 2.5 to 400
API 6A Type 6B	2 1/16” to 21 1/4” and 13.8 to 34.5 MPa
API 6A Type 6BX	1 13/16” to 21 1/4” and 13.8 to 138.0 MPa

You could send email to sales@huishih.com for more information.

Delivery Condition

Heat treatment: Hot forged & rolled
Soft-annealed
Solution annealed
Precipitation hardened

Surface condition: Non-treated
Rough peeled
Polished
Machined to the part

The polished or rough-peeled surface is preferable and favorable for nondestructive inspection, as we always advise. The micro defects are difficult to be detected via ultrasonic test (i.e. UT), due to the black, rough and uneven surface after being hot-forged. Likewise, the bright surface is also necessary for liquid penetrant test (i.e. PT).

Identification and package

The product ID, incl. material grade, heat number, dimension, client's material code, will be labelled by pneumatic punch marker normally. The Package, incl. fumigated wooden case or pallet, is not only seaworthy but also strong enough to protect the products from any damage.

Applications

Safe and reliable materials are always the top priorities for the serve conditions.

Years of experience for innovation have enabled our technical experts to acquire the forging and metalworking technology in order to meet the stringent and evolving requirements of a multitude of industries. Our services team is committed to meeting the requirements of your industry and exceeding your expectations.






Cross Reference of High Performance Alloy

UNS & Grade		W.N. & DIN		GB/T	
N10001	Hastelloy B			NS3201	NS321
N10665	Hastelloy B-2	2.4617	NiMo28	NS3202	NS322
N10675	Hastelloy B-3	2.4600	NiMo29Cr	NS3203	NS323
N10002	Hastelloy C			NS3303	NS333
N06455	Hastelloy C-4	2.4610	NiMo16Cr16Ti	NS3305	NS335
N06022	Hastelloy C-22	2.4602	NiCr21Mo14W	NS3308	NS338
N10276	Hastelloy C-276	2.4819	NiMo16Cr15W	NS3304	NS334
N06200	Hastelloy C-2000	2.4675	NiCr23Mo16Cu	NS3405	NS345
N06030	Hastelloy G-30	2.4603	NiCr30FeMo	NS3404	NS344
N06035	Hastelloy G-35	2.4643	NiCr33Mo8		
N06002	Hastelloy X	2.4665	NiCr22Fe18Mo	GH3536	GH536
N06600	Inconel 600	2.4816	NiCr15Fe	NS3102	NS312
N06601	Inconel 601	2.4851	NiCr23Fe	NS3103	NS313
N06617	Inconel 617	2.4663	NiCr23Co12Mo		
N06625	Inconel 625	2.4856	NiCr22Mo9Nb	NS3306	NS336
N06690	Inconel 690	2.4642	NiCr29Fe	NS3105	NS315
N09706	Inconel 706			GH2706	GH706
N07718	Inconel 718	2.4668	NiCr19Fe19Nb5Mo3	GH4169	GH169
N07750	Inconel X-750	2.4669	NiCr15Fe7TiAl	GH4145	GH145
N08800	Incoloy 800	1.4876	X10NiCrAlTi32-21	NS1101	NS111
N08810	Incoloy 800H	1.4958	X5NiCrAlTi31-20	NS1102	NS112
N08811	Incoloy 800HT	1.4959	X8NiCrAlTi32-21		
N08825	Incoloy 825	2.4858	NiCr21Mo	NS1402	NS142
N09925	Incoloy 925	2.4852	NiCr20FeMo3TiCuAl		
N09945	Incoloy 945				
N08020	Incoloy 20	2.4660	NiCr20CuMo	NS1403	NS143
N08028	Incoloy 28	1.4563	X1NiCrMoCu31-27-4		00Cr27Ni31Mo3Cu
N08330	Incoloy 330	1.4886	X10NiCrSi35-19		
N08926	Incoloy 25-6Mo	1.4529	X1NiCrMoCuN25-20-7		
S66286	Incoloy A-286	1.4980	X6NiCrMoVB25-15-2	GH2132	GH132
R30188	Haynes 188			GH5188	GH188
R30605	Haynes 25			GH5605	GH605
N06230	Haynes 230	2.4733	NiCr22W14Mo		GH230
N08120	Haynes HR-120	2.4854	NiFe33Cr25Co	GH3922	GH3922
N04400	Monel 400	2.4360	NiCu30Fe		
N05500	Monel K-500	2.4375	NiCu30Al		
C71500	CuNi 70/30	2.0882	CuNi30Mn1Fe	CW354H, BFe30-0.7	B30
N02200	Nickel 200	2.4066	Ni 99.2		
N02201	Nickel 201	2.4068	LC-Ni 99		
K93120	Maraging C300				
N07080	Nimonic 80A	2.4952	NiCr20TiAl	GH4080A	GH80A
N09901	Nimonic 901	2.4662	NiFe35Cr14MoTi	GH2901	GH901
	Refractaloy 26（R-26）				GH26
K94610	Kovar Alloy	1.3981	NiCo 29 18		4J29
K93603	Invar Alloy	1.3912	Ni 36		4J36
K93500	Super-Invar Alloy				4J32

Cross Reference of High Performance Stainless Steel

Austenitic Stainless Steel							
UNS & Grade			W.N. & DIN		GB/T		
N08367	AL-6XN	F62					
S31254	254SMO	F44	1.4547	X1CrNiMoN20-18-7	S31252	015Cr20Ni18Mo6CuN	00Cr20Ni18Mo6CuN
N08904	904L		1.4539	X1NiCrMoCu25-20-5	S31782	015Cr21Ni26Mo5Cu2	00Cr20Ni25Mo5Cu2
S20910	Nitronic 50	XM-19					
S21800	Nitronic 60						
S24100	Nitronic 32	XM-28					1Cr18Mn12Ni2N
S24000	Nitronic 33	XM-29					
S31008	310S		1.4845	X8CrNi25-21	S31008	06Cr25Ni20	0Cr25Ni20
S31050	310MoLN	725LN	1.4466	X1CrNiMoN25-22-2	S31053	022Cr25Ni22Mo2N	00Cr25Ni22Mo2N（U2）
S31703	317L		1.4438	X2CrNiMo18-15-4	S31703	022Cr19Ni13Mo3	00Cr19Ni13Mo3
S31726	317LMN		1.4439	X2CrNiMoN17-13-5	S31723	022Cr19Ni16Mo5N	00Cr19Ni16Mo5N
S31603	316L		1.4404	X2CrNiMo17-12-2	S31603	022Cr17Ni12Mo2	00Cr17Ni12Mo2
S31653	316LN		1.4429	X2CrNiMoN17-13-3	S31653	022Cr17Ni12Mo2N	00Cr17Ni13Mo2N
	316L mod		1.4435	X2CrNiMo18-14-3			
Duplex Stainless Steel							
UNS & Grade			W.N. & DIN		GB/T		
S32205	2205	F60	/	/	S22053	022Cr23Ni5Mo3N	00Cr23Ni5Mo3N
S31803	/	F51	1.4462	X2CrNiMoN22-5-3	S22253	022Cr22Ni5Mo3N	00Cr22Ni5Mo3N
S32750	2507	F53	1.4410	X2CrNiMoN25-7-4	S25073	022Cr25Ni7Mo4N	00Cr25Ni7Mo4N
S32760	Zeron 100	F55	1.4501	X2CrNiMoCuWN25-7-4	S27603	022Cr25Ni7Mo4WCuN	00Cr25Ni7Mo4WCuN
S32550	Ferralium 255	F61	1.4507	X2CrNiMoCuN25-6-3	S25554	03Cr25Ni6Mo3Cu2N	0Cr25Ni6Mo3Cu2N
S31200	2506	F50	1.4460	X3CrNiMoN27-5-2	S22553	022Cr25Ni6Mo2N	00Cr25Ni6Mo2N
Precipitation Hardening Stainless Steel							
UNS & Grade			W.N. & DIN		GB/T		
S17400	17-4PH	630	1.4542	X5CrNiCuNb16-4	S51740	05Cr17Ni4Cu4Nb	0Cr17Ni4Cu4Nb
S17700	17-7PH	631	1.4568	X7CrNiAl17-7	S51770	07Cr17Ni7Al	0Cr17Ni7Al
S15700	15-7Mo	632	1.4532	X8CrNiMoAl15-7-2	S51570	07Cr15Ni7Mo2Al	0Cr15Ni7Mo2Al
S15500	15-5PH	XM-12	1.4540	X4CrNiCuNb16-4	S51550	05Cr15Ni5Cu4Nb	
S13800	13-8Mo	XM-13	1.4534	X3CrNiMoAl13-8-2	S51380	04Cr13Ni8Mo2Al	
S45000	FV520B	XM-25	1.4594	X5CrNiMoCuNb14-5			
Martensitic Stainless Steel							
UNS & Grade			W.N. & DIN		GB/T		
S43100	431		1.4057	X17CrNi16-2	S43110	14Cr17Ni2	1Cr17Ni2
S41500	F6NM		1.4313	X3CrNiMo13-4	S41595	04Cr13Ni5Mo	0Cr13Ni5Mo