



# Hastelloy Tubes

Prepared for :

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# Introduction

Duplex Supply Inc. are the Ace suppliers of Hastelloy tubes over the past decapod. We are one of the prime and arch brands in steel industry. Duplex Supply Inc. specializes in deviated forms of duplex, super alloys, stainless in form of tube, pipe4, plate, flanges, sheets, valves etc. Hastelloy Tubes Manufactured by Duplex Supply Inc. are one of the fastest selling products and in bulk demand by the customers. Duplex Supply Inc. are the most accomplished and dynamite makers of nickel based alloys. We go with the saying “Customer is king” thus we make our Clients buying feel worthy and remarkable. We present customers in various countries for all size demand. The main Ambition of the firm is to provide commodities of matchless Quality because we strongly believe in Consumer Satisfaction. In Today’s Market industries have become very low quality suppliers which creates Shallow in what Steel Industry needs. Due to such Junctures it results in decline of Quality Goods. But today our firm is one of the finest Organization in Industry, Which makes us Solitary in such a Competitive Industry. Our Product Reliability and performance has made us one of the best brands. Because of such service our clients recommend us to other prospectors which is more than enough to prove our distinction in steel industry. We are known to the true essence of industry which makes us sound reliable and efficient for calibrating precise needs and demands of our customers. We are a perfect fit for giving a tremendous scope of materials, from our stock, to suit your necessities from various Industries. From exceedingly specific non-standard material to off the rack products, from low essentials to factory runs, Duplex Supply Inc. has the experience to understand your most troublesome requirements. We have always kept our Vision clear which serves best in accomplishing our mission. We rectify the changes required in industry with changing time and keep getting Major Control over the quality of our product. With the changing period of time we have always progressed day by day and our product quality has always remain finest. Our product have such impact on our customers that it fetches us new customers as well but the clients who once purchased from us always get back to us for their purchases.



# Contents

- **Product**

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- **Application**

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- **Materials**

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- **Quality**

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- **Why client choose us?**

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- **Technical Details**

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- **Production**

---

- **Packaging & Documentation**

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- **About Duplex Supply Inc.**



# Product

Hastelloy Tubes are often used in applications that require rigid materials for potable water conveyance. Manufacturers select Hastelloy Tubes because certain manmade materials have unwanted or unknown exposure effects while Inconel has many desirable qualities for maintaining clean water. Hastelloy Tubes can also be used for structural support in buildings and vehicles. The terms “tube” and “pipe” are generally interchangeable, although technically, “tube” implies heightened engineering qualities. Tubes are generally manufactured based on standardized sizes.

## Manufacturing of Hastelloy Tubes

There are three main methods of manufacturing Hastelloy Tubes that lend their names to tubing classifications.

- **Seamless** - Seamless Hastelloy Tubes are produced through extrusion. Extruded tubes can be formed in a hot or cold process. Long sections of Inconel 600 bar are forced through a die that blocks out the intended shape of the tube.
- **As-welded or electric resistant welded (ERW)** - This method involves passing a rolled sheet of Inconel 600 through two weld rollers. The weld rollers have a groove around their circumference, through which the metal roll passes. There is a contact at the roll seam that transmits electricity at a high enough current to weld the seam closed. The resulting weld is very small.
- **Drawn-over-mandrel (DOM)** - A mandrel is a small piece of metal inserted into the tube to define a shape. It gives the tube extra support to prevent unwanted wrinkling during drawing. The tube is passed through a die that has a smaller diameter than the current tube size. As the tube is drawn, it shrinks to match the size of the die's diameter. This process allows for tight tolerances and specifications.

Each of these manufacturing processes allows manufacturers the ability to form varying tube shapes and sizes. Tubes are not always cylindrical, and can be made in triangle, square or other polygonal shapes. Hastelloy Tubes destined for certain applications require extra processes as well. Applications involving hydrogen must be factory pre-cleaned or certified as instrument grade due to hydrogen's reactive characteristics that can cause metal embrittlement or even explosions.

Generally, an Inconel 600 tube manufacturing process is chosen for its interaction with the type of carbon to be used. Certain types of Inconel 600 react poorly to heat because of carbon content, so they can't be easily welded. Hastelloy Tubes also play a role in decisions regarding use in volatile applications.



# Application

Hastelloy tubing is used in high numbers in plumbing applications. The reasons are three-fold. One, Hastelloy is very sturdy, composed of 80-90 percent of Hastelloy alloy and 10-20 percent chromium. Hastelloy tubing can handle the types of pressures exerted by water upon plumbing structures. Additionally, the surface of Hastelloy Tubes does not allow for much adherence by particles or bacteria, so purification processes will not pass on unintended detritus.

Hastelloy Tubes are also used in a wide variety of structural applications, such as industrial and residential construction. Examples include fences, gates, railings, playground and athletic equipment. Hastelloy is often used for construction tubes over other metals like aluminum when extra stress resistance is necessary. Hastelloy Tubes can also be used in automotive applications and even as parts of furniture.



# Materials

## Hastelloy Availability

Hastelloy is available in the form of plate, sheet, bar, pipe, tubing, pipe fittings, flanges and welding material. The registered trademark name, Hastelloy, is applied as the prefix name to more than twenty different highly corrosion resistant metal alloys produced by Haynes International, Inc. These super-alloys, or high performance alloys, developed by Haynes International, are nickel-based steel alloys that exhibit traits that include high resistance to uniform attack, localized corrosion/oxidation resistance, stress corrosion cracking resistance and ease of welding and fabrication. Alloys of identical chemical and mechanical properties are available from other manufacturers and offer excellent alternatives to the various Hastelloy brand alloys.

The corrosion-resistant super-alloys are widely used by the chemical processing, aerospace, and industrial gas turbine and marine industries. Additionally, due to their reliable performance, areas of energy, health and environmental, oil and gas, pharmaceutical and flue gas desulfurization industries are increasingly using them.

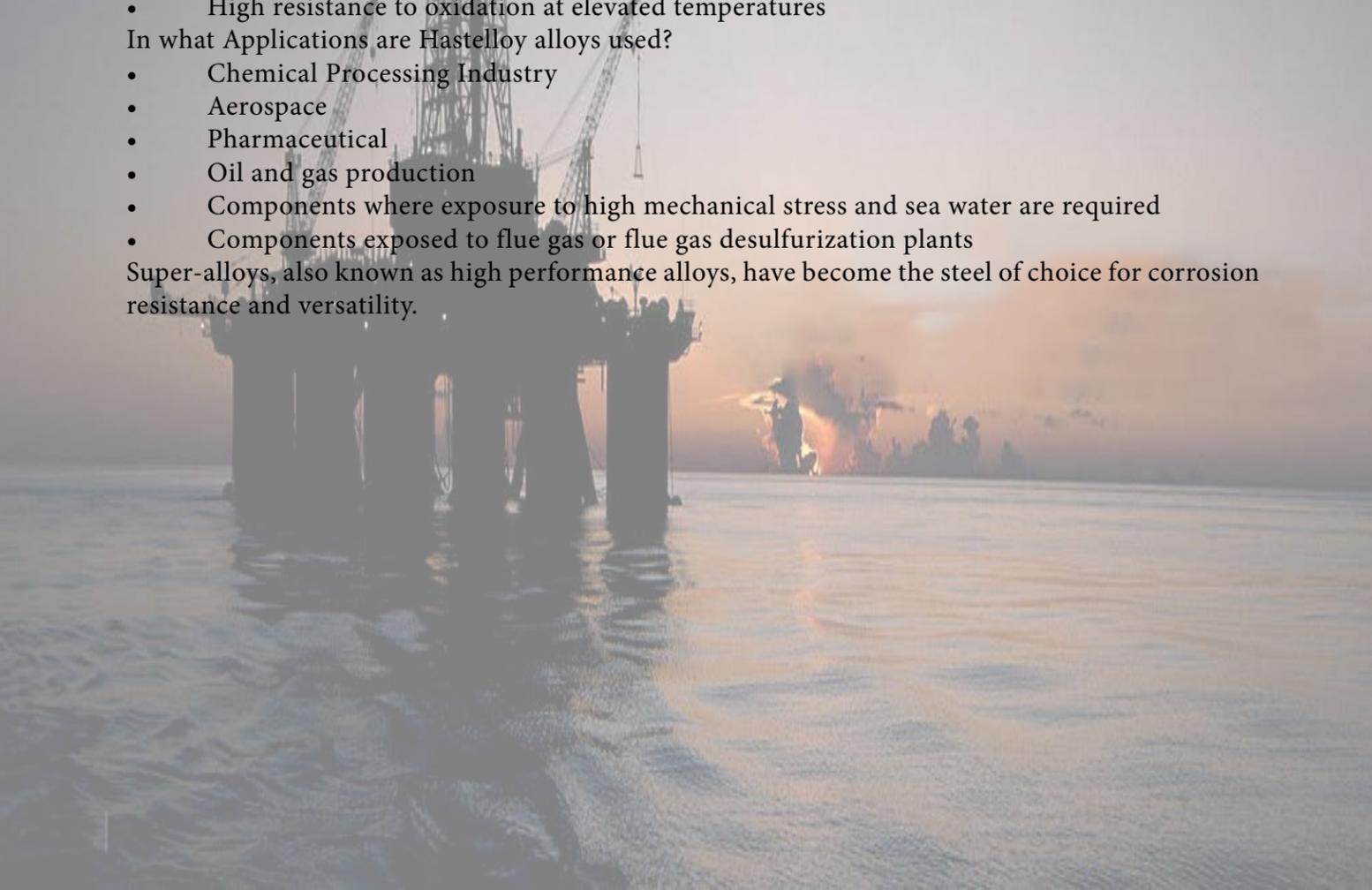
## What are the Characteristics of Hastelloy?

- High resistance to uniform attack
- Outstanding localized corrosion resistance
- Excellent stress corrosion cracking resistance
- Good resistance to acids such as sulfuric, nitric, hydrochloric, hydrofluoric and chromic
- Ease of welding and fabrication
- High resistance to oxidation at elevated temperatures

## In what Applications are Hastelloy alloys used?

- Chemical Processing Industry
- Aerospace
- Pharmaceutical
- Oil and gas production
- Components where exposure to high mechanical stress and sea water are required
- Components exposed to flue gas or flue gas desulfurization plants

Super-alloys, also known as high performance alloys, have become the steel of choice for corrosion resistance and versatility.



# Quality

Duplex Supply Inc. strongly has characteristic Quality control over all our products and our esoteric work quality and product quality makes us one of the top manufacturers in Industry. We provide Best Quality Hastelloy Tubes. Quality is our peak concern. We sustain high Quality Standards through our Committed Personnel and Sound Infrastructure. Not even a single fitting is left without a 3 layer inspection of chemical test, mechanical test, visual inspection, dimension inspection, pressure test, gauge test and conformity to the order. Quality Assurance System is beacons by Axioms that support our work culture which hooks in respect, self-administration, imaginative-ness and self-articulation. Duplex Supply Inc. is backed by all the possible certifications of a world class mill including ISO 9001:2008, ISO 14001:2007, OH-SAS 18001: 2004 & CE-PED 97/23/EC. We are also members of various renowned agencies and Chambers of Commerce including MASSMA, EEPC, FICCI, FIEO, Indian Merchants Chamber etc.

We are Highly Concerned about our customer's expectations.



We Strain To always act with probity and Honesty.

We Aim To be Paramount in our Industry.



We do our absolute best to esteem our commitments.

We are delighted to be saturated with loads of order 50 days schedule ahead of time. Every single piece of our product is attached with test certificates and authentication certificate of our Quality Product. Day by Day we keep moving to improve Quality of our products for our client. We also welcome any third party inspection from an agency nominated by the customer to comply with NACE 3.2 Certification if required by customer at an extra costs satisfaction. Our Quality Management systems and work plans ensures pursuance of total Quality Management .We never compromise in terms of Quality of Hastelloy Tubes and also for our other products. We follow stringent Quality Norms and ethics by monitoring each production process which leads in supreme product quality. With years of experience in manufacturing we offer High Quality, Lower cost and Best service. Quality Assurance begins with understanding Customer's needs and is continued till the customer is completely convinced with the delivery of products and services. Hastelloy Tubes is one of the rough and tough product due to its great quality. We efficiently fulfil customer's needs in terms of Cost, Quality and Delivery.



# Why Clients Choose us ?

Our clients have their trust in us and our Products because Duplex Supply Inc. is the most popular vendor of Hastelloy Tubes. We uniformly export our products to all the 5 continents in the world. Hastelloy Tubes are supplied majorly in Middle Eastern countries. Our all products are of marvelous quality. We have always followed saying of "Customer is king" for us and their satisfaction is what we aim for. Product replacement warranty is given. Our products can sustain high pressure. As of 2015, we stocked 500 tons of Hastelloy Tubes , highest in the country. With Duplex Supply Inc. you get un-comparable buying experience of products made from best raw materials. We execute both small and bulk orders. Every 4 months a 3rd party inspection is conducted.

## Customer is king

Duplex supply Inc. furnishes MTC with EN10204 NACE 3.1, NACE 3.2 specifications. All clients are provided with a copy of the same. Duplex Supply Inc. have the distributor in more than 15 countries. With ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007 certificate We are majestic manufacturer and exporter of Hastelloy Tubes. Duplex Supply Inc. has emerged to become the most trusted company in several European, African and gulf based companies.

No compromises are made even when it comes to the packing of our products for sea as well as air transport. Also, the raw material taken for manufacturing is of the highest grade. Our specialized logistic team focuses on delivering the first model, which provides for instant dispatch against the receipt of bank transfer copy. At competitive pricing, Duplex Supply Inc. has become the ultimate destination of Hastelloy Tubes buyers Duplex Supply Inc. is looking forward to providing you with your specialty metal needs. Also the Customization we do on personal demand of customers gets us client satisfaction and our high quality products with flexible pricing makes us admired by our clients our clients feel delighted in buying our products and consumer satisfaction in itself is the biggest achievement for our firm.



# Technical Details

## Chemical Composition of Hastelloy c22, %

	C	Mn	Si	P	S	Cr	Mo	Ni	N	Fe	Co	W	V
Min	-	-	-	-	-	20	12.5	56	-	2	-	2.5	-
Max	0.01	0.5	0.08	0.02	0.02	22.5	14.5	-	NA	6	2.5	3.5	0.35

## Chemical Composition of Hastelloy c276, %

	C	Mn	Si	P	S	Cr	Mo	Ni	N	Fe	Co	W	V
Min	-	-	-	-	-	14.5	15	57	-	4	-	3	-
Max	0.01	1	0.08	0.04	0.03	16.5	17	-	NA	7	2.5	4.5	0.35

## Mechanical Properties Hastelloy c22

UTS Min (MPA)	772
Yield Min (MPA)	365
Elongation MIn (%)	54
Hardness Max (HRB)	95
Heat Treatment	870°C - 1230°C

## Mechanical Properties Hastelloy c276

UTS Min (MPA)	690
Yield Min (MPA)	283
Elongation MIn (%)	40
Hardness Max (HRB)	95
Heat Treatment	870°C - 1230°C



# Production

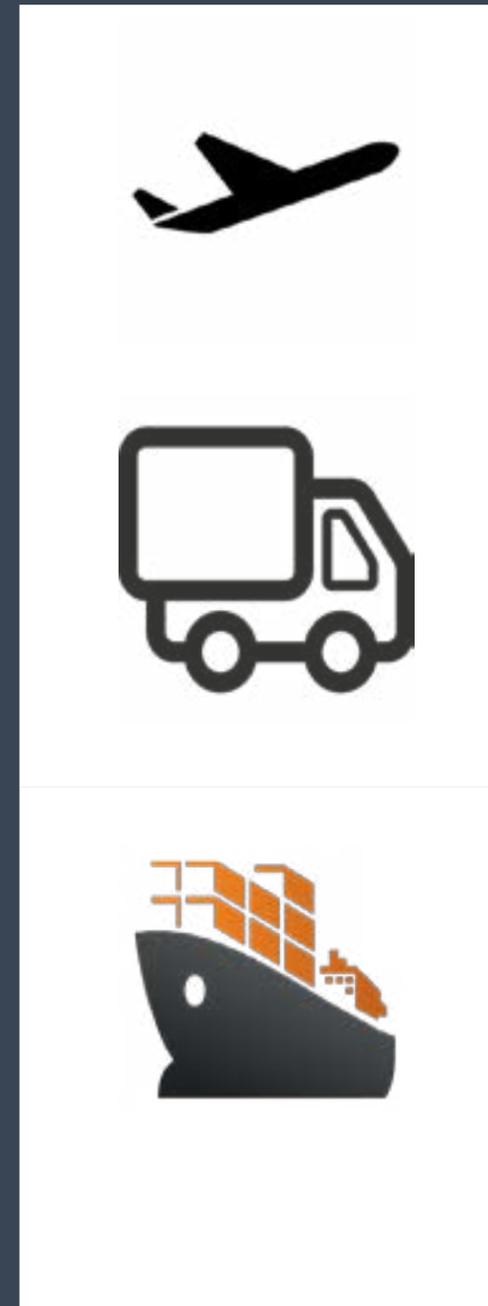
The metal, alloy or more often, tube has been around since 1841. As a testimony to its versatility and resilience, it is now packaged throughout the world with production in excess of a half billion pieces per year in the United States alone.

Production Process of Hastelloy Tubes starts with what is called a blank. It is fed into a set of tools in the die which then dismiss it. This dismissed press then roughly forms a completed tube form. The next step is too dapper the tube to the specified length on both the top and bottom ends. At this point, the tube is threaded which accredits us to screw on the cap. During dispersion, Inconel becomes work hardened so during the next step, it is passed through a process which makes the metal malleable. This is done at about 460 degrees centigrade and then Hastelloy Tubes are taken to another step of production.

The next step, which is used primarily in the industry, is the spray application of an insight lining. This acts as barrier protection for metal sensitive products between the exposed alloy and the pharmaceutical, or other product, to be packaged. If the tube is not internally coated, it will bypass the insight lining step and go to the next step which is the crust rolling of a base coat onto the tube. This crust prepares the tube for the application of offset printing. The base crust is then cured and brought back to a printing machine which puts on the customer's specified colors and copy. You can see all these tubes detailed for the different customers who require different types of personalization. Tubes for some products require a fold sealant that acts as a barrier to prevent product seepage from the fold end of the tube. The final step in the production of Hastelloy Tubes is the capping operation. And, again, customers generally command the types of styles and caps that they like. Primarily, four different materials --are used as cap material. Hastelloy Tubes are then checked, packed in boxes, inspected and loaded either into cartons or on skids for final shipment to the customer.



# Packaging & Documentation



Duplex Supply Inc. provide the certificate of origin legalized/attested by the chamber. Also, a commercial invoice including HS code is provided. Our product packing lists which come with the product includes a number of boxes, net weight, and gross weight. We provide test certificate certifying NACE MRO103, NACE MR0175 during the delivery of Hastelloy Tubes to our Clients, Along with this, a raw material test report is provided as well. Our laboratory reports that are NABL approved also is provided to our loyal customers. Other reports like raw material reports, heat treatment charts and letter of guarantee is also provided by Duplex Supply Inc. Our Hastelloy Tubes are packaged in such a way that no damage is caused during the time of delivery. We provide a free sample kit for all clients against purchase order copy for quality approval free of cost. Request your free sample kit now and get your personalized orders at tip of your We offer price basis depending on your requirements. It can be based on previous works, FOB Nhava sheva, CFR, CIF, CPT your destination port or your door to door delivery duty which can be paid or unpaid finger by ordering it online.





# About Duplex Supply Inc.

Duplex Supply Inc. is a privately held stockiest supplier and manufacturer of various alloy and metal products, the head office is located in Mumbai. DSI is committed to provide merit quality serviceability to all its customers with the minimal lead time.

Duplex supply Inc. provides shipping for all over global Customers. DSI has made noteworthy impact in metal Industry. With Duplex Supply Inc. you get un-comparable buying experience of products made from best raw materials. Duplex Supply Inc. has emerged to become the most trusted company in Indian market and in several European, African and gulf based companies. Duplex Supply Inc. is backed by all the possible certifications of a world class mill including ISO 9001:2008, ISO 14001:2007, OHSAS 18001: 2004 & CE-PED 97/23/EC.

**“Your wish we Accomplish, You Demand we Deliver”**



## OUR MISSION

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Our Aim is At Business Excellence through Higher business ethics and standards, Optimum use of resources, Spirit of Entrepreneurship.



## OUR PRECISION

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We are very Accurate from our Production System to our Delivery System we handle all our goods very precisely. We precisely fulfill all our promises to the clients and make sure that they have no complaints regarding our products.



## OUR VISION

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To provide best Quality products and service to our Clients and fulfilling their demands beyond their expectations and to be globally esteemed organization.



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# We Look Forward to Hearing From You...

After knowing about all the information above mentioned regarding our products we look forward a hearing from you regarding any Queries and Orders we are delighted to serve all our customers the existing ones and also we welcome our new customer orders. We assure that our products will never disenchant you.



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