



# Duplex Tubes

Prepared for :

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# Introduction

Duplex Supply Inc. are the suppliers of Duplex Tubes over the past decade. We are one of the nonpareil brands in alloy industry. We go with the saying “Customer is king” thus we make our Clients buying feel esteemed and exemplary. Duplex Tubes are made using superior and premium Quality materials. Today, our industry is filled with high volume but low-quality suppliers which are below the line with what the industry requires. Because of such circumstances, it results in lapse of the quality of goods and hence, the entire project. We also look after it that our industrial Hazards are dumped appropriately and not polluting the environment also we have such procedures in factory by which the harm-full chemicals are directly ventilated which doesn't harms environment and houses located around our factory. We present customers in various countries for all size demand. We have always kept our Vision clear which serves best in achieving our mission. We amend the changes required in industry with changing time and keep getting superior Control over the quality of our product. The main aim of this organization is to provide commodities of determined quality, in addition to making our client's buying experience world-class and a memorable one. Today our firm is one of the admirable Organization in Industry, Which makes us secluded in such a Competitive Industry. Our Product Reliability and performance has made us one of the top brands. Because of such service our clients recommend us to other prospectors which is more than enough to prove our distinction in steel industry. Duplex Supply Inc. Works in consideration of Clients, Environment and best Quality we do no compromise in these matters.



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# Product

Duplex Tubes are often used in applications that require rigid materials for potable water conveyance. Manufacturers select Duplex Tubes because certain manmade materials have unwanted or unknown exposure effects while Duplex has many desirable qualities for maintaining clean water. Duplex 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 Duplex Tubes

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

- **Seamless-** Seamless Duplex Tubes are produced through extrusion. Extruded tubes can be formed in a hot or cold process. Long sections of Duplex 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 Duplex 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. Duplex 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, a Duplex tube manufacturing process is chosen for its interaction with the type of carbon to be used. Certain types of duplex react poorly to heat because of carbon content, so they can’t be easily welded. Duplex also play a role in decisions regarding use in volatile applications.



# Application

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

Duplex 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. Duplex is often used for construction tubes over other metals like aluminum when extra stress resistance is necessary. Duplex Tubes can also be used in automotive applications and even as parts of furniture.



# Materials

Duplex is becoming more common. They are being offered by all the major stainless steel mills for a number of reasons:

- Higher strength leading to weight saving
- Greater corrosion resistance particularly stress corrosion cracking
- Better price stability
- Lower price

There is a conference on the subject of duplex every 2-3 years where dozens of highly technical papers are presented. There is a lot of marketing activity surrounding these grades. New grades are being announced frequently. Yet, even with all this interest, the best estimates for global market share for duplex are between 1 and 3%. The purpose of this article is to provide a straightforward guide to this steel type. The advantages and disadvantages will be described.

## Principle of Duplex

The idea of duplex dates back to the 1920s with the first cast being made at Avesta in Sweden in 1930. However, it is only in the last 30 years that duplex steels have begun to “take off” in a significant way. This is mainly due to advances in steelmaking techniques particularly with respect to control of nitrogen content. The standard austenitic steels like 304 (1.4301) and ferritic steels like 430 are relatively easy to make and to fabricate. As their names imply, they consist mainly of one phase, austenite or ferrite. Although these types are fine for a wide range of applications, there are some important technical weaknesses in both types:

Austenitic – low strength (200 MPa 0.2% PS in solution annealed condition), low resistance to stress corrosion cracking

Ferritic – low strength (a bit higher than austenitic, 250 MPa 0.2% PS), poor weld ability in thick sections, poor low temperature toughness

The basic idea of duplex is to produce a chemical composition that leads to an approximately equal mixture of ferrite and austenite. This balance of phases provides the following:

- Higher strength – The range of 0.2% PS for the current duplex grades is from 400 – 550 MPa. This can lead to reduced section thicknesses and therefore to reduced weight. This advantage is particularly significant for applications such as:
  - o Pressure Vessels and Storage Tanks
  - o Structural Applications e.g. bridges
- Good weld ability in thick sections – Not as straightforward as austenitic but much better than ferritics.
- Good toughness – Much better than ferritics particularly at low temperature, typically down to minus 50 deg C, stretching to minus 80 deg C.
- Resistance to stress corrosion cracking – Standard austenitic steels are particularly prone to this type of corrosion. The kind of applications where this advantage is important include:
  - o Hot water tanks
  - o Brewing tanks
  - o Process plant
  - o Swimming pool structures



# 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 Duplex 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, EEPCC, 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 Duplex 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. Duplex 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 Duplex Tubes. We uniformly export our products to all the 5 continents in the world. Duplex 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 Duplex 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 Duplex 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 Duplex 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 Duplex 31803, %

	C	Mn	Si	P	S	Cr	Mo	Ni	N	Fe	Other
Min	-	-	-	-	-	21	2.5	4.5	0.08	-	-
Max	0.03	2	1	0.035	0.02	23	3.5	6.5	0.2	Bal	NA

## Chemical Composition of Duplex 32205, %

	C	Mn	Si	P	S	Cr	Mo	Ni	N	Fe	Other
Min	-	-	-	-	-	22	3	4.5	0.14	-	-
Max	0.03	2	1	0.035	0.02	23	3.5	6.5	0.2	Bal	NA

## Mechanical Properties of Duplex 32205

UTS Min (MPA)	621
Yield Min (MPA)	448
Elongation MIn (%)	25
Hardness Max (HRB)	103
Heat Treatment	1020 - 1100°C



# Production

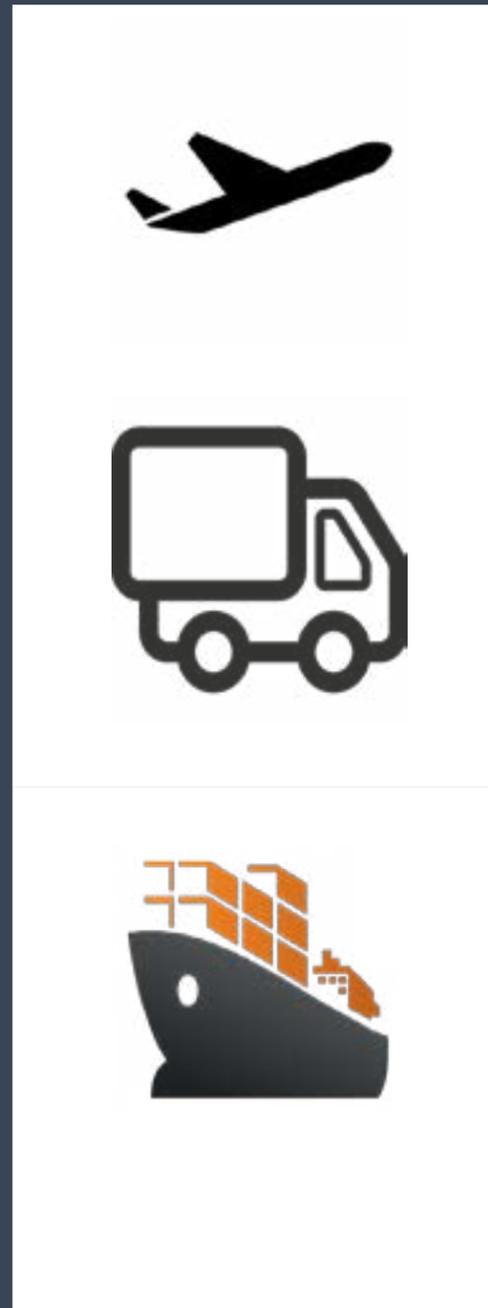
The metal, alloy or more often, tube has been around since 1841. As a testimony to its versatility and resilience, it is now packaged throughout the world with production in excess of a half billion pieces per year in the United States alone.

Production Process of Duplex 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 Duplex 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 Duplex 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. Duplex 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 Duplex 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 Duplex 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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