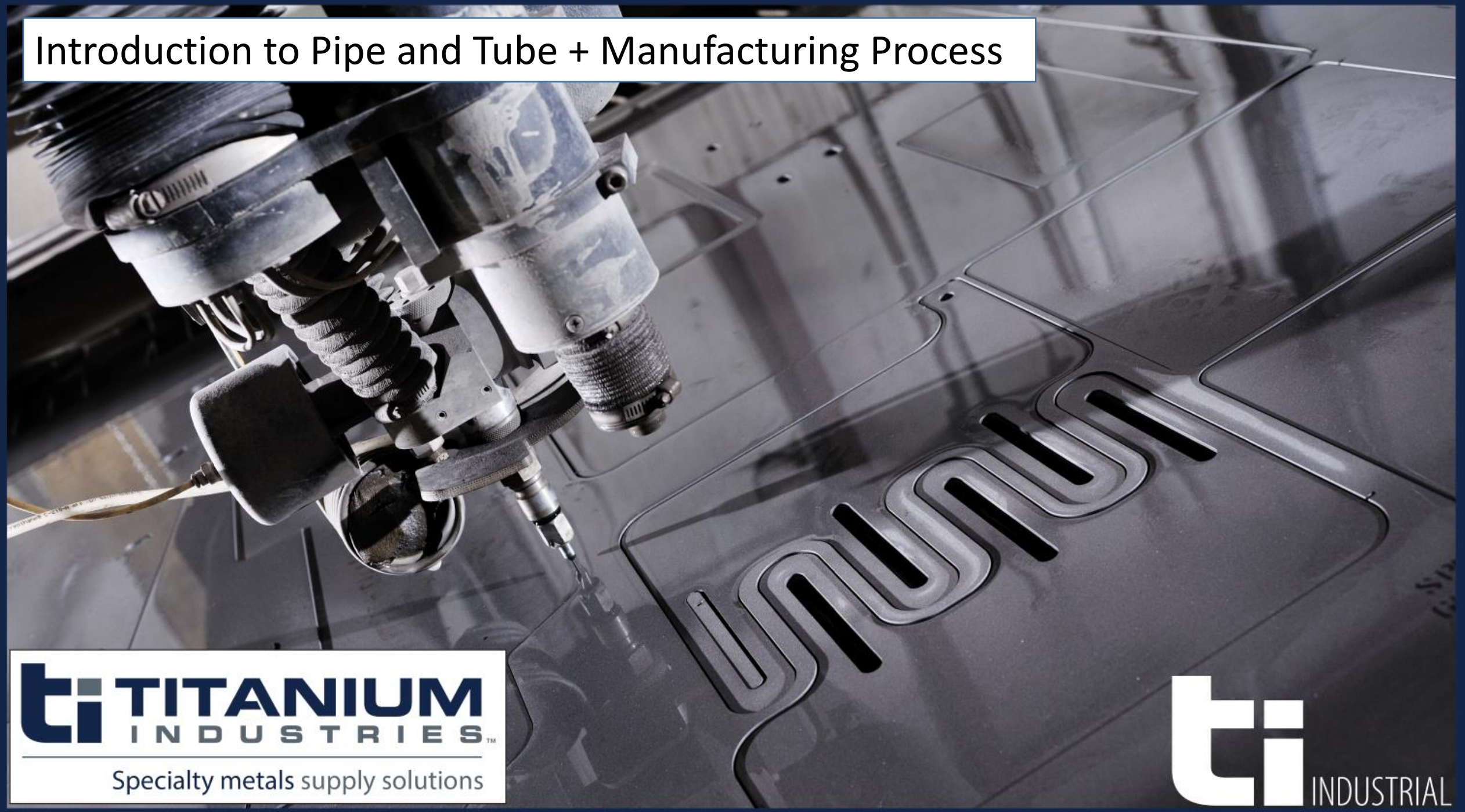
Introduction to Pipe and Tube + Manufacturing Process



TITANIUM INDUSTRIES™

Specialty metals supply solutions

INDUSTRIAL

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Introduction to Pipe and Tube

- Pipe used in an industrial context is a broad category of fluid and solid transport hardware used in numerous applications and industries.
- Industrial pipe and tube are manufactured from a wide range of materials for transporting an equally wide range of solids and fluids.
- Pipe or tube is often, but not exclusively cylindrical in shape.
- Applications and systems are normally configured with straight sections connected by using fittings, special connection points, or joints.
- Pipes and tubes have a high frequency of use in high pressure and/or corrosive environments.
- Industrial pipe construction and material specifications are application-dependent; user consultation with pipe suppliers is typical for optimization of pipe selection.

Introduction to Pipe and Tube

Tube

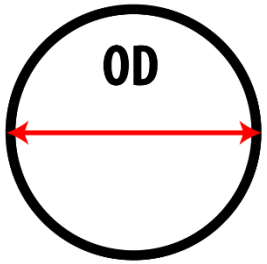
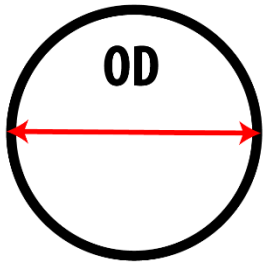
- Tubing generally used for structural purposes and OD is an important and exact number
- Tubing size specified by OD and wall thickness; the measured OD and stated OD are generally close tolerances
  Tubing is usually more expensive than pipe due to tighter manufacturing tolerances

Pipe

- Titanium grades 1, 2, 3, 7, 9, 11, 12, 16, 17, 26 and 27 are approved for pressurized service under the American Society of Mechanical Engineers (ASME, Pressure Vessel and Boiler Code)
- Grade 2 titanium is considered the workhorse of the titanium family and is suitable for most applications
- Pipe categorized as tubular vessels used in pipeline and piping systems, and commonly transport gases or fluids and specified by “Nominal Pipe Size” (NPS) and Schedule (wall thickness).
  - NPS is a size standard established by the American National Standards Institute (ANSI), and should **NOT** be confused with the various thread standards such as NPT and NPSC.
- The manufacturing of Nominal Pipe Sizes from 1/8” to 12” is based on a **standardized** nominal outside diameter (OD) that is different from the measured OD.
- NPS pipe 14” and up have measured OD’s that correspond to the nominal size.

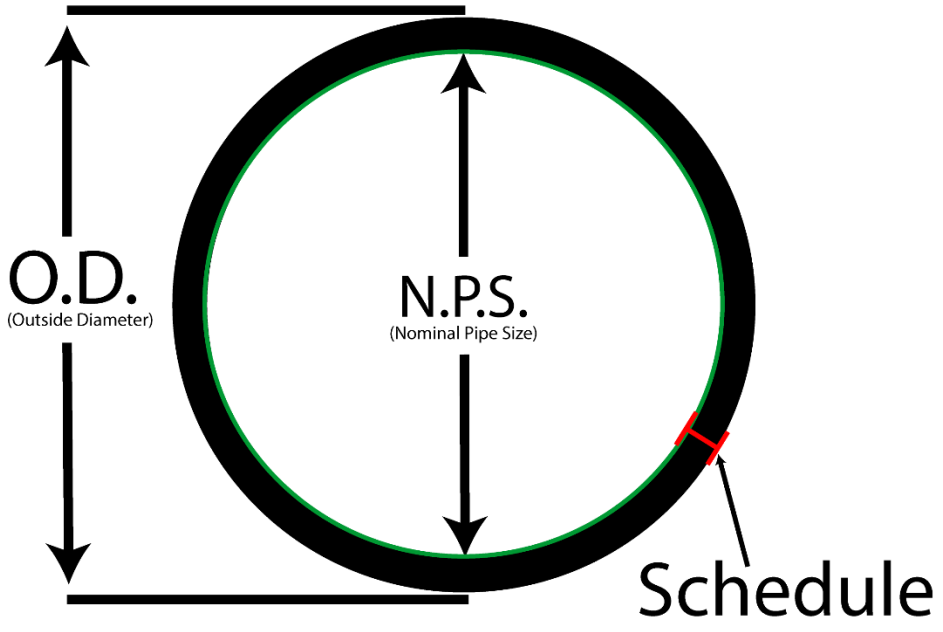


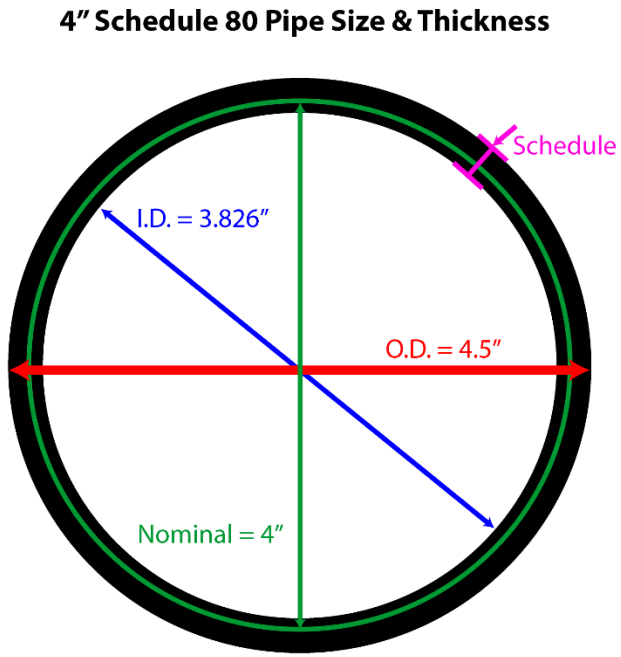

Tube vs Pipe & Nominal Pipe Size

Tube	Pipe
✔ Structural	✔ Vessel
✔ Measured by Exact OD	✔ Measured by Nominal OD
	
Tube is normally used for structural purpos. Sizing is based on **exact** outside diameter and wall thickness of tubing.	Pipe normally used to transport gases/fluids. Sizing based on **nominal** outside dia. (NPS) & wall thickness.

NPS - Nominal Pipe Size

NPS is an ANSI standard and should not be confused with various thread standards such as NPT and NPSC.

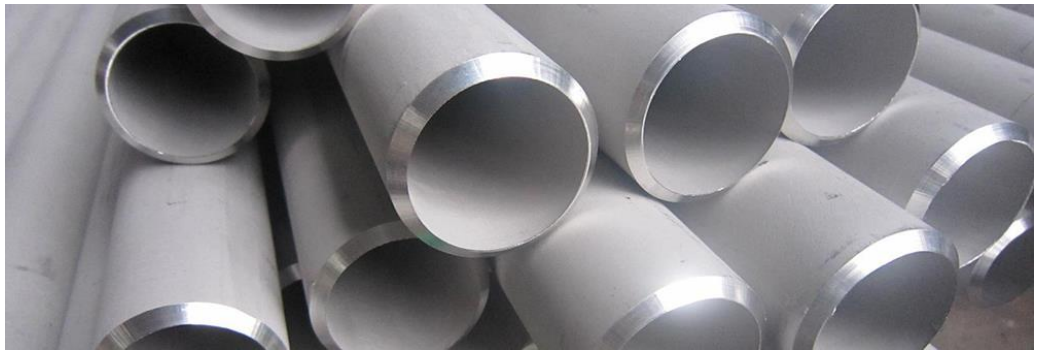




- Random Length (RL) is common in pipe but rare in tube
- The industry normal is +/-10% of the specified length
  - Example: 20'RL (18'min to 22'max length)
- Pipe Shorts: length less than specified, check the customer P.O. or engineering specification to see if shorts are addressed for shipment.
  - If not contact the customer - Tube shorts are typically not acceptable.
  - Almost all tube orders are exact length

Pipe Types and Manufacturing Processes - Seamless Pipe

- Seamless Pipe is the strongest in regards to all pipe types because of it's homogeneous structure throughout the length of the pipe.
- Seamless pipe has a variety of sizes and schedules and is widely used in the manufacturing of pipe fittings like elbows and tees.
- Titanium grades 1, 2, 3, 7, 9, 11, 12, 16, 17, 26 and 27 are approved for pressurized service under the American Society of Mechanical Engineers (ASME, Pressure Vessel and Boiler Code)
- Seamless titanium and titanium-alloy pipe is specified in ASTM B-861



Pipe Types and Manufacturing Processes - Seamless Pipe

Mandrel Mill Process

- Billet is heated to high temperature in a rotary furnace
- A cylindrical hollow (mother hollow) is produced using a rotary piercer and roller arrangement to keep piercer at center of billet
- Outside diameter of piercer is about the inside diameter of finished pipe – secondary roller arrangement outside diameter and thickness achieved

Forged Seamless Pipe Manufacturing Process (used to manufacture large diameter seamless pipe)

- Heated billet placed in forging die that has a diameter slightly larger than the finished pipe
- Hydraulic press of forging hammer with matching inside diameter used to create cylindrical forging
- Once forging is completed, pipe is machined to achieve final dimensions

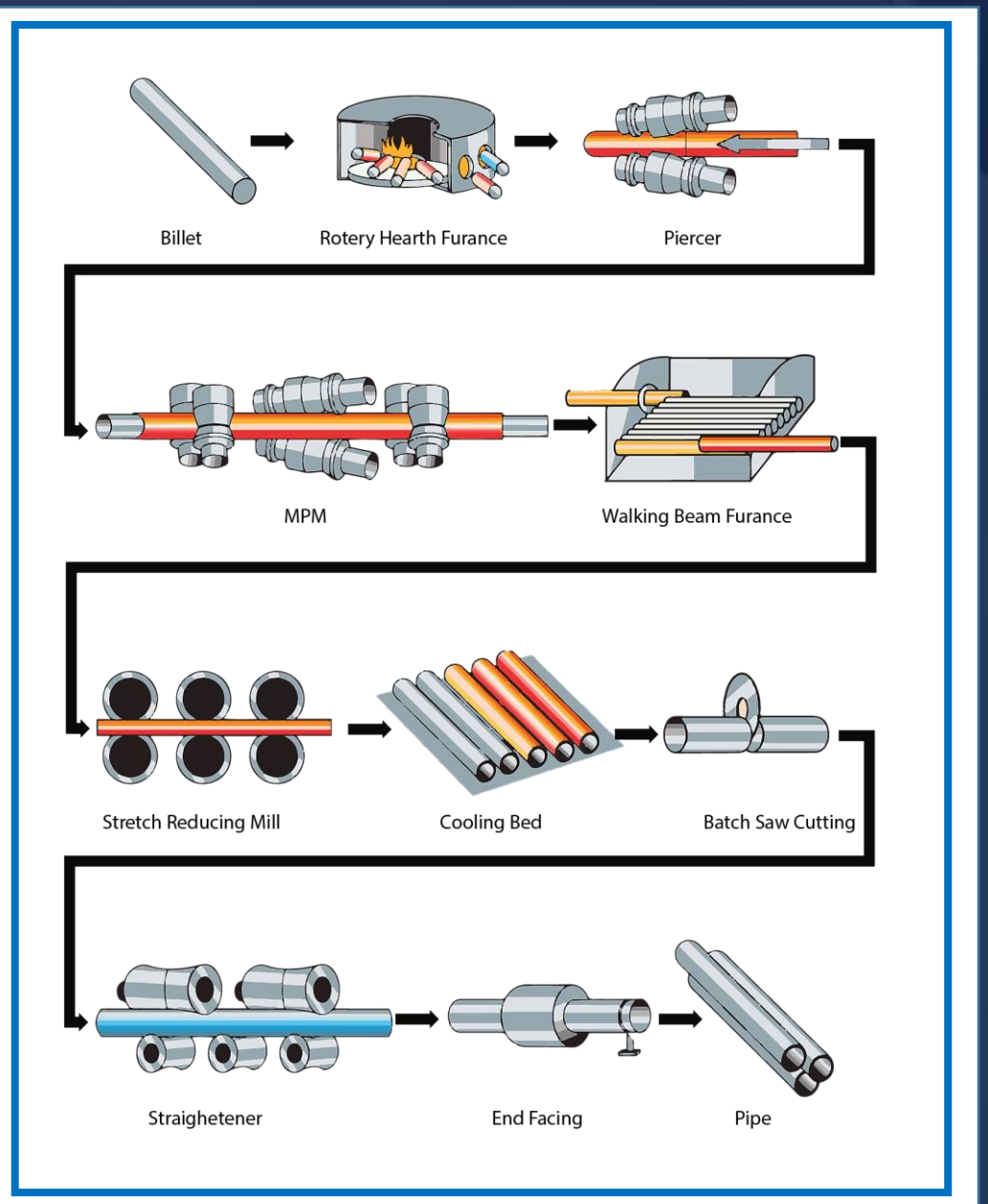
Extrusion Processes

- Heated billet is placed inside a die – hydraulic ram pushes billet against piercing mandrel
- The material flows from cylindrical cavity between die and mandrel, which produces pipe

Mannesmann Plug Mill Pipe Manufacturing Process

- Effectively the same process as Mandrel – difference being Mannesmann allows for multi-stage reduction to achieve desired diameter whereas Mandrel has single pass

Pipe Types and Manufacturing Processes - Seamless Pipe



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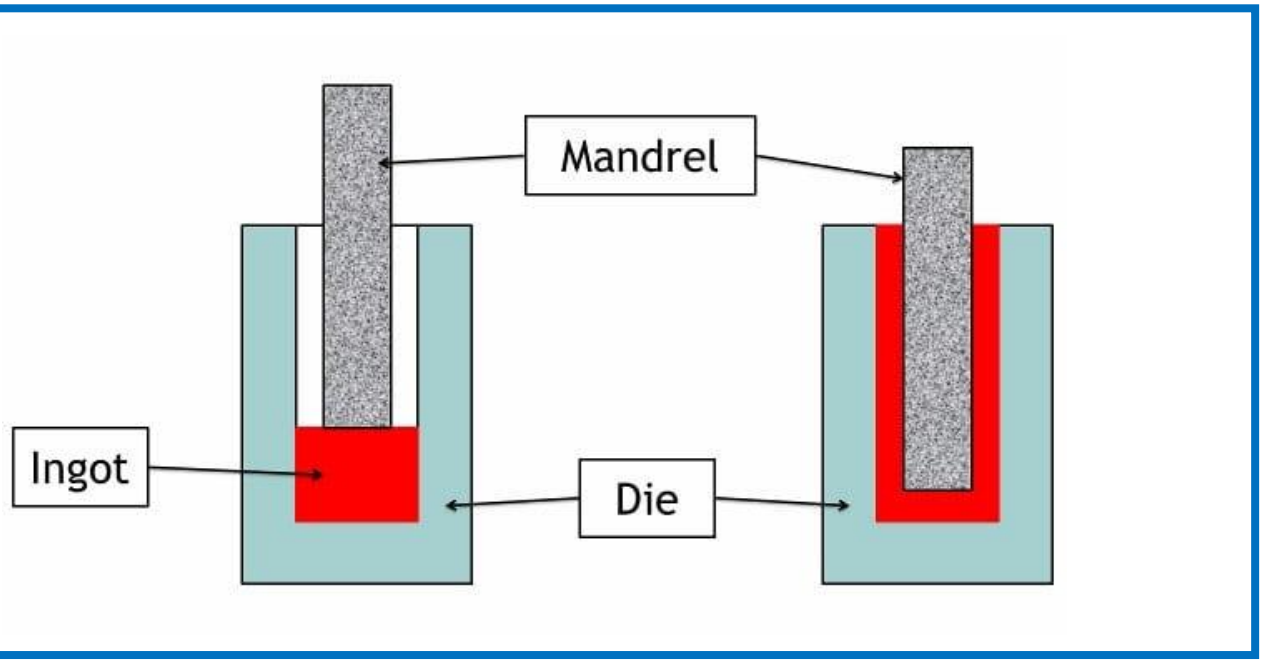

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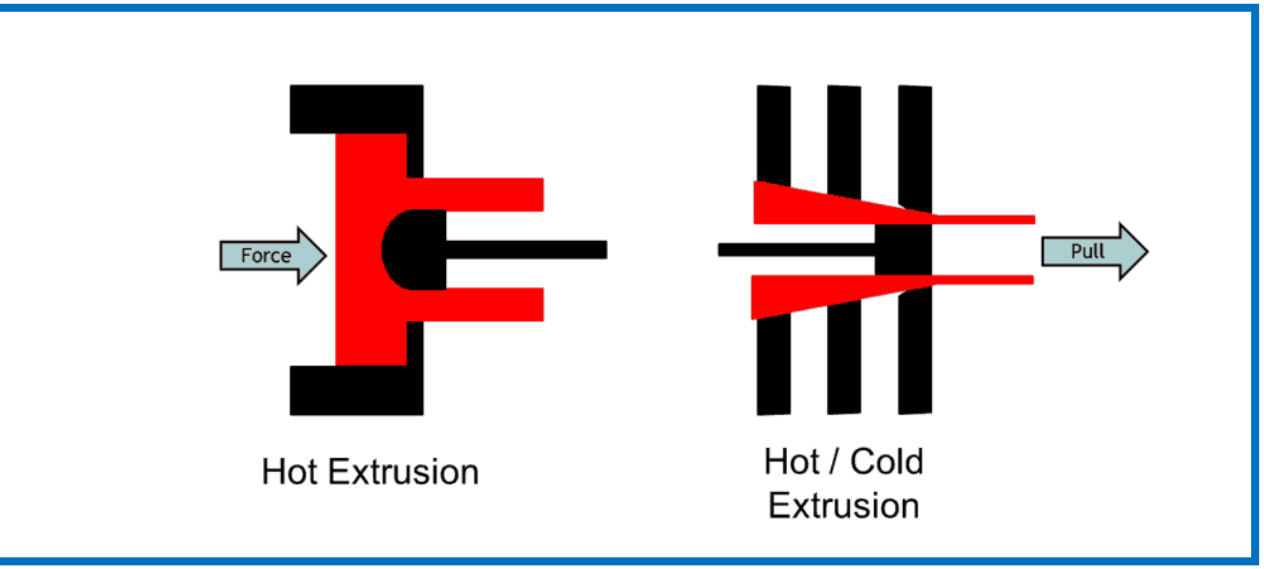

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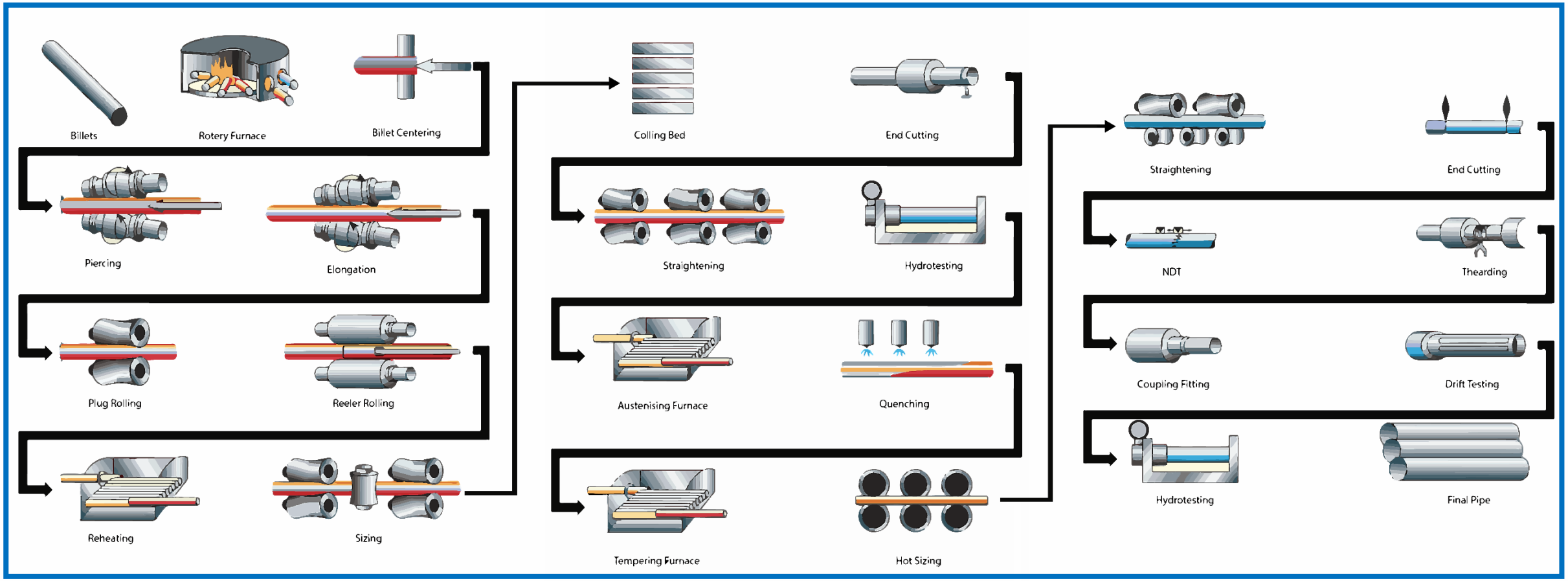

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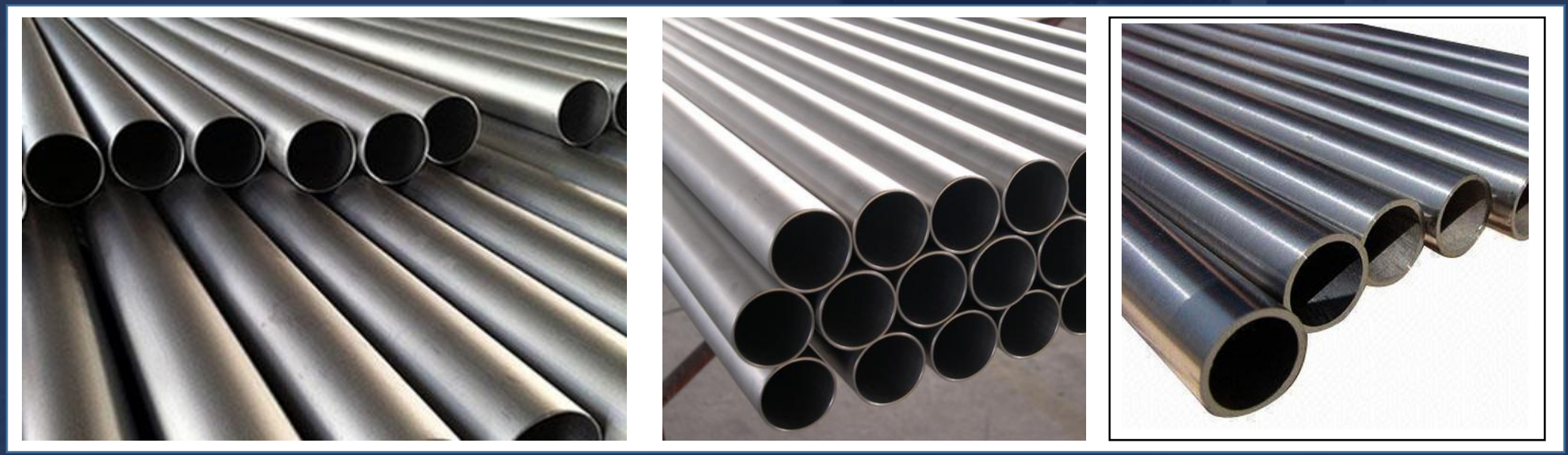
Pipe Types and Manufacturing Processes - Welded Pipe

- In the past, welded pipe was generally considered inherently weaker because of the weld seam. Seamless pipe lacked this structural flaw and was considered safer.
- Though welded pipe includes a seam which makes it theoretically weaker, modern manufacturing techniques and processes, and quality assurances have improved to the extent that welded pipe will perform as desired if tolerances aren't exceeded.
- Though the apparent advantages are clear, seamless pipe does have some critiques compared to welded. Rolling and stretching processes when manufacturing seamless pipe can produce inconsistent wall thickness compared to the more precise thickness of sheets or plate that would be used for welded pipe.



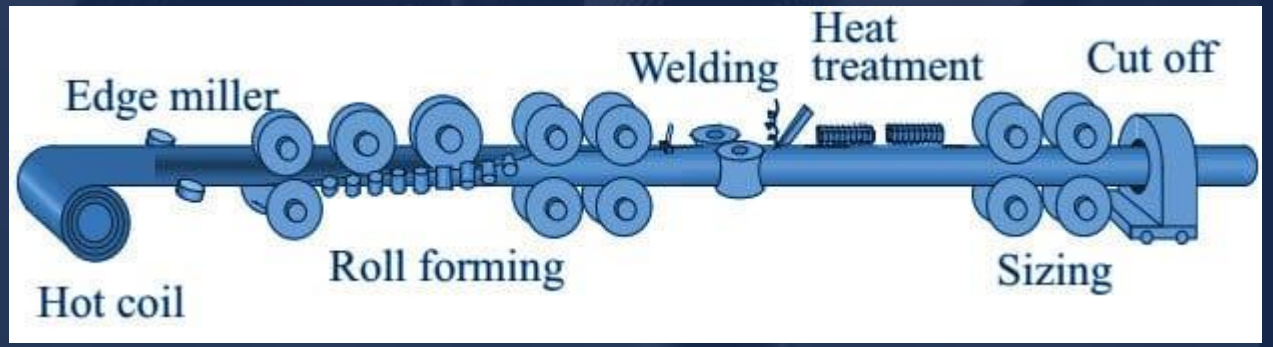
Pipe Types and Manufacturing Processes - Welded Pipe

Welded pipe is manufactured from plate, coil, or strip.

- The plate, coil, or strip is rolled in a circular section with the help of a bending machine or by a roller
- Once circular section is rolled from the above mentioned material, the pipe can be welded with or without filler materials
- Welded pipe is generally manufactured in large sizes without any upper restrictions and can be used to manufacture long radius bends and elbows
- Welded pipe is generally cheaper compared to seamless pipe

There are different welding methods used to weld pipe:

- ERW- Electric Resistance Welding
- EFW- Electric Fusion Welding
- HFW- High-frequency welding
- SAW- Submerged Arc Welding (Long seam & Spiral Seam)



ERW / EFW / HFW processes: Plate is formed in a cylindrical shape and the longitudinal edges of the cylinder formed are welded by flash-welding, low-frequency resistance-welding, high-frequency induction welding, or high-frequency resistance welding.

Pipe Types and Manufacturing Processes - Welded Pipe

SAW (Submerged Arc Welding) Pipe Manufacturing Process

In SAW welding process, external filler metal (wire electrodes) are used to join the formed plates. SAW pipes can have a single longitudinal seam of double longitudinal seam depending on the size of the pipe. SAW pipe are also available in the spiral seam, which is continually rolled from a single plate coil.

The production rate of spiral SAW pipe is very high as compared to straight SAW pipe. However, spiral SAW pipe are only used in low-pressure services such as water and non-critical process services.

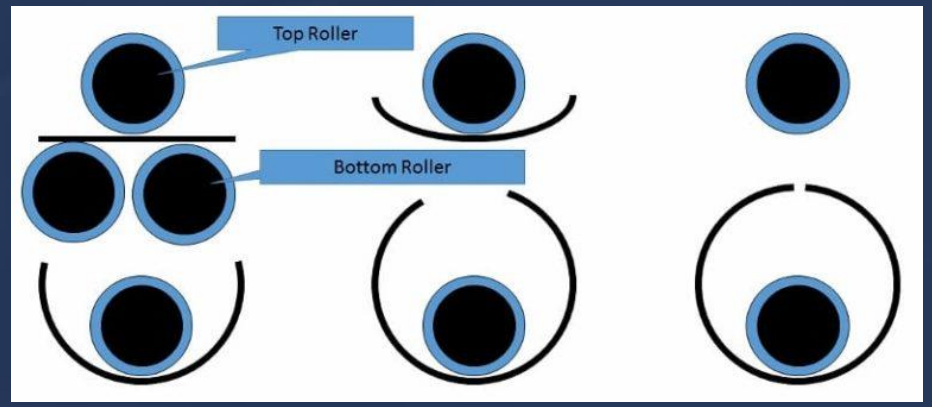
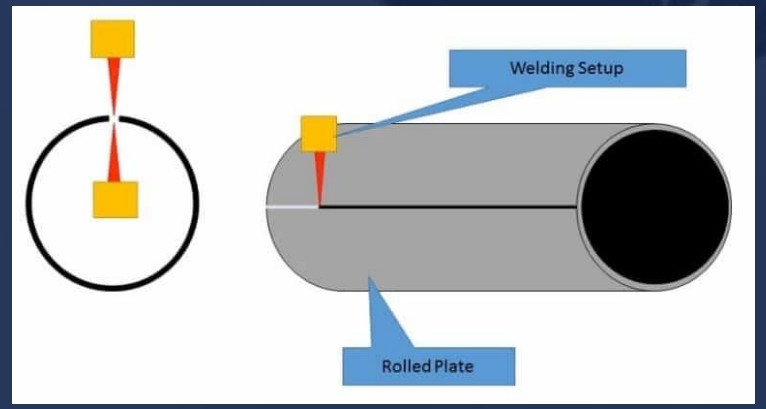
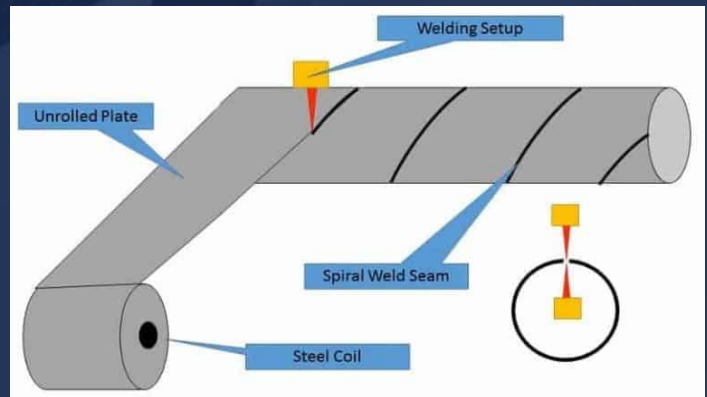


Plate Roll Formed



Straight SAW Pipe Welding



Spiral SAW Pipe Welding

Nominal Pipe Size (NPS), Wall Thickness, and Pipe Schedules

Pipe Schedule is the term used to describe the thickness of a pipe

- Outside diameter of a pipe is the same for all Schedules in a particular nominal pipe diameter

The schedule number is defined as the approximate value of the expression:
Schedule Number = (1,000)(P/S)

P = internal working pressure, psig
S = allowable stress (psi)

For example, the schedule number of ordinary steel pipe having an allowable stress of 10,000 psi for use at a working pressure of 350 psig would be:
Schedule Number = (1,000)(350/10,000) = 35 (approx. 40)

So, what does schedule 40 mean?

Schedule 40 is nothing but a pipe thickness designator. Simply, you can say that for given material, schedule 40 pipe can withstand a certain amount of pressure.

Nominal Pipe Size (NPS), Wall Thickness, and Pipe Schedules

NPS	OD	Schedule #	Wall Thickness	ID
1.000”	1.315”	SCH 40	0.133”	1.049” (approx.)
1.000”	1.315”	SCH 80	0.179”	0.957” (approx.)

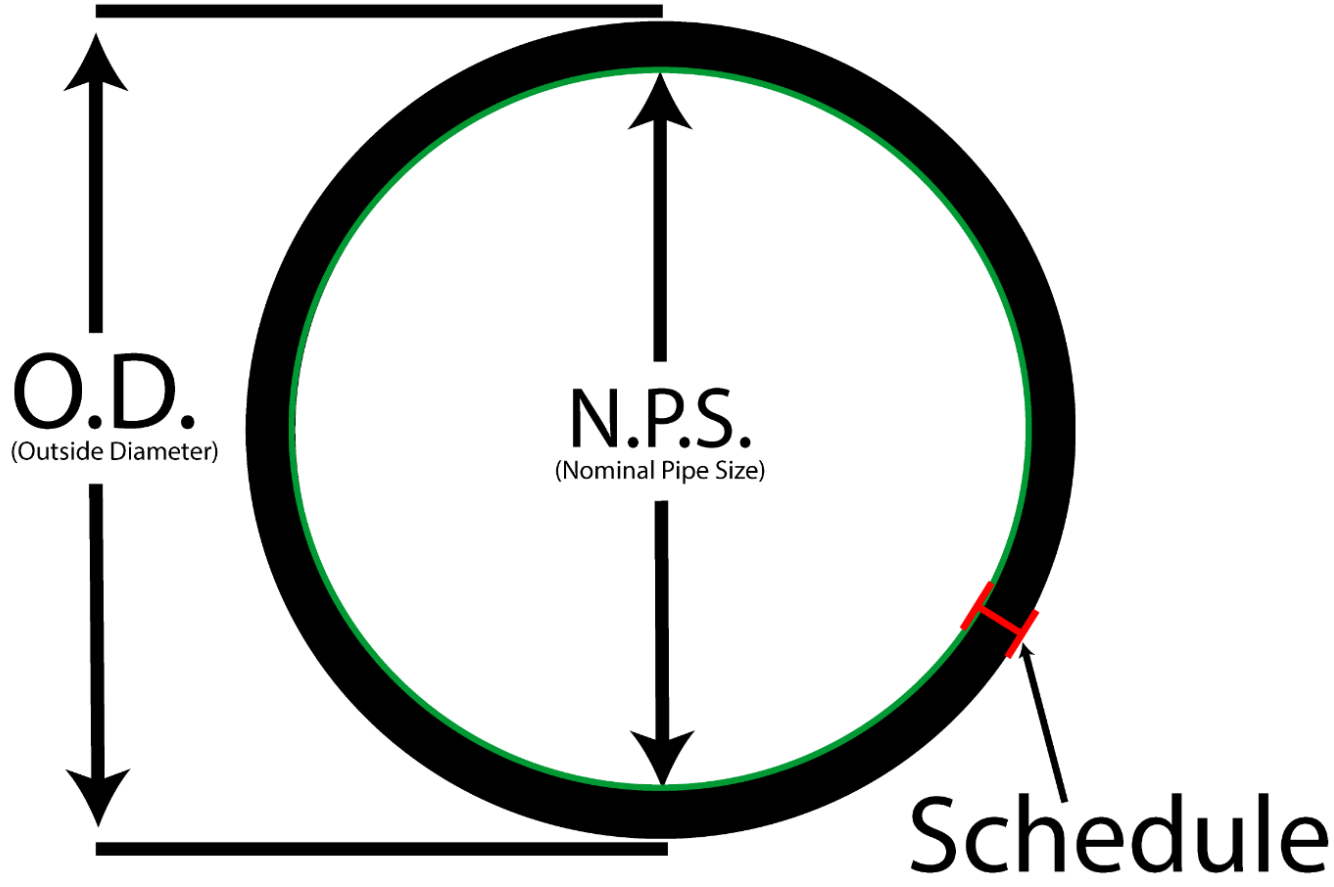
- Outside diameter (O.D.) remains relatively constant
- The variation in wall thickness affects only the inside diameters (I.D.)

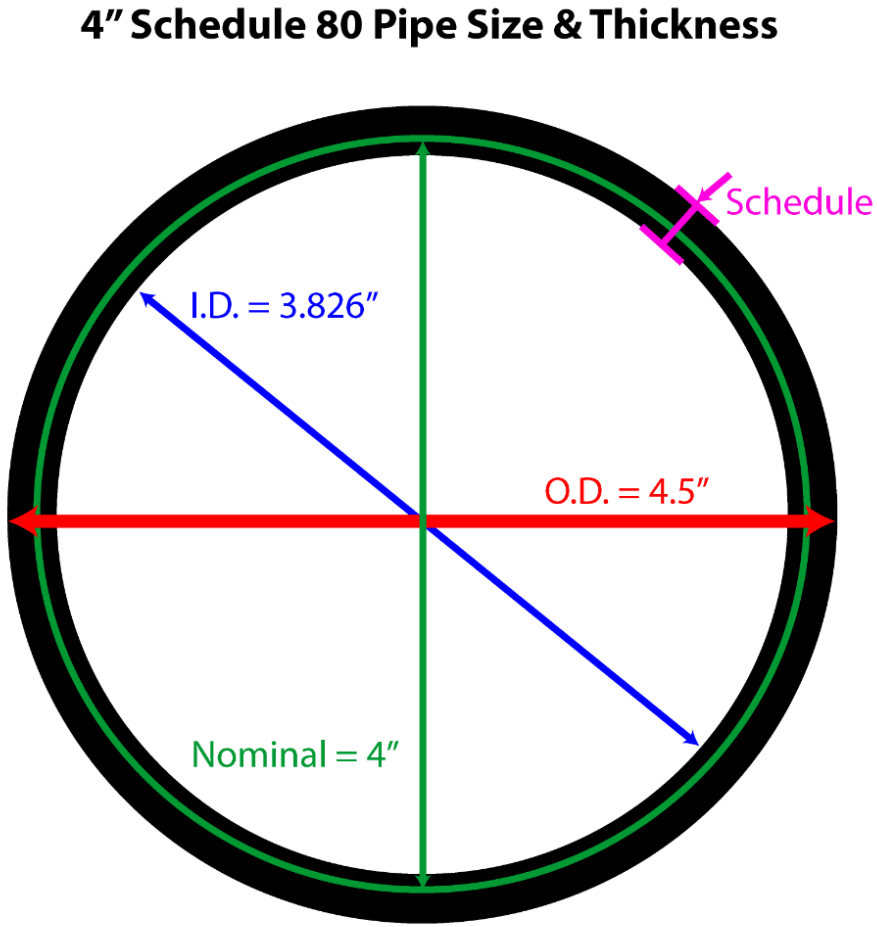
Wall Thickness Selection

- Wall thickness selection depends primarily upon capacity to resist internal pressure under given conditions.
- The design engineer shall compute the exact value of wall thickness suitable for conditions for which the pipe or tube is required.
- Calculations and procedures are described in detail in ASME B31 Code for pressure piping or similar code, whichever governs the construction.

Titanium Industries is not an engineering company. We cannot advise a customer on what wall thickness to use for a given pressure, temperature or chemical media.

Nominal Pipe Size (NPS), Wall Thickness, and Pipe Schedules





Nominal Pipe Size (NPS), Wall Thickness, and Pipe Schedules

Based on the NPS and schedule of a pipe, the pipe outside diameter (OD) and wall thickness can be obtained from reference tables based on ASME standards B36.10M and B36.19M.

For NPS ⅛" to 12", the NPS and OD values are different.

- Pipes NPS 12" and smaller have outside diameters numerically larger than their NPS sizes
  - Example: 12" NPS outside diameter is 12.750"

For NPS 14 and up, the NPS and OD values are equal. In other words, an NPS 14 pipe is actually 14 inches (360 mm) OD.

- Pipes NPS 14" and larger, the outside diameter matches the NPS size
  - Example: 14" NPS outside diameter is 14.000"

The reason for the discrepancy for NPS ⅛ to 12 inches is that these NPS values were originally set to give the same *inside* diameter (ID) based on wall thicknesses standard at the time.

However, as the set of available wall thicknesses evolved, the ID changed and NPS became only indirectly related to ID and OD.

Nominal Pipe Size (NPS), Wall Thickness, and Pipe Schedules

- For a given NPS, the OD stays fixed and the wall thickness increases with schedule. For a given schedule, the OD increases with NPS while the wall thickness stays constant or increases.
- Using equations and rules in ASME B31.3 Process Piping, it can be shown that pressure rating decreases with increasing NPS and constant schedule.
- Some specifications use pipe schedules called standard wall (STD), extra strong (XS), and double extra strong (XXS).
  - These actually belong to an older system called iron pipe size (IPS).
  - The IPS number is the same as the NPS number.
  - STD is identical to SCH 40S, and 40S is identical to 40 for NPS 1/8 to NPS 10, inclusive.
  - XS is identical to SCH 80S, and 80S is identical to 80 for NPS 1/8 to NPS 8, inclusive.
  - XXS wall is thicker than schedule 160 from NPS 1/8 in to NPS 6 in inclusive
  - Schedule 160 is thicker than XXS wall for NPS 8 in and larger.

ASME **B36.10M (non S sizes) &** ASME **B36.19M (S sizes)**

ASME B36.10M & ASME B36.19M

- Cover the standardizations of dimensions of welded and seamless pipe for high or low temperatures and pressures
  - The word pipe is used, as distinguished from tube, to apply to tubular products of dimensions commonly used for pipeline and piping systems
  - The suffix “S” in the schedule number is used to differentiate B36.19M pipe from B36.10M pipe

ASME B36.10M

- Covers pipe sized from NPS 1/8” (DN 6) through NPS 80” (DN 2000)
  - Wall-thickness designations available:
    - SCH 5, SCH 10, SCH 20, SCH 30, STD, SCH 40, SCH 60, XS, SCH 80, SCH 100, SCH 120, SCH 140, XXS, SCH 160

ASME B36.19M

- Covers pipe sized from NPS 1/8” (DN 6) through NPS 30” (DN 750)
  - Wall-thickness designations:
    - SCH 5S, SCH 10S, SCH 40S, SCH 80S
- Pipes NPS 12” and smaller have outside diameters numerically larger than their NPS sizes
  - Example: 12” NPS outside diameter is 12.750”
- Pipes NPS 14” and larger, the outside diameter matches the NPS size
  - Example: 14” NPS outside diameter is 14.000”

Inquiry Checklist – Pipe

Are there any MELT or COUNTRY of ORIGIN restrictions? Is it for Export?

PIPE
Products: Seamless & Welded
Specifications: ASTM B861, ASTM B862, ASME SB861, ASME SB862

Schedule Size: Is the request for Sch xx or Sch xxS
- 12” pipe Sch 40 wall = .406”
- 12” pipe Sch 40S wall = .375”?

At different larger pipe sizes, nominal wall sizes can be different for schedules (i.e. non-S sizes and “S” sizes)

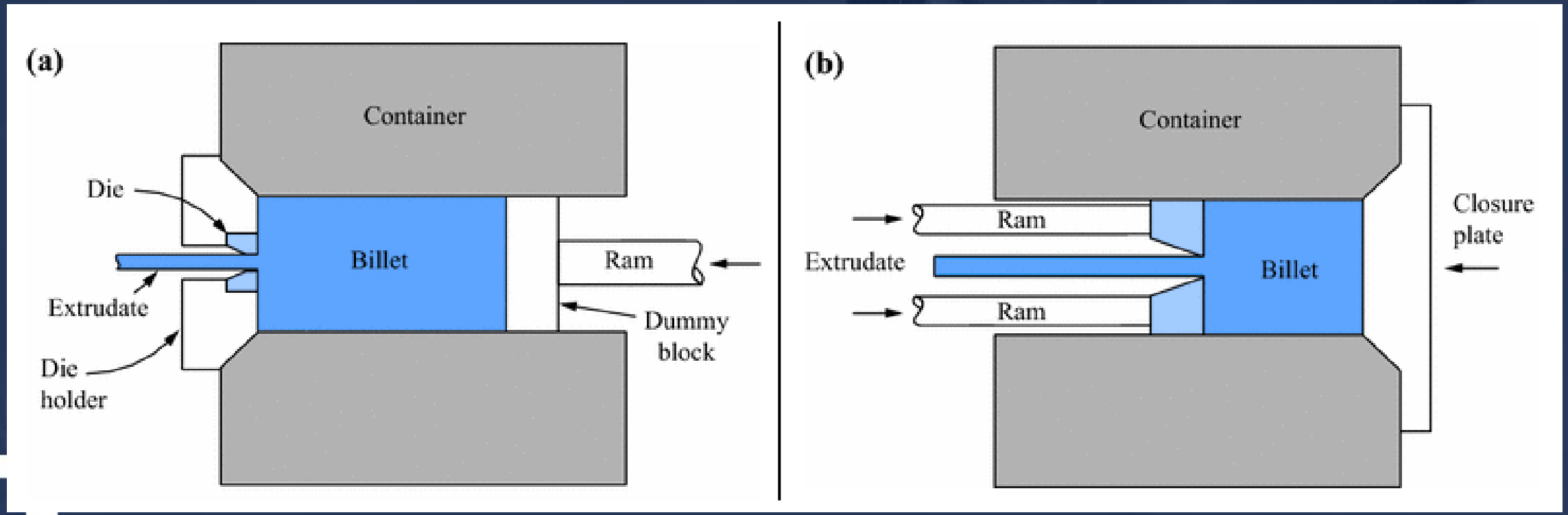
Is Liquid Penetrant Inspection required?	[Supplemental Requirement S1.1]
Is X-Ray (Radiograph) of the welds required?	100% (full pipe length)? [Supplementary Requirement S1.2.1] Spot? [Supplementary Requirement S1.2.2]
Is a Stress Relieve Anneal required?	[Supplementary Requirement S1.3]

B337 and SB337 (both Seamless & Welded) have been discontinued B861 and SB861 (Seamless) & B862 and SB862 (Welded) have replaced it

Tube Types and Manufacturing Processes

Seamless tube

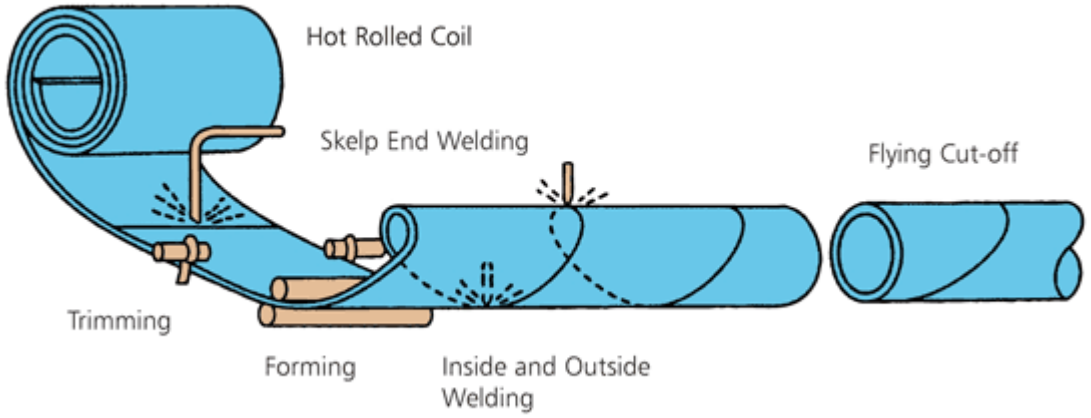
- Extruded and drawn from a billet
- Does not have welding seam
- Will ideally be a solid metal tube
  - Each end connected to another tube without welding joint
- These tubes have threads either at one end or at both ends and can be threaded to the end of another hollow tube or pipe



Tube Types and Manufacturing Processes

Welded Tube

- Produced from a strip that is roll formed and welded to produce a tube
- Generally more readily available and less expensive than seamless tube
- Produced in long continuous lengths



Tube Types and Manufacturing Processes - Seamless Tube

Sink Drawing

- Simplest drawing procedure
- Tube is drawn through a hardened die
- Tube surface comes into contact with polished die surface and is worked smooth

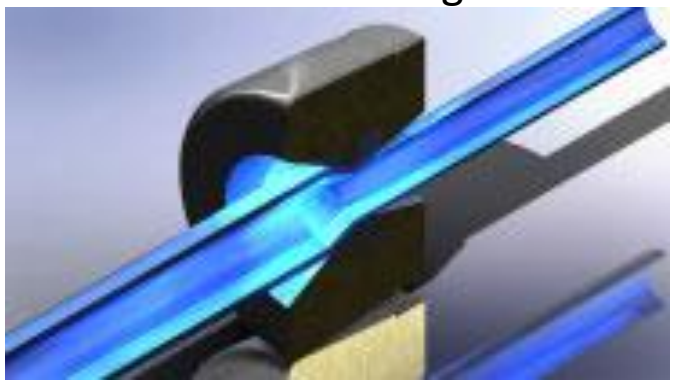
Rod drawing

- One of the main intermediate drawing stages
- Outside diameter and wall thickness are reduced at the same time
- Tube is loaded over mandrel rod and both are then drawn through a die
  - This squeezes the tube onto the rod and reduces the wall thickness
- The die and mandrel determine the size of the drawn tube which is then slightly expanded using pressure rollers so that the rod can be removed

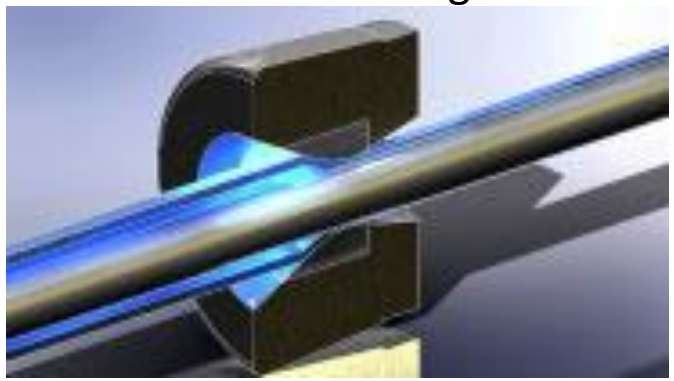
Plug Drawing

- Type of drawing used for the highest quality output
- The outside and inside diameters of the tube are worked at the same time
- A plug with a polished surface is located in the middle of the outside diameter drawing die
- The tube is loaded over the plug attached to a fixed rod
- Tube is drawn through die - the stationary plug imparts high tolerance surface finish

Sink Drawing



Rod Drawing



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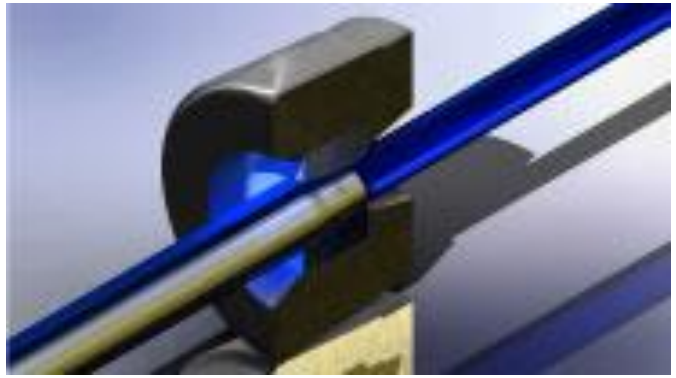
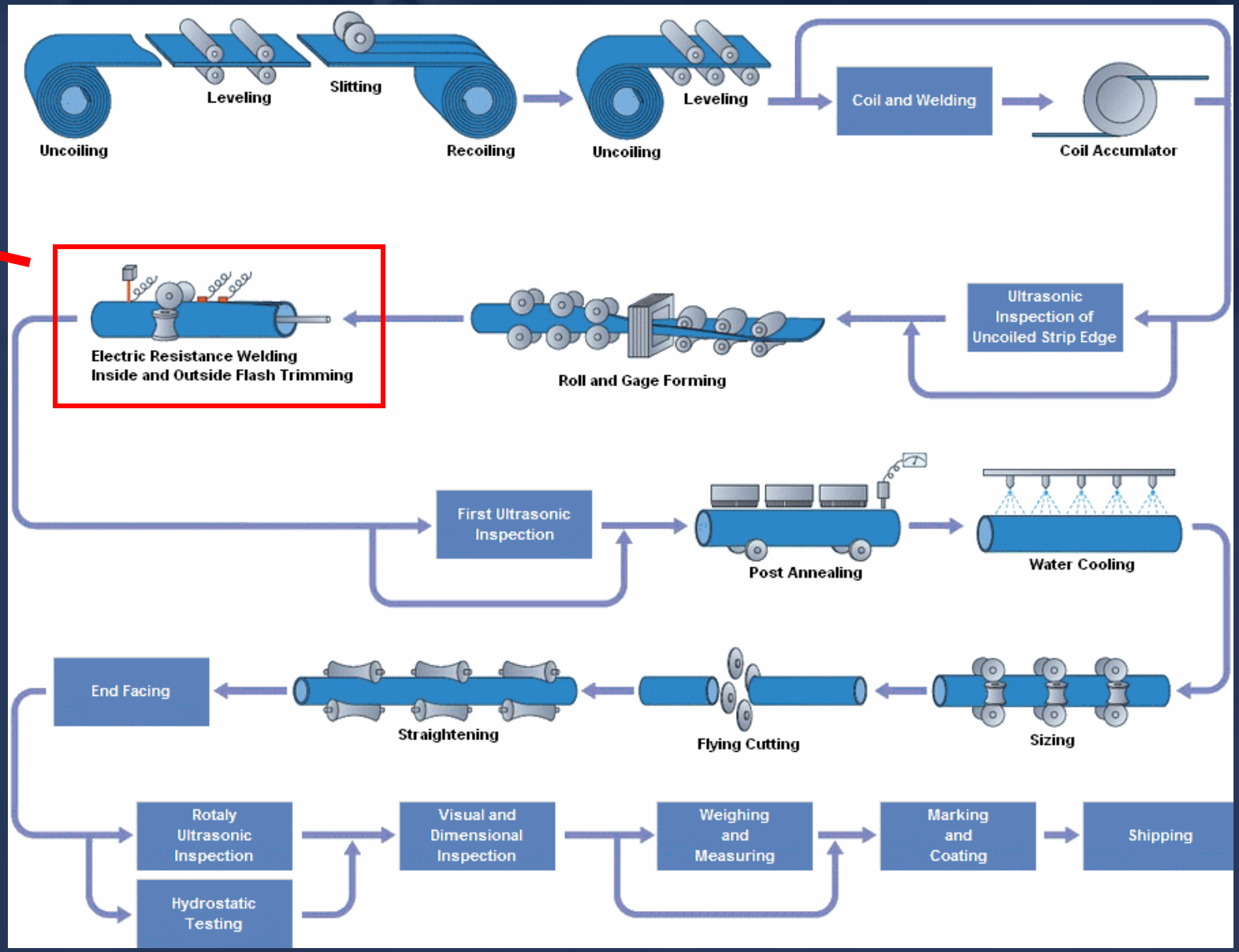


Tube Types and Manufacturing Processes – Welded Tube

Different welding methods:

- ERW- Electric Resistance Welding
- EFW- Electric Fusion Welding
- HFW- High-frequency welding
- SAW- Submerged Arc Welding

- Welding method may differ, flat product as the base material is constant
- After welding, tube can be drawn down to alter its size and shape
- Between each draw the tube is degreased, annealed and tagged for the next draw



Welded and Seamless Tube – ASTM Specs in Review

ASTM B338
Standard Specification for Seamless and Welded Titanium and Titanium Alloy Tubes for Condensers and Heat Exchangers

- Specification covers 28 grades of seamless and welded titanium alloy tubes for surface condensers, evaporators, and heat exchangers
- Seamless tube shall be made from hollow billet by any cold reducing or cold drawing process
- Welded tube shall be made from flat-rolled product by an automatic arc-welding process
    - The welded tube shall be sufficiently cold worked to final size in order to transform the cast weld microstructure into a typical equiaxed microstructure in the weld upon subsequent heat treatment.
- Welded tubing shall be tested using both a non-destructive electromagnetic test and an ultrasonic test method
- Seamless and welded/cold worked tubing shall be tested using an ultrasonic test method
- Welded tubing shall be tested with a hydrostatic or pneumatic test method
- Seamless tubing shall be tested with an electromagnetic or hydrostatic or pneumatic test method

Industrial Specifications

ASTM B 265 GR 1.. . . . . Sheet/Strip/Plate Commercially Pure 25 KSI min YS
AMS-T-9046.. . . . . .Sheet/Strip/Plate 6AL4V
ASTM B 265 GR 2.. . . . . Sheet/Strip/Plate Commercially Pure 40 KSI min YS
ASTM B 265 GR 3.. . . . . Sheet/Strip/Plate Commercially Pure 55 KSI min YS
ASTM B 265 GR 4.. . . . . Sheet/Strip/Plate Commercially Pure 70 KSI min YS
ASTM B 265 GR 5.. . . . . Sheet/Strip/Plate 6AL4V
ASTM B 265 GR 23.. . . . . Sheet/Strip/Plate 6AL4V Eli
ASTM B 861.. . . . . Seamless Pipe
ASTM B 862.. . . . . Welded Pipe
ASTM B 338 Grade 2.. . . . . Seamless and Welding Tubing Commercially Pure 40 KSI min YS
ASTM B 348 GR 1.. . . . . Bars and Billets Commercially Pure 25 KSI min YS
ASTM B 348 GR 2.. . . . . Bars and Billets Commercially Pure 40 KSI min YS
ASTM B 348 GR 3.. . . . . Bars and Billets Commercially Pure 50 KSI min YS
ASTM B 348 GR 4.. . . . . Bars and Billets Commercially Pure 70 KSI min YS
ASTM B 348 GR 5.. . . . . Bars and Billets 6AL4V
ASTM B 363.. . . . . .Fittings
ASTM B 367.. . . . . .Castings
ASTM B381.. . . . . Forgings
ASME SB 265.. . . . . .Sheet/Strip/Plate Commercially Pure and Alloyed
ASME SB 861.. . . . . .Seamless Pipe
ASME SB 862.. . . . . .Welded Pipe
ASME SB 348.. . . . . Bars and Billets Commercially Pure and Alloyed

Heat Treating of Titanium

Titanium and Titanium Alloys are heat treated in order to:

- Reduce residual stresses developed during fabrication (stress relieving)
- Produce an optimum combination of ductility, machinability and dimensional and structural stability (annealing)

Lead Times

- Not many manufacturers of Titanium Fittings
- Most fittings not in stock - 6 weeks
- Forged Flanges - 5 weeks
- Pipe depending on quantity and size avg. 6-8 weeks
- Stub Ends not in stock - 6 weeks
- Large Dia. Fittings above 12”NPS 6 – 8 weeks

All Fittings can be expedited for a faster turnaround Lead times subject to change

Industrial – Pipe and Fittings Product Look Up in Stratix

Metals:

Titanium	TI
Stainless Steel	SS
Nickel	NI

Pipe & Fitting Product Codes:

Welded Pipe	WP
Welded Tube	WT
Seamless Pipe	SP
Seamless Tube	ST
Stub Ends	SE
Flanges	FL
90 Elbows	EL
45 Elbows	EL
Tees	TE
Concentric Reducer	CR
Eccentric Reducer	ER

Titanium Grades	**Grade Codes:**
Grade 1 CP 4	1
Grade 2 CP 3	2
Grade 3 CP 2	3
Grade 4 CP 1	4
0.3-Mo-0.8Ni Grade 12	12
6Al-4V Grade 5	64
6Al-4V ELI Grade 23	64E
6Al-6V-2SN	662
6Al-2SN-4ZR-2MO	6242
6Al-2SN-4ZR-6MO	6246
7Al-4Mo	74
Grade 7	7
Nickel Alloys	
625	625
718	718
Waspaloy	WASP
Stainless Steel Alloys	
13-8 PH	13-8
15-5 PH	15-5
17-4 PH	17-4PH

Product Look Up Example:
Choose Warehouse = JAC (Jacksonville)
(* can be used in any field to find all listings)

Metal + Product = Form
i.e. Titanium + Seamless Pipe = TISP

Form selected, choose grade
i.e. Grade 2 = 2 (Titanium Seamless Pipe Grade 2)

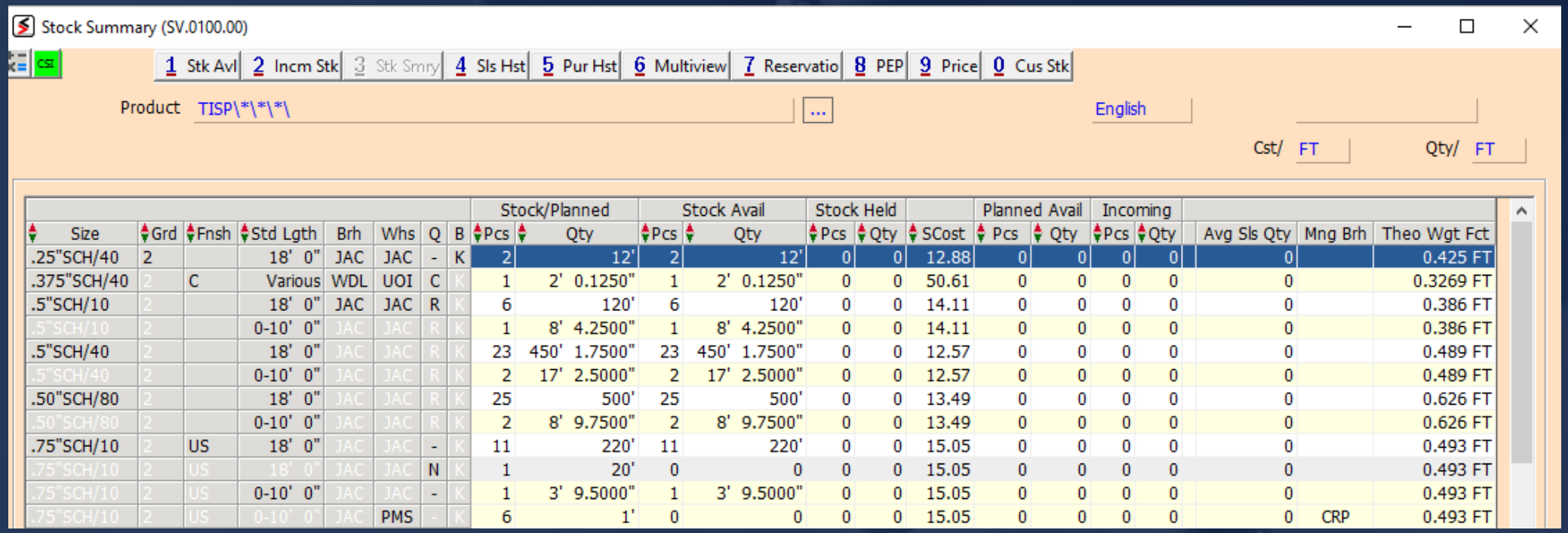
Grade selected, choose size
i.e. 2” SCH/40 = 2S40

Size selected, choose finish
i.e. R (Remnant), US (US), USR (US Remnant)
[If finish is not specified = *]

Full code: TISP\2\2”SCH/10*\\JAC

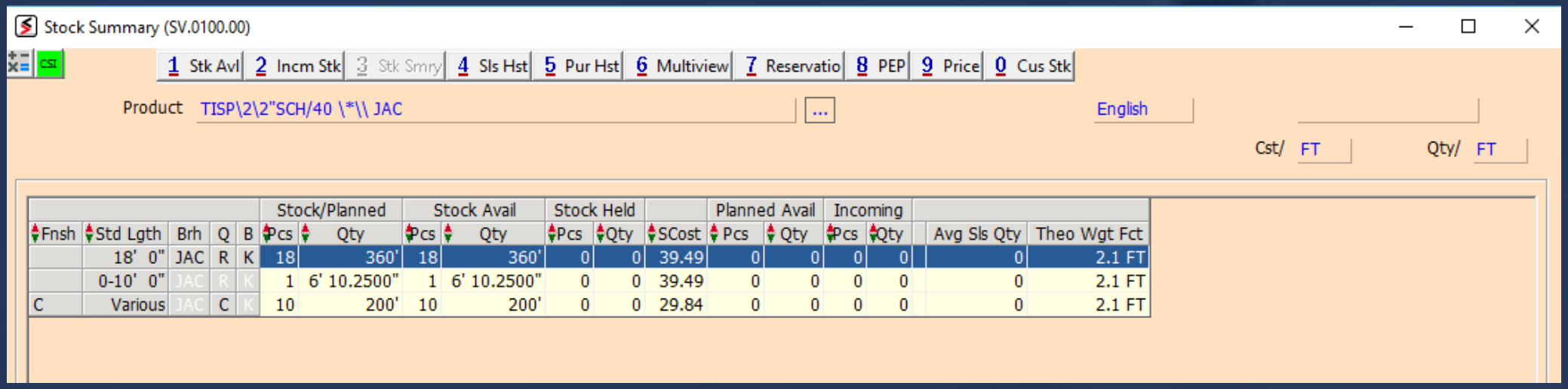
Industrial – General vs Specific Product Look Up in Stratix

General →



								Stock/Planned		Stock Avail		Stock Held			Planned Avail		Incoming				
Size	Grd	Fnsh	Std Lgth	Brh	Whs	Q	B	Pcs	Qty	Pcs	Qty	Pcs	Qty	SCost	Pcs	Qty	Pcs	Qty	Avg Sls Qty	Mng Brh	Theo Wgt Fct
.25"SCH/40	2		18' 0"	JAC	JAC	-	K	2	12'	2	12'	0	0	12.88	0	0	0	0	0		0.425 FT
.375"SCH/40	2	C	Various	WDL	UOI	C	K	1	2' 0.1250"	1	2' 0.1250"	0	0	50.61	0	0	0	0	0		0.3269 FT
.5"SCH/10	2		18' 0"	JAC	JAC	R	K	6	120'	6	120'	0	0	14.11	0	0	0	0	0		0.386 FT
.5"SCH/10	2		0-10' 0"	JAC	JAC	R	K	1	8' 4.2500"	1	8' 4.2500"	0	0	14.11	0	0	0	0	0		0.386 FT
.5"SCH/40	2		18' 0"	JAC	JAC	R	K	23	450' 1.7500"	23	450' 1.7500"	0	0	12.57	0	0	0	0	0		0.489 FT
.5"SCH/40	2		0-10' 0"	JAC	JAC	R	K	2	17' 2.5000"	2	17' 2.5000"	0	0	12.57	0	0	0	0	0		0.489 FT
.50"SCH/80	2		18' 0"	JAC	JAC	R	K	25	500'	25	500'	0	0	13.49	0	0	0	0	0		0.626 FT
.50"SCH/80	2		0-10' 0"	JAC	JAC	R	K	2	8' 9.7500"	2	8' 9.7500"	0	0	13.49	0	0	0	0	0		0.626 FT
.75"SCH/10	2	US	18' 0"	JAC	JAC	-	K	11	220'	11	220'	0	0	15.05	0	0	0	0	0		0.493 FT
.75"SCH/10	2	US	18' 0"	JAC	JAC	N	K	1	20'	0	0	0	0	15.05	0	0	0	0	0		0.493 FT
.75"SCH/10	2	US	0-10' 0"	JAC	JAC	-	K	1	3' 9.5000"	1	3' 9.5000"	0	0	15.05	0	0	0	0	0		0.493 FT
.75"SCH/10	2	US	0-10' 0"	JAC	PMS	-	K	6	1'	0	0	0	0	15.05	0	0	0	0	0	CRP	0.493 FT

Specific →



					Stock/Planned		Stock Avail		Stock Held			Planned Avail		Incoming			
Fnsh	Std Lgth	Brh	Q	B	Pcs	Qty	Pcs	Qty	Pcs	Qty	SCost	Pcs	Qty	Pcs	Qty	Avg Sls Qty	Theo Wgt Fct
	18' 0"	JAC	R	K	18	360'	18	360'	0	0	39.49	0	0	0	0	0	2.1 FT
	0-10' 0"	JAC	R	K	1	6' 10.2500"	1	6' 10.2500"	0	0	39.49	0	0	0	0	0	2.1 FT
C	Various	JAC	C	K	10	200'	10	200'	0	0	29.84	0	0	0	0	0	2.1 FT

Industrial – Mill Product Look Up in Stratix

Metals

Titanium	TI
Stainless Steel	SS
Nickel	NI

Mill Product Form Codes:

Round Bar	RD
Rec Bar	RC
Hex Bar	HX
Plate	PL
Sheet	SH
Wire	WR

Titanium Grades	Grade Codes:
Grade 1 CP 4	1
Grade 2 CP 3	2
Grade 3 CP 2	3
Grade 4 CP 1	4
0.3-Mo-0.8Ni Grade 12	12
6Al-4V Grade 5	64
6Al-4V ELI Grade 23	64E
6Al-6V-2SN	662
6Al-2SN-4ZR-2MO	6242
6Al-2SN-4ZR-6MO	6246
7Al-4Mo	74
Grade 7	7

Nickel Alloys

625	625
718	718
Waspaloy	WASP

Stainless Steel Alloys

13-8 PH	13-8
15-5 PH	15-5
17-4 PH	17-4PH

Product Look Up Example:
Choose Warehouse = ROC (Rockaway)
(* can be used in any field to find all listings)

Metal + Product = Form
i.e. Titanium + Round Bar = TIRD

Form selected, choose grade
i.e. Grade 5 = 64 (Titanium Round Bar Grade 5)

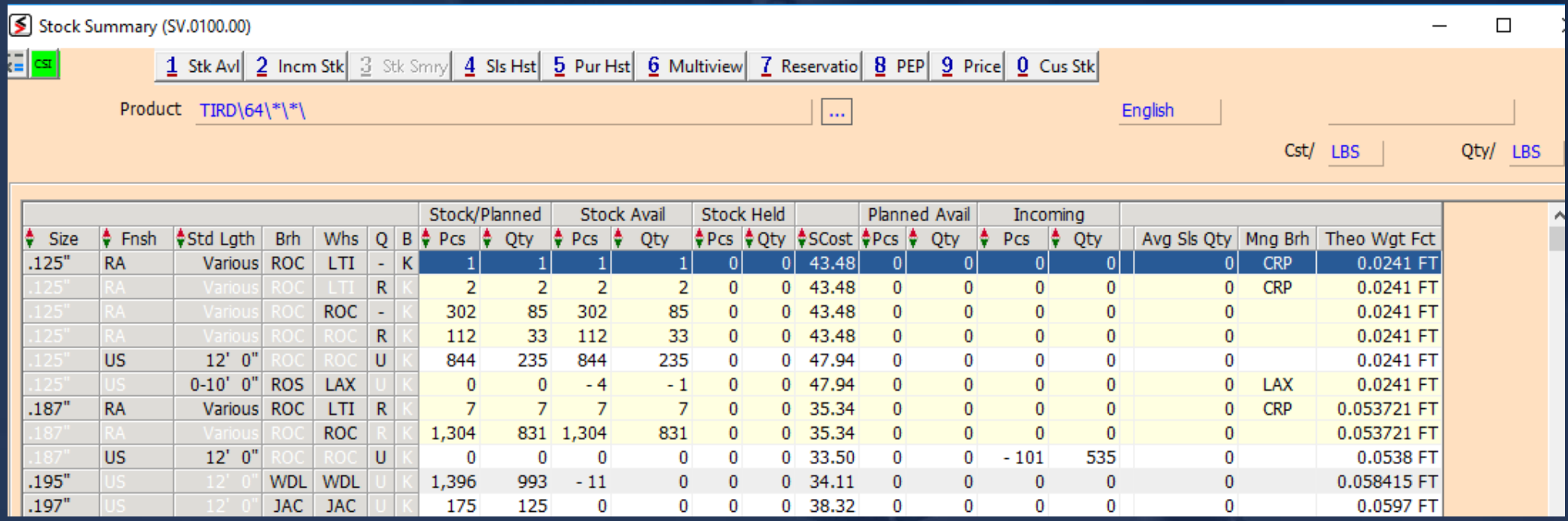
Grade selected, choose size
i.e. .250” = .250”

Size selected, choose finish
i.e. PG-US (Precision Ground US), R (Remnant), US (US), USR (US Remnant), etc.

Full code: TIRD\64\.250”\US\\ROC

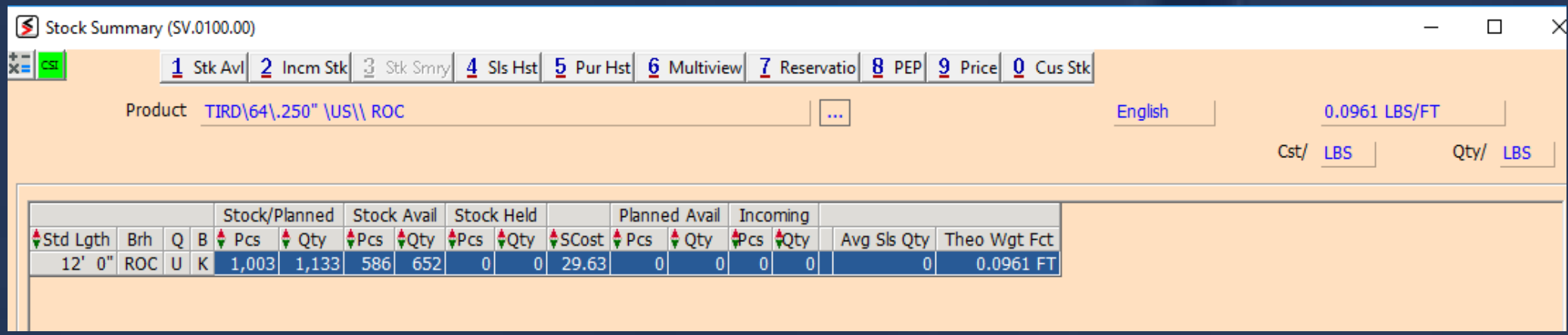
Industrial – General vs Specific Product Look Up in Stratix

General →



							Stock/Planned		Stock Avail		Stock Held			Planned Avail		Incoming				
Size	Fnsh	Std Lgth	Brh	Whs	Q	B	Pcs	Qty	Pcs	Qty	Pcs	Qty	SCost	Pcs	Qty	Pcs	Qty	Avg Sls Qty	Mng Brh	Theo Wgt Fct
.125"	RA	Various	ROC	LTI	-	K	1	1	1	1	0	0	43.48	0	0	0	0	0	CRP	0.0241 FT
.125"	RA	Various	ROC	LTI	R	K	2	2	2	2	0	0	43.48	0	0	0	0	0	CRP	0.0241 FT
.125"	RA	Various	ROC	ROC	-	K	302	85	302	85	0	0	43.48	0	0	0	0	0		0.0241 FT
.125"	RA	Various	ROC	ROC	R	K	112	33	112	33	0	0	43.48	0	0	0	0	0		0.0241 FT
.125"	US	12' 0"	ROC	ROC	U	K	844	235	844	235	0	0	47.94	0	0	0	0	0		0.0241 FT
.125"	US	0-10' 0"	ROS	LAX	U	K	0	0	- 4	- 1	0	0	47.94	0	0	0	0	0	LAX	0.0241 FT
.187"	RA	Various	ROC	LTI	R	K	7	7	7	7	0	0	35.34	0	0	0	0	0	CRP	0.053721 FT
.187"	RA	Various	ROC	ROC	R	K	1,304	831	1,304	831	0	0	35.34	0	0	0	0	0		0.053721 FT
.187"	US	12' 0"	ROC	ROC	U	K	0	0	0	0	0	0	33.50	0	0	- 101	535	0		0.0538 FT
.195"	US	12' 0"	WDL	WDL	U	K	1,396	993	- 11	0	0	0	34.11	0	0	0	0	0		0.058415 FT
.197"	US	12' 0"	JAC	JAC	U	K	175	125	0	0	0	0	38.32	0	0	0	0	0		0.0597 FT

Specific →



				Stock/Planned		Stock Avail		Stock Held			Planned Avail		Incoming			
Std Lgth	Brh	Q	B	Pcs	Qty	Pcs	Qty	Pcs	Qty	SCost	Pcs	Qty	Pcs	Qty	Avg Sls Qty	Theo Wgt Fct
12' 0"	ROC	U	K	1,003	1,133	586	652	0	0	29.63	0	0	0	0	0	0.0961 FT

Quick Quiz

1. What does NPS stand for?
   A. Normal Pipe Size
   B. National Pipe Size
   C. Nominal Pipe Size
   D. None of the above

2. Is tube normally used for structural purposes or normally used for transporting corrosive fluids?
   A. Structural
   B. Vessels (transporting corrosive fluids)
   C. Neither

3. Pipe Schedule is the term used to describe the _____ of a pipe
   A. Weight
   B. Metal type
   C. Thickness
   D. None of the above