

PIPE BODY PERFORMANCE PROPERTIES CATALOGUE

Pipe Body Performance Properties Catalogue

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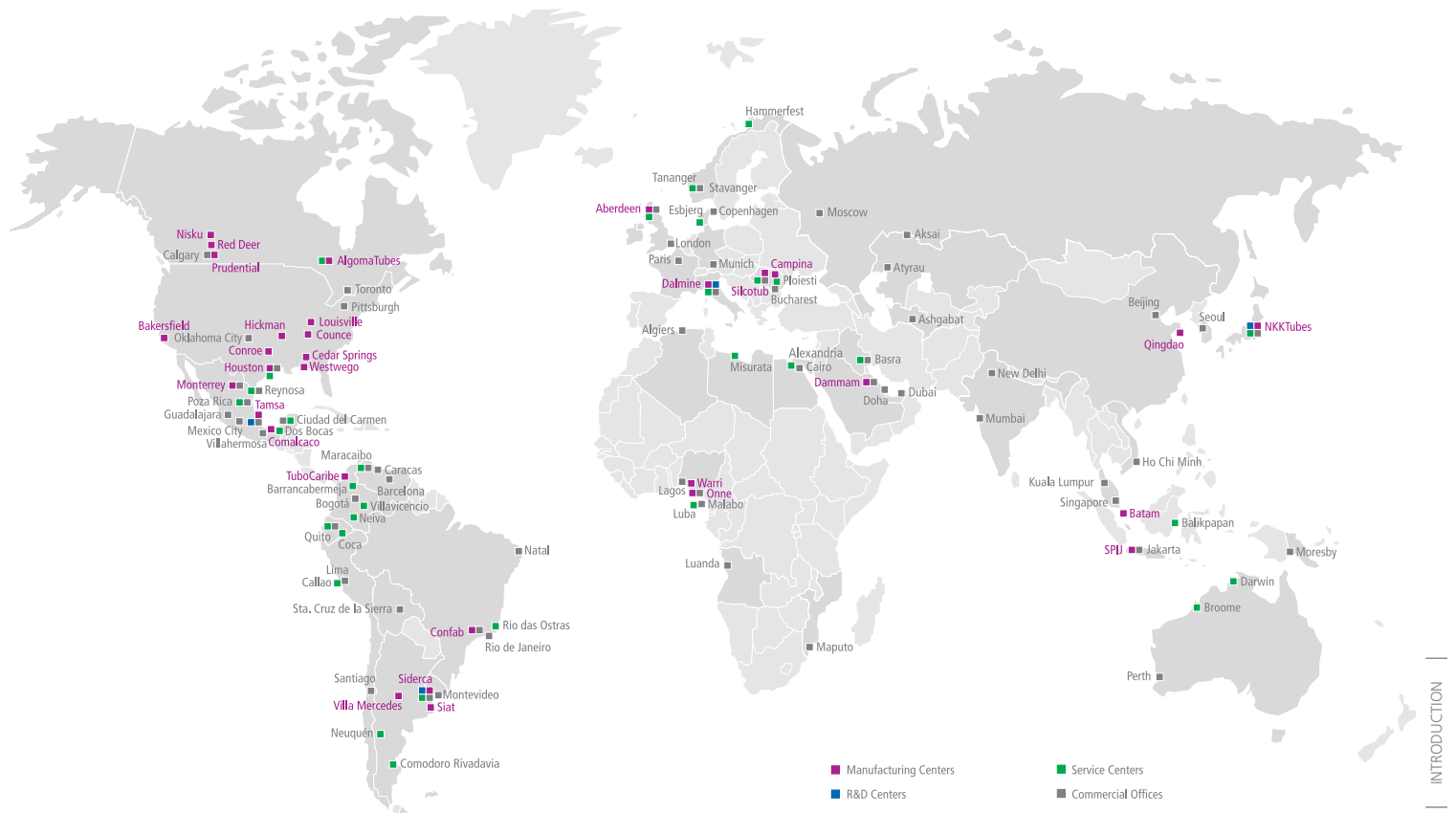
PROPRIETARY STEEL GRADES

A global leader

Tenaris is a leading supplier of tubes and related services for the world's energy industry and certain other industrial applications. Our mission is to deliver value to our customers through product development, manufacturing excellence, and supply chain management. Tenaris employees

around the world are committed to continuous improvement by sharing knowledge across a single global organization.

Tenaris has an annual production capacity of 6 million tons of steel tubes.



Steel Grades

Tenaris provides a complete range of steel grades for all kinds of oil and gas operations.

API STEEL GRADES

Tenaris manufactures all API steel grades including all the additional Supplementary Requirements (SR) and/or Product Specification Levels (PSLs).

PROPRIETARY STEEL GRADES

We manufacture steel grades with performance properties that surpass those indicated by the API.

Grades with enhanced performance properties

Tenaris manufactures the following proprietary steel grades for superior mechanical properties:

- High collapse
- Deep well
- Low temperature
- High ductility
- Thermal service

Grades for corrosive environments

To improve the corrosion resistance for the demanding conditions of particular oil and gas wells, Tenaris has developed a variety of proprietary steel grades that extend the life span of pipe products reducing corrosion rates:

- Sour service
- High collapse & Sour service
- Critical service
- Corrosion Resistant Alloys

API Steel Grades Manufactured by Tenaris

SMYS [ksi]	40	55	65	80	90	95	110	125
GROUP 1	H40	J55, K55		N80.1, N80.Q		R95		
GROUP 2			M65	L80.1, L80 13Cr	C90.1	T95.1	C110	
GROUP 3							P110	
GROUP 4								Q125.1

Seamless Proprietary Steel Grades Manufactured by Tenaris

SMYS [ksi]	35/45	55	60	70	75	80	90	95	100	110	125	135	140	150
SOUR SERVICE						TN 80S TN 80SS	TN 90S TN 90SS	TN 95S TN 95SS	TN 100SS	TN 110SS	TN 125SS			
MILD SOUR ENVIRONMENT								R95-S		P110-S				
HIGH COLLAPSE						TN 80HC		TN 95HC		TN 110HC	TN 125HC TN110HCY	TN125HCY	TN 140HC	
IMPROVED COLLAPSE						L80-IC N80-IC				P110-IC	Q125-IC P110-ICY	Q125-ICY		
HIGH COLLAPSE & SOUR SERVICE						TN 80HS		TN 95HS	TN 100HS	TN 110HS				
DEEP WELL												TN 135DW	TN 140DW	TN 150DW
CRITICAL SERVICE		TN 55CS		TN 70CS	TN 75CS	TN 80Cr3		TN 95Cr3		TN 110Cr3				
LOW TEMPERATURE		TN 55LT				TN 80LT		TN 95LT		TN110LT	TN 125LT			
HIGH DUCTILITY	TN 35HD TN 45HD		TN 60HD	TN 70HD										
THERMAL SERVICE		TN 55TH TN 55TL				TN 80TH TN 80TL								

Martensitic Stainless Steels for CO₂ Corrosion

SMYS [ksi]	80	85	95	110	125
MARTENSITIC	TN 80Cr13	TN 85Cr13	TN 95Cr13		
MODIFIED MARTENSITIC			TN 95Cr13M	TN 110Cr13M	
SUPER MARTENSITIC			TN 95Cr13S	TN 110Cr13S	TN 125Cr13S

Corrosion Resistant Alloys

ALLOY	ISO 13680 / API 5CRA GROUP AND CATEGORY	UNS NUMBER	YIELD STRENGTH [ksi] MIN.	TENSILE STRENGTH [ksi] MIN.	YIELD STRENGTH [ksi] MAX.	ELONGATION [%] MIN.	HARDNESS [HRC] MAX.
DUPLEX 22CR	2; 22-5-3	S31803	65	90	90	25	26
			140	160	145	9	38
SUPER DUPLEX 25CR	2; 25-7-4	S32750	80	105	110	20	28
			125	150	130	10	37
			140	160	145	9	38
ALLOY 28	3; 27-31-4	N08028	110	140	115	11	35
			125	150	130	10	37
ALLOY 29	Similar to 3; 27-31-4	NA	110	140	115	11	35
			125	150	130	10	37
G-3	4; 22-50-7	N06985	110	140	115	11	35
			125	150	130	10	37
C-276	4; 15-60-16	N10276	110	140	115	11	35
			125	150	130	10	37
ALLOY 825	4; 21-42-3	N08825	110	140	115	11	35
			125	150	130	10	37

Other alloy and grade combinations not listed will be considered on a case-by-case basis.

Tenaris has established alliances with Sandvik and PCC Energy Group to assist the oil and gas industry in this particular segment. We commercialize both companies'

seamless, stainless steel downhole production tubing and other high performance products.



Tenaris manufactures steel pipes in both API and proprietary steel grades for tougher requirements, which in turn require more stringent controls and testing.

Sour Service

Our Sour Service grades demonstrate improved resistance to Sulfide Stress Cracking through their steel microstructure and tight mechanical properties.

GRADES TO RESIST SOUR ENVIRONMENTS

Tenaris has developed sour service grades for oil and gas operations in sour environments. The grades in our Sour Service Series exhibit improved resistance to Sulfide Stress Cracking (SSC).

An unfavorable combination of H₂S dissolved in water, low pH, susceptible structure and high

loads, will cause cracks to occur in the steel pipe, which will propagate until failure occurs.

Our SS grades are designed to prevent Sulfide Stress Cracking (SSC) failures.

The improved resistance to SSC is obtained by the specific design of the steel microstructure and tight control of the mechanical properties.

Our SS steel grades are available in minimum yield strengths ranging from 80 ksi to 125 ksi.

Maximum Through-Wall Hardness Variation [HRC]

WT ≤ 0.500"	0.501" < WT < 0.749"	0.750" < WT < 0.999"	WT ≥ 1.000"
3.0	4.0	5.0	6.0

Mechanical Properties

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]	MAX. HARDNESS READING [HRC]	NACE METHOD A THRESHOLD [% SMYS]
TN 80SS	80	95	95	22	90
TN 90SS	90	105	100	24	90
TN 95SS	95	110	105	25	90
TN 100SS	100	115	105	27	85
TN 110SS	110	120	115	29	85
TN 125SS	125	140	130	36*	85**
TN 80S	80	95	95	22	85 (a)
TN 90S	90	105	100	24	85 (a)
TN 95S	95	110	105	25	85 (a)
R95-S	95	110	105	27	90
P110-S	110	125	125	32	85

Elongation according to API formula.

* Difference among three hardness readings within the same radial wall thickness line shall be ≤ 3 HRC

** Test solution B; initial pH 3,5; 3%H₂S

(a) Threshold, the product will be tested upon request.

Steel manufactured within strict parameters is used for sour service pipes.



GRADES TO RESIST MILD SOUR ENVIRONMENTS IN SHALE APPLICATIONS

R95-S and P110-S proprietary grades are API steel grades with improved resistance to SSC. They are available in minimum yield strength of 95 ksi and 110 ksi.

PARAMETERS FOR EXCELLENT SSC RESISTANCE

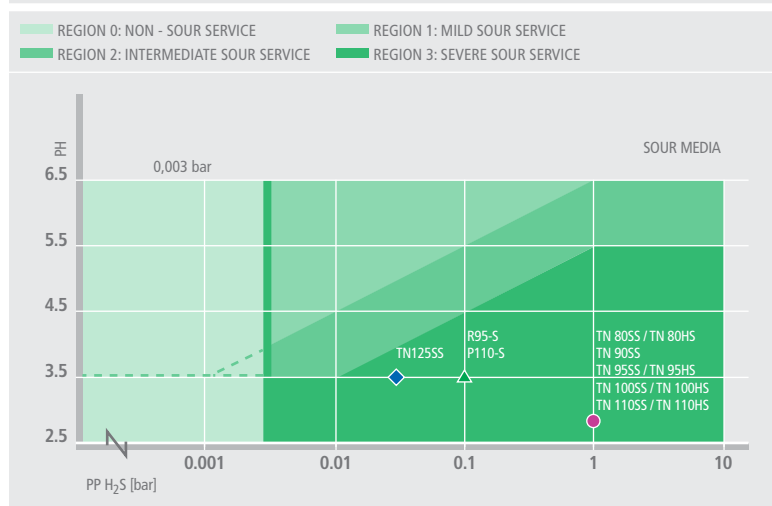
The steelmaking process must provide products with the following characteristics: Clean steel, with a very low level of residual elements and oxygen to minimize the quantity of inclusion and specifically oversized oxides.

- Chemistry design: a balanced chemical composition to ensure high hardenability.
- Together with adequate quenching, the chemistry ensures over 95% martensite.
- Fine-grained microstructure through rolling and heat treatment.
- Heat treatment ensuring a very fine microstructure and high final tempering temperature to promote a recovery process eliminating high-energy sites.



A simplified description of the Sulfide Stress Cracking Process: an unfavorable combination of H_2S dissolved in water, low pH, susceptible structure, high loads and low temperature, could cause cracking in the steel pipe in a short period of time.

NACE MR0175 - ISO 15156 CHART



Regions of environmental severity with respect to SSC of carbon and low alloy steels. Indicated points in the chart represent the testing condition for QA for the different sour service proprietary grades.

High Collapse

Our High Collapse Series (HC and IC) exhibit higher collapse resistance than that determined for API 5CT/ISO 11960 products.

PROPRIETARY STEEL GRADE FOR HIGH-PRESSURE SERVICE

Tenaris provides the High Collapse Series of proprietary steel grades for oil and gas wells where high external pressures are anticipated and collapse resistances higher than API are needed.

In addition to uniform external pressures, the reservoir can exert high pressures due to ground movements or saline strata, subjecting pipes to extreme localized external pressure.

Our HC Series is available in minimum yield strengths ranging from 80 ksi to 140 ksi. These products have higher collapse resistance than that determined for API 5CT/ISO 11960 products.

As an additional requirement they can be manufactured with controlled Yield Strength (HCY grades) in order to enhance the Internal Yield Pressure.

As an alternative to the HC series, we also manufacture the Improved Collapse grades (IC grades). They are an excellent cost-benefit solution for less severe applications.

IC grades are API steel grades with improved performance. They are available in minimum yield strength of 80 ksi, 110 ksi and 125 ksi. As an

additional requirement they can be manufactured with controlled Yield Strength (ICY grades) in order to enhance the Internal Yield Pressure.

PARAMETERS FOR EXCELLENT COLLAPSE PERFORMANCE

The collapse pressure of a pipe is related to the stiffness or rigidity of the cross section area along the pipe length. Dimensional and mechanical properties determine a true high collapse proprietary product. We pay strict attention to these variables when manufacturing our High Collapse Series.

DIMENSIONAL PROPERTIES

The dimensional properties of a high collapse pipe depend on three factors: external diameter to wall thickness ratio, ovality and eccentricity. Low ovality, low eccentricity and the maximum wall thickness for the maximum allowed pipe weight will give the best dimensional conditions for collapse resistance.

MECHANICAL PROPERTIES

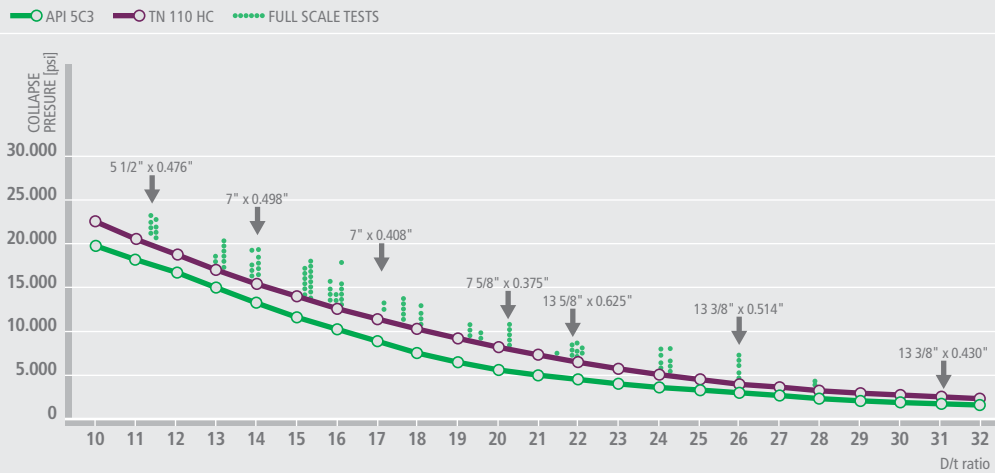
The mechanical properties that determine high collapse are yield strength and residual stresses. Strict control of the heat treatment process to ensure optimum yield strength distribution and minimal compressive residual stresses will lead to the maximum collapse properties of the pipe.

Our High Collapse Series consistently outperforms API TR 5C3 & ISO/TR 10400 collapse resistance for API steel grades.

Mechanical Properties

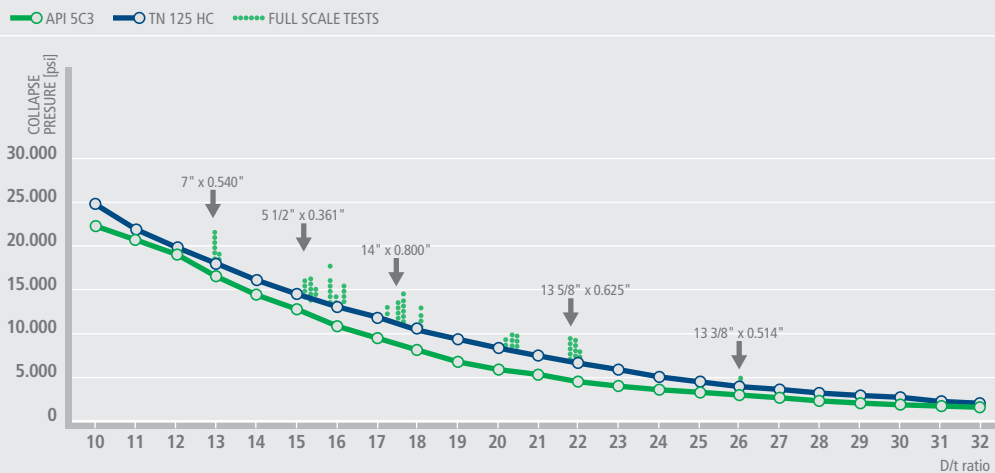
GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]
TN 80HC	80	110	100
TN 95HC	95	125	110
TN 110HC	110	140	125
TN 110HCY	125	140	130
TN 125HC	125	150	135
TN 125HCY	135	150	140
TN 140HC	140	170	150
L80-IC	80	95	95
N80-IC	80	110	100
P110-IC	110	140	125
P110-ICY	125	140	130
Q125-IC	125	150	135
Q125-ICY	135	150	140

COLLAPSE RESISTANCE vs. D/t

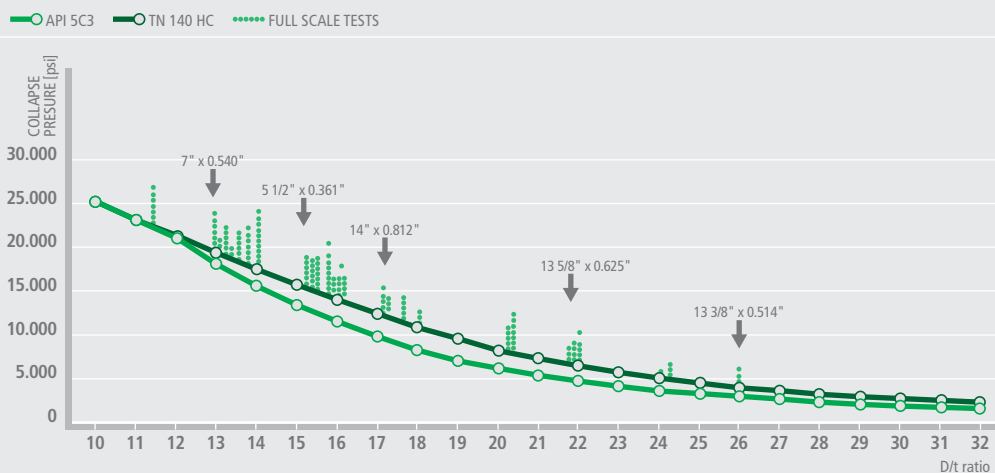


High Collapse grades are tested on each production unit as part of the manufacturing process.

COLLAPSE RESISTANCE vs. D/t



COLLAPSE RESISTANCE vs. D/t



High Collapse & Sour Service

The design of our High Collapse & Sour Service grades is based on the development of carbon low alloy steels. The manufacturing process is strictly controlled from steelmaking through rolling and heat treatment.

GRADES TO WITHSTAND HIGH PRESSURES IN CORROSIVE ENVIRONMENTS

Tenaris has developed the High Collapse & Sour Service steel grades to meet the needs of oil and gas operations in environments characterized by a combination of high external pressure and the probability of Sulfide Stress Cracking due to the presence of H₂S.

We offer our High Collapse & Sour Service grades in a range of yield strengths from 80 ksi to 125 ksi.

In addition to uniform external pressures, high pressures can be exerted by reservoir, ground

movements or saline strata, subjecting pipes to extreme localized external pressure.

Hydrogen sulfide dissolved in water may lead to Sulfide Stress Cracking. The factors that activate the cracking phenomena include: high stress state, high acidity levels, H₂S partial pressure and a susceptible microstructure.

The design of the High Collapse & Sour Service grades is based on the development of carbon low alloy steels. The manufacturing process is strictly controlled from steelmaking through rolling and heat treatment.

Our state-of-the-art manufacturing facilities provide strict cleanliness, physical and metallurgical controls as well as tight dimensional controls to ensure outstanding resistance to hydrogen Sulfide Stress Cracking under high external pressures.

Maximum Through-Wall Hardness Variation [HRC]

WT ≤ 0.500"	0.501" < WT < 0.749"	0.750" < WT < 0.999"	WT ≥ 1.000"
3.0	4.0	5.0	6.0

Mechanical Properties

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]	MAX. HARDNESS READING [HRC]	NACE METHOD A THRESHOLD [% SMYS]
TN 80HS	80	95	95	22	90
TN 95HS	95	110	105	25	90
TN 100HS	100	115	105	27	85
TN 110HS	110	125	125	29	85
TN 125HS	125	140	130	36*	85**

Elongation according to API formula.

* Difference among three hardness readings within the same radial wall thickness line shall be ≤ 3 HRC

** Test solution B; initial pH 3,5; 3% H₂S

Manufactured under strict chemical and process tolerances, HS pipes are used when a combination of pressure and corrosion is found in a well.



Deep Well

Our Deep Well Series shows high strength with good ductility and fracture toughness.

PROPRIETARY STEEL GRADES FOR THE DEEPEST WELLS

Tenaris offers its Deep Well (DW) proprietary steel grades for oil and gas operations demanding very high strength materials with good ductility and fracture toughness. As depth increases a combination of higher pressures and temperatures defines the use of high strength materials.

As yield strength increases, the general trend of carbon steel is to become more brittle. Brittle materials may fail under loads, even those below actual yield strength. We have developed DW grades that achieve this trade-off in addition to high yield strength, good ductility and fracture toughness.

Our DW proprietary steel grades are designed and heat-treated to maximize the combination of material toughness and high strength.

Our DW Series are available in minimum yield strengths ranging from 135 ksi to 150 ksi. To determine their material toughness, DW products are subjected to Charpy testing at specific temperatures.

Mechanical Properties

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]	MAX. HARDNESS VALUE [HRC]	MAX. HARDNESS READING [HRC]	CVN ABSORBED ENERGY MIN. AVERAGE FOR TRANSVERSE 10X10 MM (MIN INDIVIDUAL) [JOULES]			
						-45° C	-20° C	-10° C	0° C
TN 135DW	135	150	140	37	39	37 (31)	55 (44)	65 (52)	75 (60)
TN 140DW	140	155	150	39	40	32 (27)	50 (40)	60 (48)	70 (56)
TN 150DW	150	165	160	40	41	24 (21)	34 (31)	34 (31)	34 (31)



DW pipes are used for reaching extreme depths.

Critical Service

Our Critical Service grades offer a cost effective alternative in case of mild sweet corrosion.

AN ECONOMICAL ALTERNATIVE TO CRA

Tenaris provides oil and gas customers the Critical Service (CS) proprietary steel grades to resist corrosion produced under the presence of CO₂ where Corrosion Resistant Alloys are not economically justified.

Our offer of CS grades can be divided in two basic metallurgical designs, characterized by their Chromium content.

- 1% Cr steels are recommended for mild sweet corrosion, with low CO₂ partial pressures and medium to high water cut.
- 3% Cr steels, micro alloyed to increase strength, also tolerate a higher amount of CO₂ for milder

conditions than the ones requiring martensitic stainless steels (Cr13).

CS are carbon steels designed for improved performance in these environments. The performance can be further improved when combined with TenarisHydril premium connections or a proper inhibitor program.

CS grades are also being used in water injection applications, as a good improvement for carbon steels, although retaining some of their limitations. The corrosion film, although not producing complete protection, provides a higher resistance level when compared with standard API L80 grade, always in combination with a proper water treatment in order to provide controlled dissolved oxygen levels in the injected water.

1% Chromium Mechanical Properties

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]
TN 55CS	55	80	80
TN 70CS	70	100	95
TN 75CS	75	105	100

3% Chromium Mechanical Properties

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]	MAX. HARDNESS READING [HRC]
TN 80Cr3	80	95	95	23
TN 95Cr3	95	110	105	—
TN 110Cr3	110	140	125	—

Critical Service pipes are extensively used in mature fields, such as this one in Patagonia.



Low Temperature

Proprietary steel grades for Arctic regions and permafrost conditions.

Tenaris provides Low Temperature (LT) proprietary steel grades for oil and gas wells in very low temperature conditions, including Arctic regions, where highly effective ductility and fracture toughness are required.

When metals do not have adequate impact toughness and are exposed to low temperatures, they fail in a brittle manner.

Our LT Series grades are available in minimum yield strengths ranging from 55 ksi to 125 ksi. To determine their material toughness, LT products are subjected to Charpy testing at -45° C.

MAIN FEATURES OF THE LT SERIES

Normally as yield strength increases, steel toughness decreases. Our Low Temperature (LT) steel grades provide great toughness. The key factors for achieving this condition are the following:

- Clean steel, containing very low levels of residual elements and oxygen.
- Balanced chemical composition to endure high hardenability.
- Heat treatment process in combination with chemical composition design to ensure a very fine microstructure and high final tempering temperatures to promote the recovery process.

Mechanical Properties

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]	CVN ABSORBED ENERGY FOR TRANSVERSE 10X10 MM AT -45° C	
				MIN. INDIVIDUAL [JOULE]	MIN. AVERAGE [JOULE]
TN 55LT	55	90	95	30	40
TN 80LT	80	110	100	60	70
TN 95LT	95	110	105	50	60
TN 110LT	110	140	125	40	50
TN 125LT	125	150	135	30	40

Elongation according to API formula.

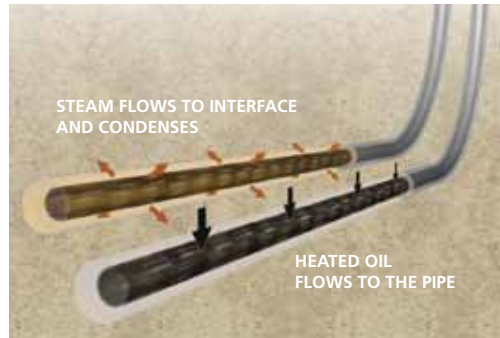


Tenaris Low Temperature (LT) Series pipes are specially designed to provide reliable service in cold environments.

Thermal Service

SAGD APPLICATION

Strains due to thermal loads in applications such as SAGD can be effectively managed with Tenaris's Thermal Service pipes.



Our Thermal Service pipes are the perfect choice for heavy oil applications.

GRADES FOR THERMAL APPLICATIONS

Tenaris has created Thermal Service (TH and TL) grades for applications where thermal loads are expected to develop due to working conditions, such as the ones found in Steam Assisted Gravity Drainage (SAGD) or Cyclic Steam Stimulation applications.

These grades are able to evenly accommodate the strains produced by thermal loads in the string and function in high temperature conditions.

Our TN 55TH and TN 80TH will additionally comply with improved toughness requirements.

Mechanical Properties

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]	MAX. HARDNESS VALUE [HRC]	MAX. HARDNESS READING [HRC]
TN 55TH	55	75	95	22	—
TN 80TH	80	95	95	21	22
TN 55TL	55	75	95	22	—
TN 80TL	80	95	95	21	22

Elongation according to API formula.

High Ductility

Our High Ductility (HD) grades provide good performance when plastic deformation is expected — typical applications of these expandable pipes range from casing patching to monobore completions.

Tenaris has developed optimized carbon alloys for expandable applications in oil and gas operations. This technology allows operators to implement slim well designs, reducing the number of strings of traditional designs.

These grades also have the capability to bring mature wells back to life by isolating undesirable perforations, isolating and repairing casing links and providing increased recompletion options.

Our HD Series grades are available in minimum yield strengths ranging from 35 ksi to 70 ksi.

Specified Mechanical Properties

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]	ELONGATION [%]	MAX. HARDNESS READING	YS/UTS MAX
TN 35HD	36	56	60	30	93 HRB	0.80
TN 45HD	45	65	63	30	95 HRB	0.85
TN 60HD	60	80	75	30	22 HRC	0.90
TN 70HD	70	90	82	22	22 HRC	0.92

Corrosion Resistant Alloys

Tenaris provides 13% Chromium grades and Corrosion Resistant Alloys (CRA) for oil and gas operations in highly corrosive environments where steel carbon pipe cannot be used.

PROPRIETARY STEEL GRADES FOR SEVERE CORROSIVE ENVIRONMENTS

In most conditions when the partial pressure of CO₂ is above 30 psi, carbon steels present high corrosion rates. Steel grades alloyed with high contents of Chromium (Cr), Molybdenum (Mo) and Nickel (Ni) are able to effectively resist corrosion.

We manufacture 13% Chromium tubular products in our mills. We supply Corrosion Resistant Alloys through our alliances with Sandvik and PCC Energy Group.

The development of ultra deep gas wells and enhanced recovery of oil and gas implies more aggressive environments, with higher downhole temperatures and corrosive gases.

13% CHROMIUM AND SUPER 13% CHROMIUM GRADES

Our group of 13%Cr alloys are martensitic stainless steels suitable for applications involving CO₂ rich environments. 13CrS can be used in mild sour conditions. 13CrM and 13CrS have better performance with regards to corrosion resistance and excellent toughness.

CORROSION RESISTANT ALLOYS (ABOVE 13%Cr)

Tenaris has established alliances with Sandvik and PCC Energy Group to assist the oil and gas industry in this particular segment. We commercialize both companies' seamless, stainless steel downhole production tubing and other high performance products.

Sandvik and PCC Energy Group manufacture CRA products according to the API 5CRA and ISO 13680 international standards. These CRA materials are needed when there is a combination of the following factors: Presence of CO₂, Presence of H₂S, Low pH, Chlorides and High temperature.

Mechanical Properties & Chemical Composition

GRADE	MIN. YIELD STRENGTH [ksi]	MAX. YIELD STRENGTH [ksi]	MIN. TENSILE STRENGTH [ksi]	MAX. HARDNESS VALUE [HRC]	CHEMICAL COMPOSITION [W/T%]			
					C MAX.	Cr	Ni	Mo
TN 80Cr13	80	95	95	23	0.22	13	—	—
TN 85Cr13	85	100	105	24	0.22	13	—	—
TN 95Cr13	95	110	110	27	0.22	13	—	—
TN 95Cr13M	95	110	105	28	0.05	13	4	1
TN 110Cr13M	110	130	115	31	0.05	13	4	1
TN 95Cr13S	95	110	105	29	0.03	13	5	2
TN 110Cr13S	110	130	115	31	0.03	13	5	2
TN 125Cr13S	125	145	130	37	0.05	14	7	2.5

Elongation according to API formula.

Corrosion Resistant Alloys

ALLOY	ISO 13680 / API 5CRA GROUP AND CATEGORY	UNS NUMBER	YIELD STRENGTH [ksi] MIN.	TENSILE STRENGTH [ksi] MIN.	YIELD STRENGTH [ksi] MAX.	ELONGATION [%] MIN.	HARDNESS [HRC] MAX.
DUPLEX 22CR	2; 22-5-3	S31803	65	90	90	25	26
			140	160	145	9	38
SUPER DUPLEX 25CR	2; 25-7-4	S32750	80	105	110	20	28
			125	150	130	10	37
			140	160	145	9	38
ALLOY 28	3; 27-31-4	N08028	110	140	115	11	35
			125	150	130	10	37
ALLOY 29	Similar to 3; 27-31-4	NA	110	140	115	11	35
			125	150	130	10	37
G-3	4; 22-50-7	N06985	110	140	115	11	35
			125	150	130	10	37
C-276	4; 15-60-16	N10276	110	140	115	11	35
			125	150	130	10	37
ALLOY 825	4; 21-42-3	N08825	110	140	115	11	35
			125	150	130	10	37

Other alloy and grade combinations not listed will be considered on a case-by-case basis.

Research & Development

Decades of investigation using the latest methods provide the key to meeting the tubular goods challenges of the future.

INNOVATION

At Tenaris, we aim to raise the quality and range of our products, by accompanying our customers and analyzing new trends in the sectors where they operate.

For major global companies that have moved beyond traditional operations to explore new fields in complex environments, Tenaris offers a complete partnership, rich in options and solutions.

Tenaris's R&D centers are a fundamental component in Tenaris's approach to serving the customer. An extensive knowledge of metallurgy and materials behavior complements our experience in the field.

The R&D team is responsible for developing our premium connections. We have developed a wide range of proprietary steel grades to withstand high pressure and temperatures as well as sour conditions. We have contributed to the development of specialized products for deep and ultra-deep water projects around the world.

More than 200 scientists and engineers, more than half of whom hold PhDs or Master's degrees work in our centers worldwide. Their dedication to continuous improvement and product innovation has already served complex E&P projects and high performance mechanical and structural applications.

Our global network of R&D centers collaborates with more than 60 universities and research institutions worldwide that conduct basic and applied research.

TENARIS R&D CENTERS

R&D centers are located in the cities of Veracruz, Campana, Dalmine and Kawasaki. With an aligned agenda, they develop new products and innovate manufacturing processes. The main research areas are:

- Advanced metallurgy
- Advanced computer modelling of processes and products
- Fracture mechanics and structural integrity
- Full-scale testing of tubular products and premium connections
- Advanced corrosion testing
- Nanotechnology
- Non-destructive testing and optical measurement
- Welding metallurgy and technology

Our R&D Centers carry out testing on new products and innovative manufacturing processes.



Manufacturing Centers

Our production centers offer a significant range of tubular products for customers worldwide.

Tenaris is able to reach oil and gas customers worldwide through its global network of manufacturing centers.

We supply a full range of high quality casing and tubing for use in all types of oil and gas drilling and well completion activities.

Through our manufacturing centers we offer steel pipe products in a wide range of specifications, that vary in diameter, length, thickness, finishing, steel grades, threading and coupling.

Tenaris Manufacturing Centers

COUNTRY	PRODUCTION UNIT	SIZE AVAILABILITY	TYPE
USA	Hickman	2 3/8" - 16"	Welded
	Conroe	4 1/2" - 8 5/8"	Welded
	Counce	4 1/2" - 8 5/8"	Welded
	Downhole Center	3/4" - 5"	Coiled
	Subsea Center	3/8" - 2"	Coiled
CANADA	Algoma	4 1/2" - 9 5/8"	Seamless
	Prudential	2 3/8" - 12 3/4"	Welded
MEXICO	Tamsa	2 3/8" - 16"	Seamless
COLOMBIA	TuboCaribe	2 3/8" - 8 5/8"	Welded
ROMANIA	Silcotub	1.05" - 6 1/4"	Seamless
ITALY	Dalmine	5 1/2" - 24 1/2"	Seamless
JAPAN	NKKTubes	2 3/8" - 16"	Seamless
ARGENTINA	Siderca	1.315" - 10 3/4"	Seamless
	Siat	4 1/2" - 20"	Welded
BRAZIL	Confab	5 1/2" - 20"	Welded
INDONESIA	SPIJ	2 3/8" - 13 5/8"	Seamless

Tenaris offers finishing line centers not included in this list.



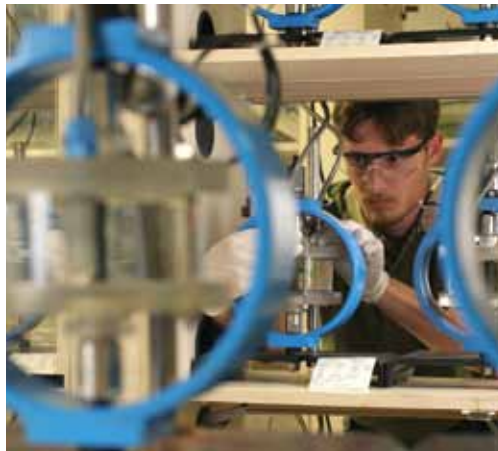
The quality and reliability of our products are guaranteed by our state-of-the-art facilities and internal quality procedures.

Product Properties Control

Tenaris pipes are manufactured in Tenaris's global network of production facilities with its consistent quality management system.

Tenaris final goal is to satisfy customer needs with regard to field product performance. For this purpose, a global network of laboratories is fully dedicated and equipped with the latest technology.

—
We test and control our products in specially designed equipment to assure optimum performance.



The quality management system for production control is complemented by full-scale laboratories for certification and development activities. Such facilities are crucial for high risk oil and gas projects, like HP/HT, Sour Service and Casing while Drilling.

Online Non-Destructive Testing inspection is another key factor for the structural integrity and performance of our products. Therefore, Tenaris is continuously investing in advanced technology including ultrasonic testing and pipe end automatic measurement profiling.

Tenaris annual testing activities:

- 25,000 tensile tests
- 24,000 hardness tests
- 29,000 impact tests

For our proprietary High Collapse grades, we boast a unique full-testing capacity of 4,200 tests per year.



In order to provide reliable Sour Service grade pipes, we have developed testing capacity to verify quality at our mills worldwide, carrying out 8,800 Sulfide Stress Cracking tests per year.

On a different note, for new applications such as Drilling with Casing Tenaris has been extensively testing its pipes and connections in its own laboratories in order to obtain their S-N curves 900 Fatigue tests performed per year.

We maintain an important level of collaboration with independent technical bodies, actively participating in the definition of how material properties are tested throughout the industry.

Customer representatives and Third Party Inspectors (TPIs) around the world regularly visit our mills to follow specific manufacturing and testing activities.

We guarantee the reliability of our products for even the most challenging operations by systematically verifying their material properties at the mill.



Accessories: a full package

Tenaris works alongside its customers to provide the correct package of OCTG accessories for each project.

COMPLETE TUBULAR SERVICE

We supply a full range of TenarisHydril premium connections, along with the pipe body for tubular accessories to complement our offer for oil and gas drilling operations. We are able to provide threading services for non-tubular accessories and devices no matter where our customers are operating.

Our worldwide network of manufacturing facilities, finishing facilities and licensed threading shops are dedicated to serving our customers, regardless of their location or the complexity of the conditions they face in the field.

We work in partnership with customers and original equipment manufacturers to meet the accessory needs of each oil and gas customer. Our supply chain offers reliability and flexibility in accordance with our customers' production schedules.

DOPELESS® TECHNOLOGY

This technology can be applied to tubular accessories and devices. Our unique dope-free technology is a fully engineered solution, applied after pipe threading in a completely controlled industrial process.

Tenaris offers the following accessories:

TUBULAR ACCESSORIES

Accessories such as pup joints, crossovers, couplings, blast joints, or plugs, among others, produced from a machined tube, hollow or bar. Pipe body and premium threads are supplied on a worldwide basis. Tenaris's capabilities as a world-class steel manufacturer allow us to provide tubular accessories manufactured in our proprietary steel grades, assuring steel uniformity along the full string.

NON-TUBULAR ACCESSORIES

Tenaris manufactures centralizers, stop collars and thread protectors, among others. We can also supply cementing equipment in partnership with recognized accessory suppliers.



Tenaris provides a tailored package for each customer with accessories as required.

Our website provides useful information and online tools about our OCTG offer.

We offer visitors to our website detailed technical information about proprietary steel grades for more demanding operations and API steel grades for general applications.

Visitors to the site can contact our Technical Sales team to request additional information about our OCTG and premium connections offer using the “Request technical information” function.

CASING AND TUBING PERFORMANCE DATA

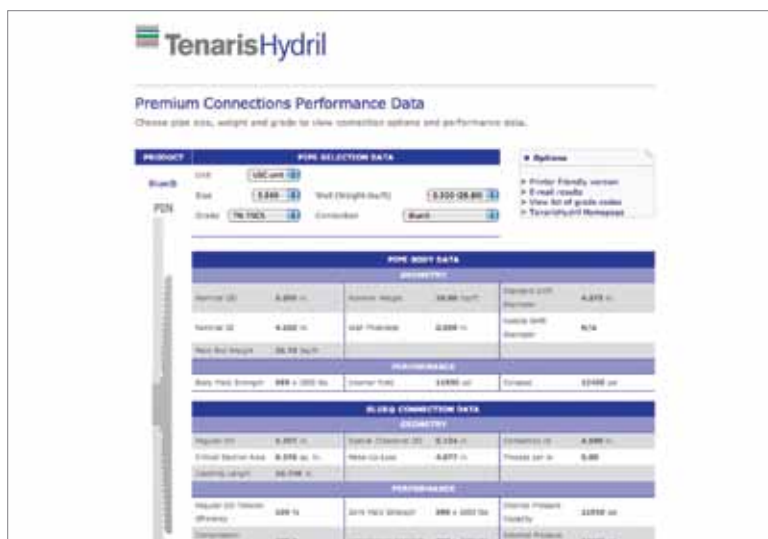
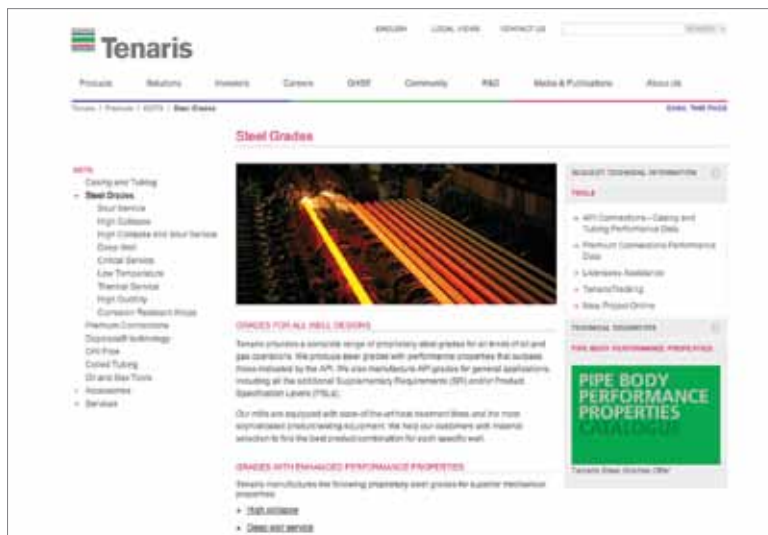
By clicking on the Casing and Tubing Performance Data tool, customers can search for specific geometry and performance data of pipes and API connections by choosing a particular pipe size, wall thickness and steel grade. Results can be printed or e-mailed.

PREMIUM CONNECTIONS PERFORMANCE DATA

This tool provides information about the geometry, performance, make-up torques, and blanking dimensions of TenarisHydril premium connections, by choosing a particular pipe size, weight and grade. Illustrations for each product show each connection profile's main characteristics.

LICENSEES ASSISTANCE

From our website, users can also access information about our worldwide network of licensee threading and repair shops. Customers can identify the workshop that is closest to their specific operation through an online tool.



www.tenaris.com

Dimensional Range & Pipe Identification

Dimensional Range

API Steel Grades Manufactured by Tenaris

API STEEL GRADES BY GROUPS		OUTSIDE DIAMETER [IN]																							
Group	Grade	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Group 1	H40	1.05 TO 24 1/2																							
	J55	1.05 TO 24 1/2																							
	K55				4 1/2 CASING TO 24 1/2																				
	N80.1, N80.Q	1.05 TO 24 1/2																							
	R95				4 1/2 CASING TO 24 1/2																				
Group 2	M65				4 1/2 CASING TO 24 1/2																				
	L80.1	1.05 TO 24 1/2																							
	L80 13Cr			2 3/8 TO 16																					
	C90.1	1.05 TO 16																							
	T95.1	1.05 TO 16																							
	C110				4 1/2 CASING TO 24 1/2																				
Group 3	P110	1.05 TO 24 1/2																							
Group 4	Q125.1				4 1/2 CASING TO 24 1/2																				

API steel grades can be seamless or welded.

Tenaris Proprietary Steel Grades

PROPRIETARY STEEL GRADES BY SERIES		OUTSIDE DIAMETER [IN]																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Sour Service				2 3/8 TO 16																					
High Collapse						4 1/2 TO 16																			
Improved Collapse						4 1/2 TO 20																			
High Collapse & Sour Service						4 1/2 TO 16																			
Deep Well						4 1/2 TO 16																			
Critical Service CS				2 3/8 TO 7																					
Critical Service Cr3				2 3/8 TO 9 5/8																					
Low Temperature				2 3/8 TO 16																					
High Ductility						4 1/2 TO 16																			
Thermal Service						4 1/2 TO 16																			
Martensitic				2 3/8 TO 16																					

All of the above proprietary steel grades are seamless.

Pipe Identification

Color code for API steel grades

STEEL GRADES	COUPLING (**)			PIPE BODY				COLOR CODE
	Body	Bands		Bands				
		1 st.	2 nd.	1 st.	2 nd.	3 rd.	4 th.	
H40 (*)	Black	—	—	Black	—	—	—	
J55 tubing	Bright green	—	—	Bright green	—	—	—	
J55 casing	Bright green	White	—	Bright green	—	—	—	
K55	Bright green	—	—	Bright green	Bright green	—	—	
M65	Red	Brown	—	Bright green	Blue	—	—	
N80.1	Red	—	—	Red	—	—	—	
N80.Q	Red	Green	—	Red	Bright green	—	—	
L80.1	Red	Brown	—	Red	Brown	—	—	
L80 13Cr	Red	Yellow	—	Red	Brown	Yellow	—	
C90.1	Purple	—	—	Purple	—	—	—	

NOTE: Steel grade information is available at www.tenaris.com

(*) Optional: bare

(**) Special-clearance coupling also has a black band.

Color code for API steel grades

STEEL GRADES	COUPLING (**)			PIPE BODY				COLOR CODE
	Body	Bands		Bands				
		1 st.	2 nd.	1 st.	2 nd.	3 rd.	4 th.	
R95	Brown	—	—	Brown	—	—	—	
T95.1	Silver	—	—	Silver	—	—	—	
P110	White	—	—	White	—	—	—	
C110	White	Brown	Brown	White	Brown	Brown	—	
Q125.1	Orange	—	—	Orange	—	—	—	

(**) Special-clearance coupling also has a black band.

Color code for proprietary steel grades

STEEL GRADES	COUPLING			PIPE BODY			COLOR CODE
	Body	Bands		Bands			
		1 st.	2 nd.	1 st.	2 nd.	3 rd.	
R95-S	Brown	—	—	Brown	—	—	
P110-S	White	—	—	White	—	—	
TN 80S	Pink	Blue	—	Blue	Pink	—	
TN 90S	Pink	Purple	—	Purple	Pink	—	
TN 95S	Pink	Orange	Sky Blue	Orange	Sky Blue	Pink	
TN 80SS	Brown	Blue	—	Blue	Brown	—	
TN 90SS	Brown	Purple	—	Purple	Brown	—	
TN 95SS	Brown	Orange	Sky Blue	Orange	Sky Blue	Brown	
TN 100SS	Brown	Silver	—	Silver	Brown	—	
TN 110SS	Brown	Pink	Yellow	Pink	Yellow	Brown	
TN 125SS	Brown	Blue	Blue	Blue	Blue	Brown	
TN 80HC	White	Blue	—	Blue	White	—	
TN 95HC	White	Orange	Sky Blue	Orange	Sky Blue	White	
TN 110HC TN 110HCY	White	Pink	Yellow	Pink	Yellow	White	

Color code for proprietary steel grades

STEEL GRADES	COUPLING			PIPE BODY			COLOR CODE
	Body	Bands		Bands			
		1 st.	2 nd.	1 st.	2 nd.	3 rd.	
TN 125HC TN 125HCY	White	Blue	Blue	Blue	Blue	White	
TN 140HC	White	Brown	—	Brown	White	—	
L80-IC	Red	Brown	—	Red	Brown	—	
P110-IC P110-ICY	White	—	—	White	—	—	
Q125-IC Q125-ICY	Orange	—	—	Orange	—	—	
TN 80HS	Silver	Blue	—	Blue	Silver	—	
TN 95HS	Silver	Orange	Sky Blue	Orange	Sky Blue	Silver	
TN 100HS	Silver	—	—	Silver	Silver	—	
TN 110HS	Silver	Pink	Yellow	Pink	Yellow	Silver	
TN 135DW	Sky Blue	Blue	Brown	Blue	Brown	Sky Blue	
TN 140DW	Sky Blue	Brown	—	Brown	Sky Blue	—	
TN 150DW	Sky Blue	Red	Red	Red	Red	Sky Blue	
TN 55CS	Green	Pink	—	Pink	Green	—	
TN 70CS	Green	Sky Blue	—	Sky Blue	Green	—	

Color code for proprietary steel grades

STEEL GRADES	COUPLING			PIPE BODY			COLOR CODE
	Body	Bands		Bands			
		1 st.	2 nd.	1 st.	2 nd.	3 rd.	
TN 75CS	Green	Gray	Gray	Gray	Gray	Green	
TN 80Cr3	Green	Blue	—	Blue	Green	—	
TN 95Cr3	Green	Orange	Sky Blue	Orange	Sky Blue	Green	
TN 110Cr3	Green	Pink	Yellow	Pink	Yellow	Green	
TN 55LT	Violet	Pink	—	Pink	Violet	—	
TN 80LT	Violet	Blue	—	Blue	Violet	—	
TN 95LT	Violet	Orange	Sky Blue	Orange	Sky Blue	Violet	
TN 110LT	Violet	Pink	Yellow	Pink	Yellow	Violet	
TN 125LT	Violet	Blue	Blue	Blue	Blue	Violet	
TN 35HD (*)	—	—	—	Pink	Pink	Yellow	
TN 45HD (*)	—	—	—	Yellow	Blue	Yellow	
TN 60HD (*)	—	—	—	Pink	Yellow	—	
TN 70HD (*)	—	—	—	Sky Blue	Yellow	—	
TN 55TH	Red	Pink	—	Pink	Red	—	

(*) Steel grade for special application.

Color code for proprietary steel grades

STEEL GRADES	COUPLING			PIPE BODY			COLOR CODE
	Body	Bands		Bands			
		1 st.	2 nd.	1 st.	2 nd.	3 rd.	
TN 80TH	Red	Blue	—	Blue	Red	—	
TN 55TL	Gray	Pink	—	Pink	Gray	—	
TN 80 TL	Gray	Blue	—	Blue	Gray	—	
TN 80Cr13	Gray	Red	—	Gray	—	Red	
TN 85Cr13	Gray	Purple	—	Gray	—	Purple	
TN 95Cr13	Gray	Brown	—	Gray	—	Brown	
TN 95Cr13M	Light Brown	Orange	Sky Blue	Orange	Sky Blue	Light Brown	
TN 110Cr13M	Light Brown	Pink	Yellow	Pink	Yellow	Light Brown	
TN 95Cr13S	Bright Green	Orange	Sky Blue	Orange	Sky Blue	Bright Green	
TN 110Cr13S	Bright Green	Pink	Yellow	Pink	Yellow	Bright Green	
TN 125Cr13S	Bright Green	Blue	Blue	Blue	Blue	Bright Green	

Pipe Marking

Marking API Threaded Pipe



HARD STAMP

- **TAT:** TenarisAlgoma
- **5CT:** API specification
- **8/1:** 2008 Q1
- **53.5:** Mass designation
- **P:** Grade
- **S:** Seamless

PIPE STENCIL

- Manufacturer
- Manufacturing Specification
- API Monogram
- Date of manufacture
- OD
- Mass designation
- Grade
- Process of manufacture
- Hydrostatic Test Pressure
- Thread Type
- Drift Diameter if Alternative drift
- Customer Brand
- Heat Number
- Pipe Number
- Length (mts)

Marking Premium Threaded Pipe



HARD STAMP/STENCIL COUPLING

- **TTM:** TenarisTamsa
- **5CT:** API specification
- **0124:** API License Number
- **4/1:** 2004 Q1
- **SF:** Special end-finish
- **53.5:** Mass designation
- **P:** Grade
- **S:** Seamless
- **TSH MS:** Thread Type

PIPE STENCIL

- Manufacturer
- Manufacturing Specification
- API Monogram
- Date of manufacture
- Special end-finish
- OD
- Mass designation
- Grade
- Process of manufacture
- Hydrostatic Test Pressure
- Drift Diameter if Alternative drift
- Thread Type
- Customer Brand / PO number
- Heat Number
- Pipe Number
- Length (mts)

NOTE: THE PIPE MARKING REPRESENTED IS ONLY AN EXAMPLE AND DOES NOT INCLUDE NEITHER COLOR CODING NOR BANDS. SOME DIFFERENCES MAY BE OBSERVED DEPENDING ON WHERE PRODUCTS ARE MANUFACTURED.

Tenaris mill marking code

PRODUCTION UNIT	STENCILED WHITE INK	HARD STAMP
SIDERCA ARGENTINA	Tenaris SD	TSD
SIAT VA ARGENTINA	Tenaris VA	TVA
CONFAB BRAZIL	Tenaris CF	TCF
TUBO CARIBE COLOMBIA	Tenaris TC	TTC
TAMSA MEXICO	Tenaris TM	TTM
ALGOMA CANADA	Tenaris AT	TAT
PRUDENTIAL CANADA	Tenaris PS	TPS
CONROE USA	Tenaris CR	TCR
HICKMAN USA	Tenaris HK	THK
COUNCE USA	Tenaris CN	TCN
DALMINE ITALY	Tenaris DL	TDL
SILCOTUB ROMANIA	Tenaris SL	TSL
NKKTUBES JAPAN	Tenaris NKKtubes	TNK
SPIJ INDONESIA	Tenaris SPIJ	TIJ

Pipe Body Performance Properties Data

API Steel Grades

API Steel Grades | Tubing | 4" TO 4 1/2 "

SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH					
40 ksi	55 ksi	80 ksi	90 ksi	95 ksi	110 ksi	40 ksi	55 ksi	80 ksi	90 ksi	95 ksi	110 ksi	40 ksi	55 ksi	80 ksi	90 ksi	95 ksi	110 ksi
Steel grades						Steel grades						Steel grades					
H40	J55	N80.1, N80.Q N80 Q L80.1 L80 13Cr	C90.1	T95.1	C110 P110	H40	J55	N80.1, N80.Q N80 Q L80.1 L80 13Cr	C90.1	T95.1	C110 P110	H40	J55	N80.1, N80.Q N80 Q L80.1 L80 13Cr	C90.1	T95.1	C110 P110

OUTSIDE DIAMETER	NOMINAL LINEAR MASS NON-UPSET T&C	NOMINAL LINEAR MASS EXTERNAL UPSET T&C	WALL THICKNESS	PLAIN-END WEIGHT	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH						INTERNAL YIELD PRESSURE						COLLAPSE PRESSURE					
in	in	lb/ft	in	lb/ft	in	in	in²	x 1000 lb						PSI						PSI					
4	21.10	21.10	0.562	20.65	2.876	2.751	6.070	242.8	333.9	485.6	546.3	576.7	667.7	9840	13520	19670	22130	23360	27050	9660	13280	19320	21730	22940	26560
	22.20	22.50	0.610	22.11	2.780	2.655	6.496	259.9	357.3	519.7	584.7	617.2	714.6	10680	14680	21350	24020	25350	29360	10340	14210	20670	23260	24550	28420
4 1/2	10.50	—	0.224	10.24	4.052	3.927	3.009	120.4	165.5	240.7	270.8	285.9	331.0	3480	4790	6970	7840	8280	9580	3260	4010	4940	5200	5310	5550
	11.00	—	0.237	10.80	4.026	3.901	3.174	127.0	174.6	253.9	285.7	301.5	349.1	3690	5070	7370	8300	8760	10140	3600	4480	5640	6010	6170	6560
	11.60	11.60	0.250	11.36	4.000	3.875	3.338	133.5	183.6	267.0	300.4	317.1	367.2	3890	5350	7780	8750	9240	10690	3940	4960	6350	6820	7030	7580
	12.60	12.75	0.271	12.25	3.958	3.833	3.600	144.0	198.0	288.0	324.0	342.0	396.1	4220	5800	8430	9480	10010	11590	4490	5720	7500	8120	8410	9200
	13.50	13.50	0.290	13.05	3.920	3.795	3.836	153.4	211.0	306.8	345.2	364.4	421.9	4510	6200	9020	10150	10710	12410	4820	6420	8540	9300	9660	10680
	15.20	15.50	0.337	15.00	3.826	3.701	4.407	176.3	242.4	352.6	396.7	418.7	484.8	5240	7210	10480	11800	12450	14420	5540	7620	11090	12230	12770	14350
	16.60	—	0.375	16.54	3.750	3.625	4.860	194.4	267.3	388.8	437.4	461.7	534.6	5830	8020	11670	13120	13850	16040	6110	8400	12220	13750	14510	16810
	17.00	17.00	0.380	16.74	3.740	3.615	4.918	196.7	270.5	393.5	442.7	467.3	541.0	5910	8130	11820	13300	14040	16260	6190	8510	12370	13920	14690	17010
	17.70	—	0.402	17.61	3.696	3.571	5.175	207.0	284.7	414.0	465.8	491.7	569.3	6250	8600	12510	14070	14850	17200	6510	8950	13020	14650	15460	17900
	18.90	19.20	0.430	18.71	3.640	3.515	5.498	219.9	302.4	439.8	494.8	522.3	604.8	6690	9200	13380	15050	15890	18390	6910	9500	13820	15550	16410	19010
	21.50	21.60	0.500	21.38	3.500	3.375	6.283	251.3	345.6	502.7	565.5	596.9	691.2	7780	10690	15560	17500	18470	21390	7900	10860	15800	17780	18770	21730
	23.70	24.00	0.560	23.59	3.380	3.255	6.932	277.3	381.2	554.5	623.8	658.5	762.5	8710	11980	17420	19600	20690	23960	8710	11980	17430	19600	20690	23960
	26.10	26.50	0.630	26.06	3.240	3.115	7.660	306.4	421.3	612.8	689.4	727.7	842.5	9800	13480	19600	22050	23280	26950	9640	13250	19270	21680	22880	26500

API Steel Grades | Casing | 18 5/8" TO 24 1/2 "

(90 ksi, 95 ksi, 110 ksi and 125 ksi on reverse side)

SPECIFIED MINIMUM YIELD STRENGTH				SPECIFIED MINIMUM YIELD STRENGTH				SPECIFIED MINIMUM YIELD STRENGTH			
40 ksi	55 ksi	65 ksi	80 ksi	40 ksi	55 ksi	65 ksi	80 ksi	40 ksi	55 ksi	65 ksi	80 ksi
Steel grades				Steel grades				Steel grades			
H40	J55 K55	M65	N80.1, N80.Q N80 Q L80.1 L80 13Cr	H40	J55 K55	M65	N80.1, N80.Q N80 Q L80.1 L80 13Cr	H40	J55 K55	M65	N80.1, N80.Q N80 Q L80.1 L80 13Cr

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH				INTERNAL YIELD PRESSURE				COLLAPSE PRESSURE			
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb						PSI		PSI			
18 5/8	87.50	0.435	84.590	17.76	17.568	—	24.858	994	1367	1616	1989	1630	2250	2660	3270	630	630	630	630
	94.50	0.460	89.320	17.71	17.518	—	26.251	1050	1444	1706	2100	1730	2380	2810	3460	740	740	740	740
	94.50	0.468	90.840	17.69	17.502	—	26.696	1068	1468	1735	2136	1760	2420	2860	3520	770	780	780	780
	96.50	0.485	94.050	17.66	17.468	17.500	27.639	1106	1520	1797	2211	1820	2510	2960	3650	850	870	870	870
	99.00	0.500	96.880	17.63	17.438	—	28.471	1139	1566	1851	2278	1880	2580	3050	3760	920	960	960	960
	101.00	0.510	98.760	17.61	17.418	17.500	29.024	1161	1596	1887	2322	1920	2640	3110	3830	960	1020	1020	1020
	109.35	0.563	108.710	17.50	17.312	—	31.947	1278	1757	2077	2556	2120	2910	3440	4230	1190	1330	1370	1380
	114.00	0.579	111.700	17.47	17.280	—	32.825	1313	1805	2134	2626	2180	2990	3540	4350	1260	1420	1480	1500
	115.00	0.594	114.490	17.44	17.250	—	33.648	1346	1851	2187	2692	2230	3070	3630	4470	1330	1510	1590	1620
	123.40	0.625	120.260	17.38	17.188	—	35.343	1414	1944	2297	2827	2350	3230	3820	4700	1470	1690	1800	1890
126.00	0.636	122.300	17.35	17.166	—	35.943	1438	1977	2336	2875	2390	3290	3880	4780	1520	1760	1880	1990	
136.00	0.693	132.840	17.24	17.052	—	39.040	1562	2147	2538	3123	2600	3580	4230	5210	1780	2090	2270	2470	
139.00	0.720	137.810	17.19	16.998	—	40.500	1620	2228	2633	3240	2710	3720	4400	5410	1950	2250	2460	2710	
20	94.00	0.438	91.590	19.12	18.937	—	26.918	1077	1480	1750	2153	1530	2110	2490	3070	520	520	520	520
	106.50	0.500	104.230	19.00	18.813	—	30.631	1225	1685	1991	2450	1750	2410	2840	3500	760	770	770	770
	118.50	0.563	116.980	18.87	18.687	—	34.379	1375	1891	2235	2750	1970	2710	3200	3940	1020	1100	1110	1110
	131.50	0.625	129.450	18.75	18.563	—	38.043	1522	2092	2473	3043	2190	3010	3550	4380	1280	1440	1500	1530
	133.00	0.635	131.450	18.73	18.543	—	38.631	1545	2125	2511	3091	2220	3060	3610	4450	1320	1500	1570	1600
	147.00	0.709	146.210	18.58	18.395	—	42.969	1719	2363	2793	3437	2480	3410	4030	4960	1630	1900	2050	2190
	156.00	0.750	154.340	18.50	18.313	—	45.357	1814	2495	2948	3629	2630	3610	4270	5250	1810	2120	2310	2520
	169.00	0.812	166.560	18.38	18.189	—	48.948	1958	2692	3182	3916	2840	3910	4620	5680	2180	2500	2710	3020
	209.00	1.000	203.110	18.00	17.813	—	59.690	2388	3283	3880	4775	3500	4810	5690	7000	3290	4040	4470	4990
22	146.50	0.625	142.810	20.75	20.563	—	41.970	1679	2308	2728	3358	1990	2730	3230	3980	1040	1130	1140	1140
	180.00	0.781	177.160	20.44	20.251	—	52.063	2083	2863	3384	4165	2490	3420	4040	4970	1630	1910	2050	2200
	226.00	1.000	224.490	20.00	19.813	—	65.973	2639	3629	4288	5278	3180	4380	5170	6360	2750	3300	3580	3870
24	159.20	0.625	156.170	22.75	22.563	—	45.897	1836	2524	2983	3672	1820	2510	2960	3650	850	870	870	870
	162.00	0.635	158.610	22.73	22.543	—	46.611	1864	2564	3030	3729	1850	2550	3010	3700	880	920	920	920
	174.00	0.688	171.450	22.62	22.437	—	50.387	2015	2771	3275	4031	2010	2760	3260	4010	1070	1160	1170	1170
24 1/2	133.00	0.500	128.280	23.50	23.313	—	37.699	1508	2073	2450	3016	1430	1960	2320	2860	420	420	420	420
	140.00	0.531	136.060	23.44	23.251	—	39.985	1599	2199	2599	3199	1520	2090	2470	3030	500	500	500	500
	162.00	0.625	159.510	23.25	23.063	—	46.878	1875	2578	3047	3750	1790	2460	2900	3570	800	820	820	820
	165.00	0.635	162.000	23.23	23.043	—	47.609	1904	2618	3095	3809	1810	2490	2950	3630	840	860	860	860
	182.00	0.709	180.320	23.08	22.895	—	52.992	2120	2915	3444	4239	2030	2790	3290	4050	1090	1190	1210	1210

• Grade L80 13Cr only available up to outside diameter 16"

API Steel Grades | Casing | 18 5/8" TO 24 1/2"

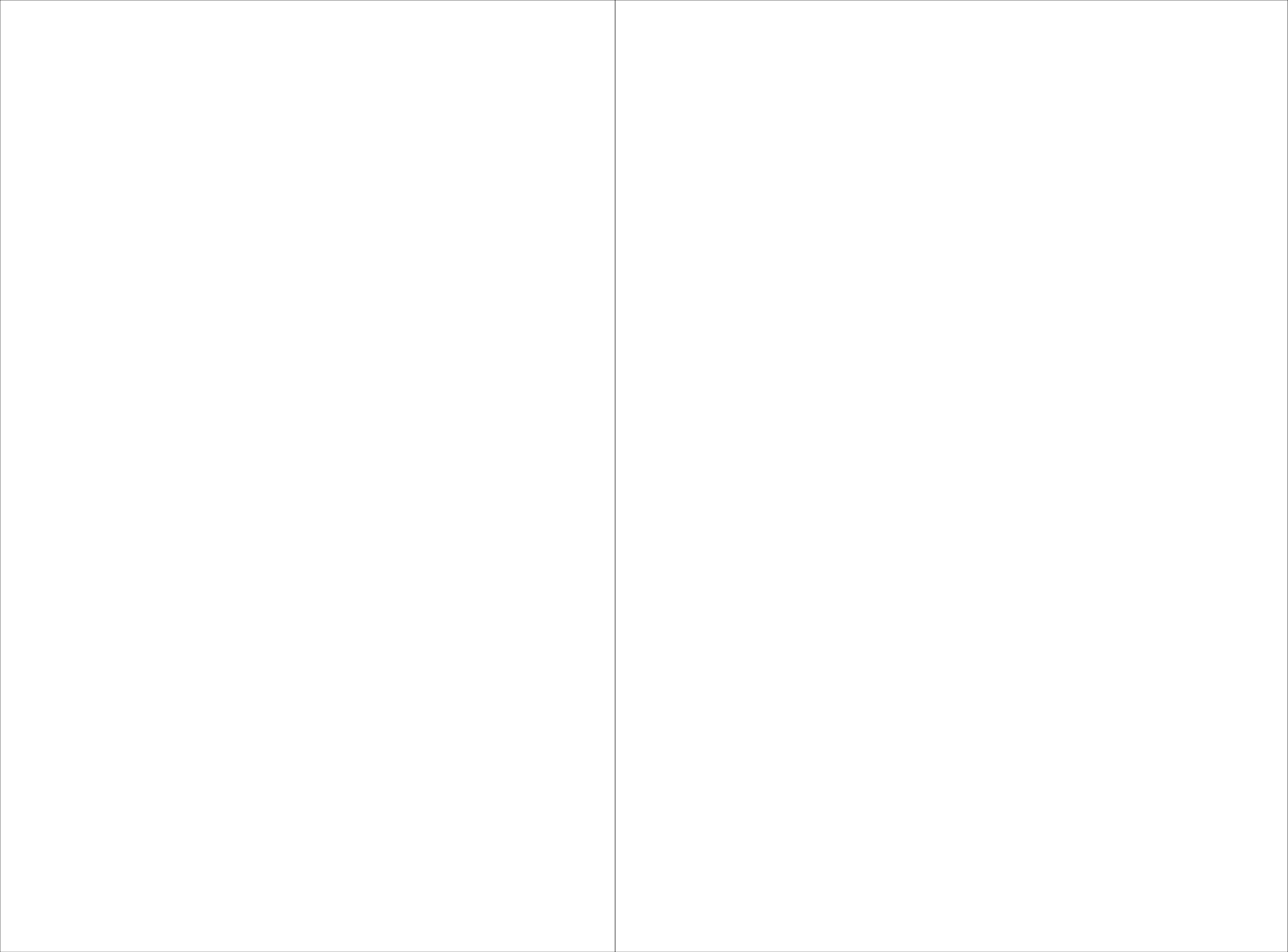
SPECIFIED MINIMUM YIELD STRENGTH				SPECIFIED MINIMUM YIELD STRENGTH				SPECIFIED MINIMUM YIELD STRENGTH			
90 ksi	95 ksi	110 ksi	125 ksi	90 ksi	95 ksi	110 ksi	125 ksi	90 ksi	95 ksi	110 ksi	125 ksi
Steel grades				Steel grades				Steel grades			
C90.1	C95 T95.1	C110 P110	Q125.1	C90.1	C95 T95.1	C110 P110	Q125.1	C90.1	C95 T95.1	C110 P110	Q125.1

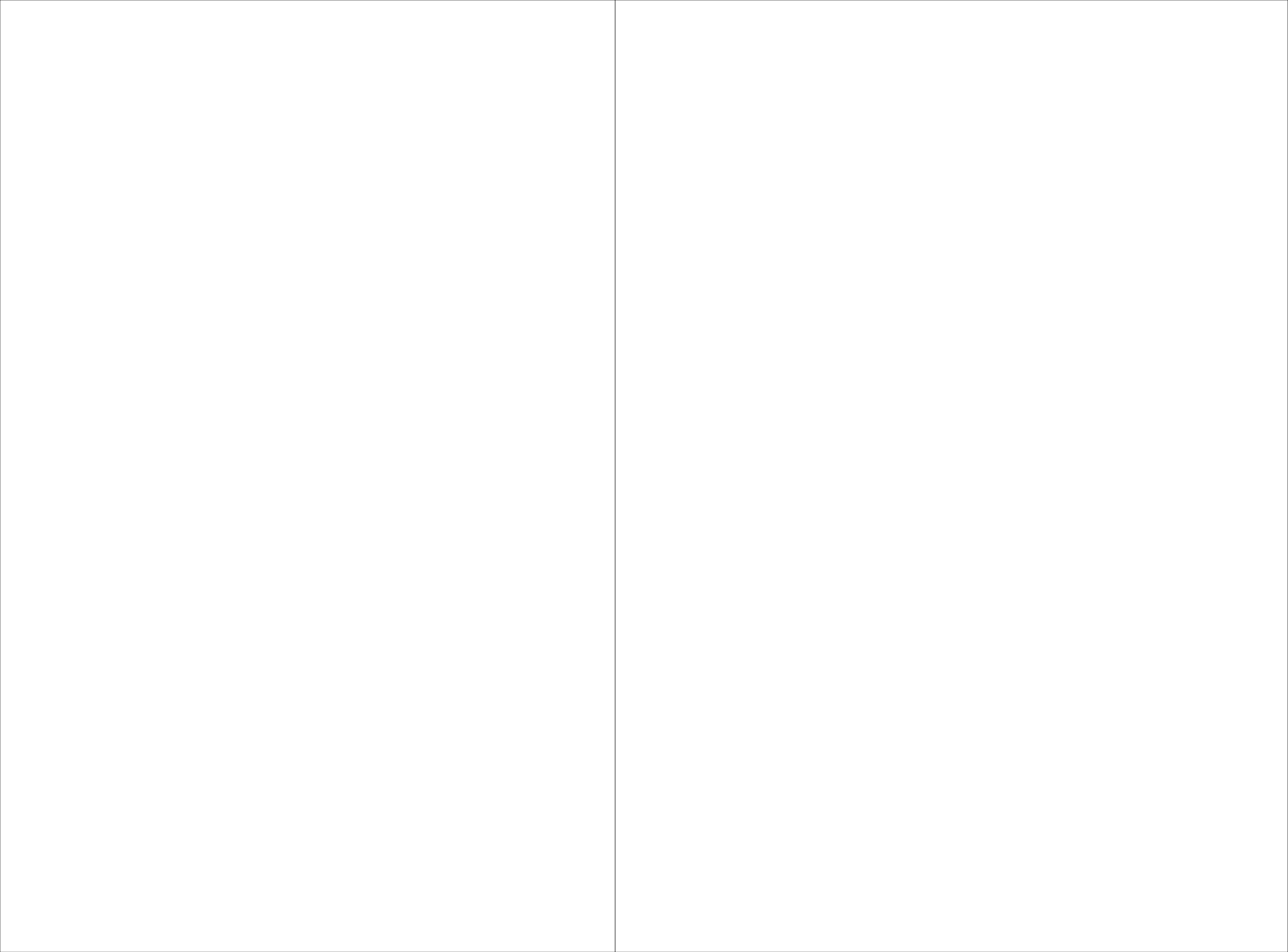
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH				INTERNAL YIELD PRESSURE				COLLAPSE PRESSURE			
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb				PSI				PSI			
18 5/8	87.50	0.435	84.590	17.76	17.568	—	24.858	2237	2362	2734	3107	3680	3880	4500	5110	630	630	630	630
	94.50	0.460	89.320	17.71	17.518	—	26.251	2363	2494	2888	3281	3890	4110	4750	5400	740	740	740	740
	94.50	0.468	90.840	17.69	17.502	—	26.696	2403	2536	2937	3337	3960	4180	4840	5500	780	780	780	780
	96.50	0.485	94.050	17.66	17.468	17.500	27.639	2488	2626	3040	3455	4100	4330	5010	5700	870	870	870	870
	99.00	0.500	96.880	17.63	17.438	—	28.471	2562	2705	3132	3559	4230	4460	5170	5870	960	960	960	960
	101.00	0.510	98.760	17.61	17.418	17.500	29.024	2612	2757	3193	3628	4310	4550	5270	5990	1020	1020	1020	1020
	109.35	0.563	108.710	17.50	17.312	—	31.947	2875	3035	3514	3993	4760	5030	5820	6610	1380	1380	1380	1380
	114.00	0.579	111.700	17.47	17.280	—	32.825	2954	3118	3611	4103	4900	5170	5980	6800	1500	1500	1500	1500
	115.00	0.594	114.490	17.44	17.250	—	33.648	3028	3197	3701	4206	5020	5300	6140	6980	1620	1620	1620	1620
	123.40	0.625	120.260	17.38	17.188	—	35.343	3181	3358	3888	4418	5290	5580	6460	7340	1900	1900	1900	1900
	126.00	0.636	122.300	17.35	17.166	—	35.943	3235	3415	3954	4493	5380	5680	6570	7470	2000	2000	2000	2000
	136.00	0.693	132.840	17.24	17.052	—	39.040	3514	3709	4294	4880	5860	6190	7160	8140	2560	2590	2610	2610
	139.00	0.720	137.810	17.19	16.998	—	40.500	3645	3848	4455	5063	6090	6430	7440	8460	2820	2870	2930	2930
20	94.00	0.438	91.590	19.12	18.937	—	26.918	2423	2557	2961	3365	3450	3640	4220	4790	520	520	520	520
	106.50	0.500	104.230	19.00	18.813	—	30.631	2757	2910	3369	3829	3940	4160	4810	5470	770	770	770	770
	118.50	0.563	116.980	18.87	18.687	—	34.379	3094	3266	3782	4297	4430	4680	5420	6160	1110	1110	1110	1110
	131.50	0.625	129.450	18.75	18.563	—	38.043	3424	3614	4185	4755	4920	5200	6020	6840	1530	1530	1530	1530
	133.00	0.635	131.450	18.73	18.543	—	38.631	3477	3670	4249	4829	5000	5280	6110	6950	1600	1600	1600	1600
	147.00	0.709	146.210	18.58	18.395	—	42.969	3867	4082	4727	5371	5580	5890	6820	7750	2240	2250	2250	2250
	156.00	0.750	154.340	18.50	18.313	—	45.357	4082	4309	4989	5670	5910	6230	7220	8200	2610	2640	2670	2670
	169.00	0.812	166.560	18.38	18.189	—	48.948	4405	4650	5384	6119	6390	6750	7820	8880	3180	3240	3370	3410
	209.00	1.000	203.110	18.00	17.813	—	59.690	5372	5671	6566	7461	7880	8310	9630	10940	5260	5380	5630	5890
22	146.50	0.625	142.810	20.75	20.563	—	41.970	3777	3987	4617	5246	4470	4720	5470	6210	1140	1140	1140	1140
	180.00	0.781	177.160	20.44	20.251	—	52.063	4686	4946	5727	6508	5590	5900	6830	7770	2250	2260	2260	2260
	226.00	1.000	224.490	20.00	19.813	—	65.973	5938	6267	7257	8247	7160	7560	8750	9940	4060	4180	4480	4690
24	159.20	0.625	156.170	22.75	22.563	—	45.897	4131	4360	5049	5737	4100	4330	5010	5700	870	870	870	870
	162.00	0.635	158.610	22.73	22.543	—	46.611	4195	4428	5127	5826	4170	4400	5090	5790	920	920	920	920
	174.00	0.688	171.450	22.62	22.437	—	50.387	4535	4787	5543	6298	4520	4770	5520	6270	1170	1170	1170	1170
24 1/2	133.00	0.500	128.280	23.50	23.313	—	37.699	3393	3581	4147	4712	3210	3390	3930	4460	420	420	420	420
	140.00	0.531	136.060	23.44	23.251	—	39.985	3599	3799	4398	4998	3410	3600	4170	4740	500	500	500	500
	162.00	0.625	159.510	23.25	23.063	—	46.878	4219	4453	5157	5860	4020	4240	4910	5580	820	820	820	820
	165.00	0.635	162.000	23.23	23.043	—	47.609	4285	4523	5237	5951	4080	4310	4990	5670	860	860	860	860
	182.00	0.709	180.320	23.08	22.895	—	52.992	4769	5034	5829	6624	4560	4810	5570	6330	1210	1210	1210	1210

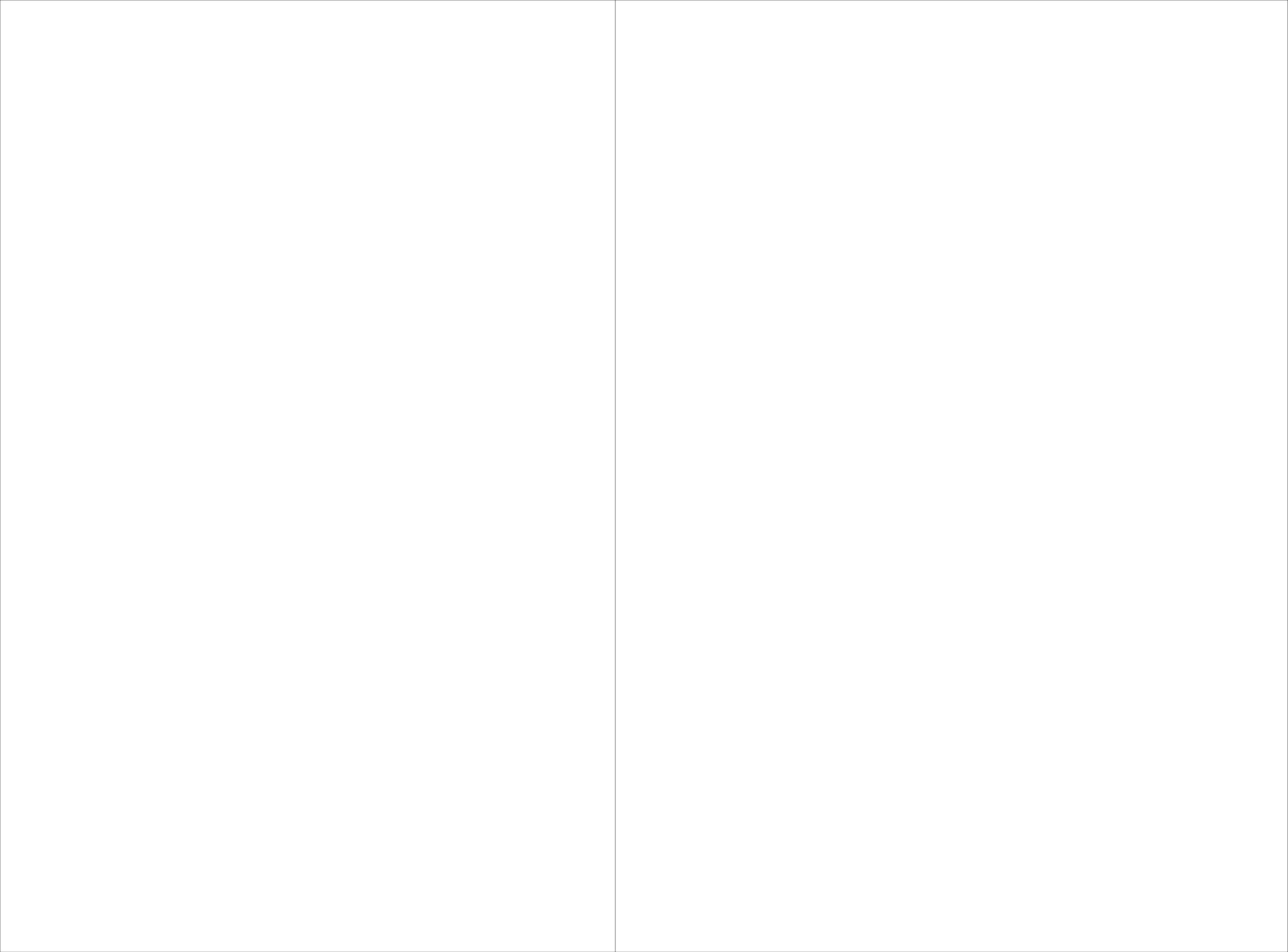
▪ Grade L80 13Cr only available up to outside diameter 16"

Pipe Body
Performance
Properties Data

Proprietary
Steel Grades





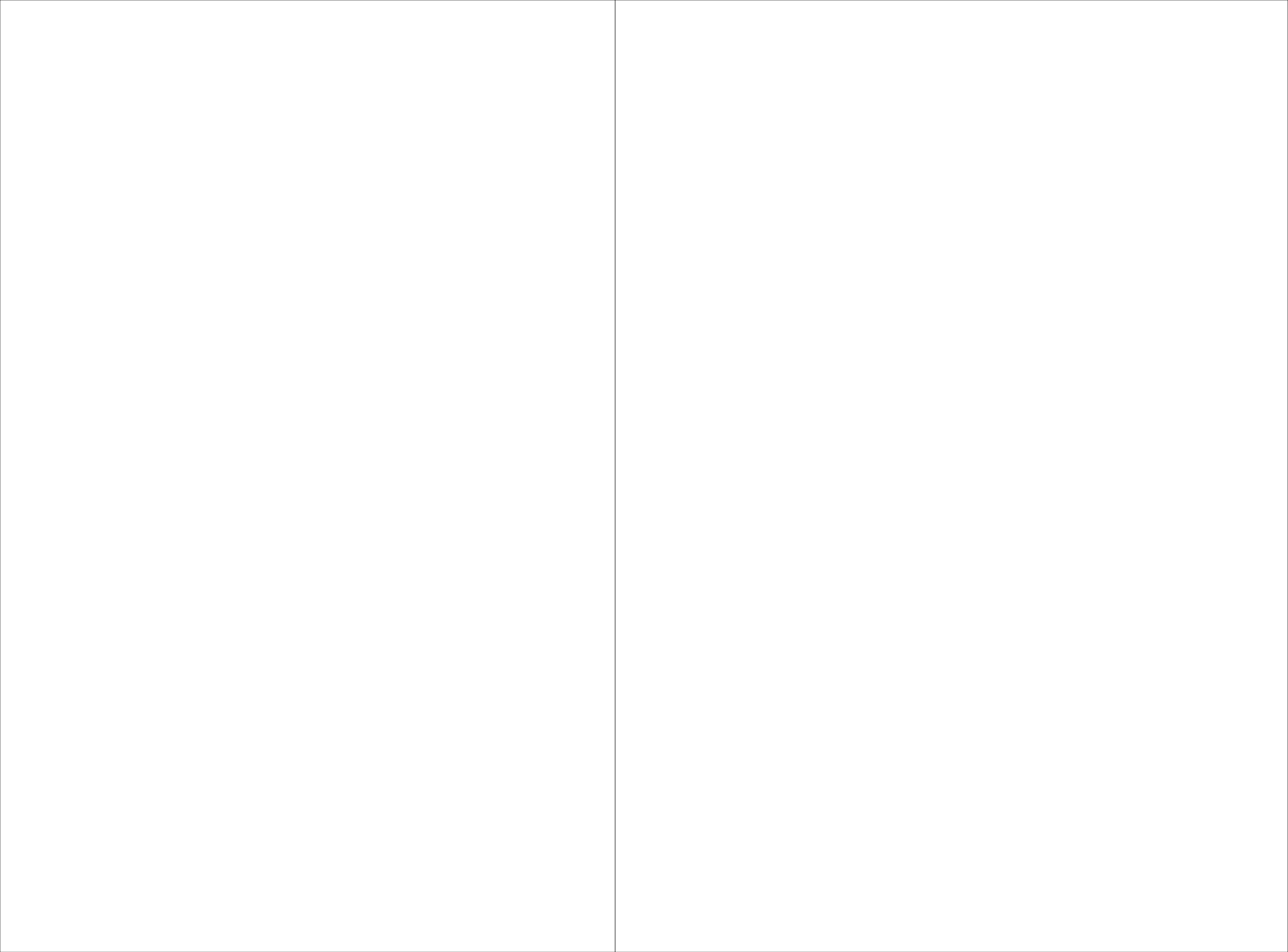


High Collapse & Sour Service Series | Casing | 13 3/8" TO 16"

SPECIFIED MINIMUM YIELD STRENGTH				SPECIFIED MINIMUM YIELD STRENGTH				SPECIFIED MINIMUM YIELD STRENGTH			
80 ksi	95 ksi	100 ksi	110 ksi	80 ksi	95 ksi	100 ksi	110 ksi	80 ksi	95 ksi	100 ksi	110 ksi
Steel grades				Steel grades				Steel grades			
TN 80HS	TN 95HS	TN 100HS	TN 110HS	TN 80HS	TN 95HS	TN 100HS	TN 110HS	TN 80HS	TN 95HS	TN 100HS	TN 110HS

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH				INTERNAL YIELD PRESSURE		COLLAPSE PRESSURE			
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb					PSI	PSI			
13 3/8	85.00	0.608	82.98	12.159	12.003	—	24.386	1951	2317	2439	2682	6360	7560	7960	8750	—	—
	86.00	0.625	85.19	12.125	11.969	—	25.035	2003	2378	2503	2754	6540	7770	8180	9000	5630	5850
	92.50	0.672	91.25	12.031	11.875	—	26.818	2145	2548	2682	2950	7030	8350	8790	9670	—	—
	98.00	0.719	97.28	11.937	11.781	—	28.587	2287	2716	2859	3145	7530	8940	9410	10350	—	—
	100.30	0.734	99.19	11.907	11.751	—	29.149	2332	2769	2915	3206	7680	9120	9600	10560	—	—
	108.10	0.797	107.16	11.781	11.625	—	31.493	2519	2992	3149	3464	8340	9910	10430	11470	—	—
	115.70	0.859	114.93	11.657	11.501	—	33.776	2702	3209	3378	3715	8990	10680	11240	12360	—	—
	123.40	0.922	122.74	11.531	11.375	—	36.071	2886	3427	3607	3968	9650	11460	12060	13270	—	—
	130.80	0.984	130.34	11.407	11.251	—	38.305	3064	3639	3830	4214	10300	12230	12870	14160	—	—
	138.30	1.047	137.98	11.281	11.125	—	40.550	3244	3852	4055	4460	10960	13010	13700	15070	—	—
	145.60	1.109	145.42	11.157	11.001	—	42.735	3419	4060	4274	4701	11610	13780	14510	15960	—	—
13 1/2	80.40	0.576	79.58	12.348	12.161	12.250	23.387	1871	2222	2339	2573	5970	7090	7470	8210	—	—
	81.40	0.580	80.11	12.340	12.153	12.250	23.542	1883	2236	2354	2590	6010	7140	7520	8270	—	—
13 5/8	88.20	0.625	86.86	12.375	12.188	12.250	25.525	2042	2425	2553	2808	6420	7630	8030	8830	—	—
	105.00	0.760	104.52	12.105	11.918	—	30.717	2457	2918	3072	3379	7810	9270	9760	10740	—	—
14	82.50	0.562	80.73	12.876	12.689	—	23.726	1898	2254	2373	2610	5620	6670	7030	7730	—	—
	86.00	0.600	85.95	12.800	12.613	—	25.258	2021	2400	2526	2778	6000	7120	7500	8250	—	—
	93.00	0.650	92.76	12.700	12.513	—	27.261	2181	2590	2726	2999	6500	7720	8130	8940	—	—
	94.80	0.656	93.58	12.688	12.501	—	27.500	2200	2613	2750	3025	6560	7790	8200	9020	—	—
	99.30	0.688	97.91	12.624	12.437	—	28.773	2302	2733	2877	3165	6880	8170	8600	9460	—	—
	99.60	0.700	99.52	12.600	12.413	—	29.248	2340	2779	2925	3217	7000	8310	8750	9630	—	—
	104.20	0.734	104.09	12.532	12.345	—	30.590	2447	2906	3059	3365	7340	8720	9180	10090	—	—
	106.00	0.750	106.23	12.500	12.313	—	31.220	2498	2966	3122	3434	7500	8910	9370	10310	—	—
	110.00	0.772	109.17	12.456	12.269	—	32.082	2567	3048	3208	3529	7720	9170	9650	10620	—	—
	111.00	0.779	110.10	12.442	12.255	—	32.356	2588	3074	3236	3559	7790	9250	9740	10710	—	—
	112.60	0.797	112.49	12.406	12.219	12.250	33.058	2645	3141	3306	3636	7970	9460	9960	10960	—	—
	113.00	0.800	112.89	12.400	12.213	12.250	33.175	2654	3152	3318	3649	8000	9500	10000	11000	—	—
	120.00	0.850	119.49	12.300	12.113	—	35.115	2809	3336	3512	3863	8500	10090	10620	11690	—	—
15	77.50	0.500	77.50	14.000	13.813	—	22.777	1822	2164	2278	2505	4670	5540	5830	6420	—	—
	109.00	0.715	109.19	13.570	13.383	—	32.088	2567	3048	3209	3530	6670	7920	8340	9180	—	—
16	65.00	0.375	62.64	15.250	15.063	—	18.408	1473	1749	1841	2025	3280	3900	4100	4510	—	—
	75.00	0.438	72.86	15.124	14.937	—	21.414	1713	2034	2141	2355	3830	4550	4790	5270	—	—
	84.00	0.495	82.05	15.010	14.823	—	24.112	1929	2291	2411	2652	4330	5140	5410	5960	—	—
	94.50	0.562	92.75	14.876	14.689	14.750	27.257	2181	2589	2726	2998	4920	5840	6150	6760	—	—
	95.00	0.566	93.38	14.868	14.681	14.750	27.444	2196	2607	2744	3019	4950	5880	6190	6810	—	—
	96.00	0.575	94.81	14.850	14.663	14.750	27.864	2229	2647	2786	3065	5030	5970	6290	6920	—	—
	102.90	0.625	102.72	14.750	14.563	—	30.189	2415	2868	3019	3321	5470	6490	6840	7520	—	—
	109.00	0.656	107.60	14.688	14.501	14.600	31.622	2530	3004	3162	3478	5740	6820	7180	7890	—	—
	118.00	0.715	116.83	14.570	14.383	—	34.334	2747	3262	3433	3777	6260	7430	7820	8600	—	—
	128.00	0.781	127.06	14.438	14.251	—	37.341	2987	3547	3734	4108	6830	8120	8540	9400	—	—
	137.90	0.843	136.59	14.314	14.127	—	40.141	3211	3813	4014	4416	7380	8760	9220	10140	—	—
	147.30	0.906	146.19	14.188	14.001	—	42.962	3437	4081	4296	4726	7930	9410	9910	10900	—	—

• For the sizes without an specified collapse resistance value, the corresponding value can be calculated upon request.



Improved Collapse Series | Casing | 18 5/8" TO 20"

								SPECIFIED MINIMUM YIELD STRENGTH				SPECIFIED MINIMUM YIELD STRENGTH				SPECIFIED MINIMUM YIELD STRENGTH			
								110 ksi	125 ksi	125 ksi	135 ksi	110 ksi	125 ksi	125 ksi	135 ksi	110 ksi	125 ksi	125 ksi	135 ksi
								Steel grades				Steel grades				Steel grades			
								P110-IC	P110-ICY	Q125-IC	Q125-ICY	P110-IC	P110-ICY	Q125-IC	Q125-ICY	P110-IC	P110-ICY	Q125-IC	Q125-ICY

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH				INTERNAL YIELD PRESSURE				COLLAPSE PRESSURE			
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb				PSI				PSI			
18 5/8	94.50	0.460	89.32	17.705	17.518	—	26.251	2888	3281	3281	3544	4750	5400	5400	5830	—	—	—	—
	94.50	0.468	90.84	17.689	17.502	—	26.696	2937	3337	3337	3604	4840	5500	5500	5940	—	—	—	—
	96.50	0.485	94.05	17.655	17.468	17.500	27.639	3040	3455	3455	3731	5010	5700	5700	6150	—	—	—	—
	99.00	0.500	96.88	17.625	17.438	—	28.471	3132	3559	3559	3844	5170	5870	5870	6340	—	—	—	—
	101.00	0.510	98.76	17.605	17.418	17.500	29.024	3193	3628	3628	3918	5270	5990	5990	6470	—	—	—	—
	109.35	0.563	108.71	17.499	17.312	—	31.947	3514	3993	3993	4313	5820	6610	6610	7140	—	—	—	—
	114.00	0.579	111.70	17.467	17.280	—	32.825	3611	4103	4103	4431	5980	6800	6800	7340	—	—	—	—
	115.00	0.594	114.49	17.437	17.250	—	33.648	3701	4206	4206	4542	6140	6980	6980	7530	—	—	—	—
	123.40	0.625	120.26	17.375	17.188	—	35.343	3888	4418	4418	4771	6460	7340	7340	7930	—	—	—	—
	126.00	0.636	122.30	17.353	17.166	—	35.943	3954	4493	4493	4852	6570	7470	7470	8070	—	—	—	—
20	136.00	0.693	132.84	17.239	17.052	—	39.040	4294	4880	4880	5270	7160	8140	8140	8790	—	—	—	—
	139.00	0.720	137.81	17.185	16.998	—	40.500	4455	5063	5063	5468	7440	8460	8460	9130	—	—	—	—
	94.00	0.438	91.59	19.124	18.937	—	26.918	2961	3365	3365	3634	4220	4790	4790	5170	—	—	—	—
	106.50	0.500	104.23	19.000	18.813	—	30.631	3369	3829	3829	4135	4810	5470	5470	5910	—	—	—	—
	118.50	0.563	116.98	18.874	18.687	—	34.379	3782	4297	4297	4641	5420	6160	6160	6650	—	—	—	—
	131.50	0.625	129.45	18.750	18.563	—	38.043	4185	4755	4755	5136	6020	6840	6840	7380	—	—	—	—
	133.00	0.635	131.45	18.730	18.543	—	38.631	4249	4829	4829	5215	6110	6950	6950	7500	—	—	—	—
	147.00	0.709	146.21	18.582	18.395	—	42.969	4727	5371	5371	5801	6820	7750	7750	8380	—	—	—	—
	156.00	0.750	154.34	18.500	18.313	—	45.357	4989	5670	5670	6123	7220	8200	8200	8860	—	—	—	—
	169.00	0.812	166.56	18.376	18.189	—	48.948	5384	6119	6119	6608	7820	8880	8880	9590	—	—	—	—
	209.00	1.000	203.11	18.000	17.813	—	59.690	6566	7461	7461	8058	9630	10940	10940	11810	—	—	—	—

• For the sizes without an specified collapse resistance value, the corresponding value can be calculated upon request.

Deep Well Series | Casing | 6 5/8" TO 7 3/4"

SPECIFIED MINIMUM YIELD STRENGTH			SPECIFIED MINIMUM YIELD STRENGTH			SPECIFIED MINIMUM YIELD STRENGTH		
135 ksi	140 ksi	150 ksi	135 ksi	140 ksi	150 ksi	135 ksi	140 ksi	150 ksi
Steel grades			Steel grades			Steel grades		
TN 135DW	TN 140DW	TN 150DW	TN 135DW	TN 140DW	TN 150DW	TN 135DW	TN 140DW	TN 150DW

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH			INTERNAL YIELD PRESSURE			COLLAPSE PRESSURE		
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb			PSI			PSI		
6 5/8	28.00	0.417	27.67	5.791	5.666	—	8.133	1098	1139	1220	14870	15420	16520	11480	11710	12120
	32.00	0.475	31.23	5.675	5.550	—	9.177	1239	1285	1377	16940	17570	18820	15360	15750	16500
	33.00	0.500	32.74	5.625	5.500	—	9.621	1299	1347	1443	17830	18490	19810	17030	17500	18390
	35.00	0.525	34.23	5.575	5.450	—	10.061	1358	1409	1509	18720	19420	20800	18700	19240	20280
	36.70	0.562	36.43	5.501	5.376	—	10.705	1445	1499	1606	20040	20780	22270	20960	21730	23070
	40.20	0.625	40.09	5.375	5.250	—	11.781	1590	1649	1767	22290	23110	24760	23070	23920	25630
	43.70	0.687	43.61	5.251	5.126	—	12.816	1730	1794	1922	24500	25410	27220	25100	26030	27890
	46.00	0.730	46.00	5.165	5.040	—	13.519	1825	1893	2028	26030	27000	28920	26460	27440	29400
	47.10	0.750	47.10	5.125	5.000	—	13.843	1869	1938	2076	26750	27740	29720	27110	28120	30130
	50.40	0.812	50.46	5.001	4.876	—	14.829	2002	2076	2224	28960	30030	32170	29030	30110	32260
7	53.70	0.875	53.78	4.875	4.750	—	15.806	2134	2213	2371	31200	32360	34670	30960	32100	34390
	65.80	1.125	66.14	4.375	4.250	—	19.439	2624	2721	2916	40120	41600	44580	38060	39470	42290
	17.00	0.231	16.72	6.538	6.413	—	4.912	663	688	737	7800	8090	8660	1800	1800	1800
	20.00	0.272	19.56	6.456	6.331	—	5.749	776	805	862	9180	9520	10200	2980	2980	2980
	23.00	0.317	22.65	6.366	6.241	6.250	6.655	898	932	998	10700	11100	11890	4730	4760	4790
	24.75	0.343	24.41	6.314	6.189	—	7.173	968	1004	1076	11580	12010	12860	5800	5880	5990
	26.00	0.362	25.69	6.276	6.151	—	7.549	1019	1057	1132	12220	12670	13570	6580	6690	6880
	29.00	0.408	28.75	6.184	6.059	6.125	8.449	1141	1183	1267	13770	14280	15300	9420	9560	9790
	32.00	0.453	31.70	6.094	5.969	6.000	9.317	1258	1304	1398	15290	15850	16990	12280	12540	13020
	35.00	0.498	34.61	6.004	5.879	—	10.172	1373	1424	1526	16810	17430	18680	15110	15490	16220
	38.00	0.540	37.29	5.920	5.795	5.875	10.959	1479	1534	1644	18230	18900	20250	17780	18280	19240
	41.00	0.590	40.43	5.820	5.695	—	11.881	1604	1663	1782	19910	20650	22130	20850	21580	22820
	42.70	0.625	42.59	5.750	5.625	—	12.517	1690	1752	1878	21090	21880	23440	21950	22770	24390
	44.00	0.640	43.51	5.720	5.595	—	12.788	1726	1790	1918	21600	22400	24000	22420	23250	24920
	46.00	0.670	45.34	5.660	5.535	—	13.324	1799	1865	1999	22610	23450	25120	23360	24230	25960
	46.40	0.687	46.36	5.626	5.501	—	13.625	1839	1908	2044	23190	24050	25760	23900	24780	26550
	49.50	0.730	48.93	5.540	5.415	—	14.379	1941	2013	2157	24640	25550	27380	25220	26150	28020
	50.10	0.750	50.11	5.500	5.375	—	14.726	1988	2062	2209	25310	26250	28130	25840	26790	28710
	53.60	0.812	53.71	5.376	5.251	—	15.785	2131	2210	2368	27410	28420	30450	27690	28710	30770
	57.10	0.875	57.29	5.250	5.125	—	16.837	2273	2357	2526	29530	30630	32810	29530	30630	32810
	60.50	0.937	60.73	5.126	5.001	—	17.847	2409	2499	2677	31620	32790	35140	31310	32470	34780
	63.90	1.000	64.14	5.000	4.875	—	18.850	2545	2639	2827	33750	35000	37500	33060	34290	36730
7 1/4	41.20	0.578	41.23	6.094	5.969	—	12.115	1636	1696	1817	18830	19530	20930	18920	19470	20530
7 5/8	24.00	0.300	23.49	7.025	6.900	—	6.904	932	967	1036	9300	9640	10330	3100	3100	3100
	26.40	0.328	25.59	6.969	6.844	—	7.519	1015	1053	1128	10160	10540	11290	4080	4080	4080
	29.70	0.375	29.06	6.875	6.750	—	8.541	1153	1196	1281	11620	12050	12910	5860	5930	6060
	33.70	0.430	33.07	6.765	6.640	—	9.720	1312	1361	1458	13320	13820	14800	8590	8690	8850
	35.80	0.465	35.59	6.695	6.570	—	10.460	1412	1464	1569	14410	14940	16010	10620	10810	11140
	39.00	0.500	38.08	6.625	6.500	—	11.192	1511	1567	1679	15490	16070	17210	12650	12930	13440
	42.80	0.562	42.43	6.501	6.376	—	12.470	1683	1746	1871	17410	18060	19350	16240	16680	17500
	45.30	0.595	44.71	6.435	6.310	6.375	13.141	1774	1840	1971	18440	19120	20480	18150	18670	19660
	47.10	0.625	46.77	6.375	6.250	—	13.744	1856	1924	2062	19360	20080	21520	19910	20500	21650
	51.20	0.687	50.95	6.251	6.126	—	14.974	2022	2096	2246	21290	22070	23650	22130	22950	24590
	52.80	0.712	52.62	6.201	6.076	—	15.463	2088	2165	2319	22060	22880	24510	22860	23700	25400
	55.30	0.750	55.12	6.125	6.000	—	16.199	2187	2268	2430	23240	24100	25820	23940	24820	26600
	59.20	0.812	59.14	6.001	5.876	—	17.380	2346	2433	2607	25160	26090	27950	25690	26640	28550
	63.20	0.875	63.14	5.875	5.750	—	18.555	2505	2598	2783	27110	28110	30120	27440	28460	30490
	66.90	0.937	66.99	5.751	5.626	—	19.687	2658	2756	2953	29030	30110	32260	29090	30170	32330
	70.70	1.000	70.82	5.625	5.500	—	20.813	2810	2914	3122	30980	32130	34430	30780	31920	34200
7 3/4	46.10	0.595	45.51	6.560	6.435	6.500	13.374	1806	1872	2006	18140	18810	20150	17590	18090	19030
	47.60	0.625	47.60	6.500	6.375	—	13.990	1889	1959	2098	19050	19760	21170	19320	19890	20980
	48.60	0.640	48.64	6.470	6.345	6.375	14.296	1930	2001	2144	19510	20230	21680	20170	20780	21950
	51.80	0.687	51.87	6.376	6.251	—	15.244	2058	2134	2287	20940	21720	23270	21810	22620	24240
	54.20	0.712	53.57	6.326	6.201	6.250	15.743	2125	2204	2361	21700	22510	24120	22540	23370	25040

Deep Well Series | Casing | 7 3/4" TO 10 1/4"

(10 3/4" TO 13 3/8" on reverse side)

								SPECIFIED MINIMUM YIELD STRENGTH			SPECIFIED MINIMUM YIELD STRENGTH			SPECIFIED MINIMUM YIELD STRENGTH		
								135 ksi	140 ksi	150 ksi	135 ksi	140 ksi	150 ksi	135 ksi	140 ksi	150 ksi
								Steel grades			Steel grades			Steel grades		
								TN 135DW	TN 140DW	TN 150DW	TN 135DW	TN 140DW	TN 150DW	TN 135DW	TN 140DW	TN 150DW
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH			INTERNAL YIELD PRESSURE			COLLAPSE PRESSURE		
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb			PSI			PSI		
7 3/4	56.10	0.750	56.12	6.250	6.125	—	16.493	2227	2309	2474	22860	23710	25400	23610	24480	26230
8	31.00	0.375	30.57	7.250	7.125	—	8.983	1213	1258	1347	11070	11480	12300	5190	5240	5300
	70.80	0.937	70.75	6.126	6.001	—	20.791	2807	2911	3119	27670	28700	30750	27910	28950	31020
	74.20	0.980	74.20	6.103	5.978	—	21.807	2944	3053	3271	28710	29780	31910	28820	29890	32020
8 1/8	32.50	0.375	31.07	7.375	7.250	—	9.130	1233	1278	1370	10900	11310	12120	4980	5020	5060
	35.50	0.420	34.59	7.285	7.160	—	10.167	1372	1423	1525	12210	12660	13570	6570	6680	6870
	39.50	0.470	38.46	7.185	7.060	—	11.303	1526	1582	1695	13670	14170	15180	9230	9360	9570
8 5/8	24.00	0.264	23.60	8.097	7.972	—	6.934	936	971	1040	7230	7500	8030	1430	1430	1430
	28.00	0.304	27.04	8.017	7.892	—	7.947	1073	1113	1192	8330	8640	9250	2210	2210	2210
	32.00	0.352	31.13	7.921	7.796	7.875	9.149	1235	1281	1372	9640	10000	10710	3470	3470	3470
	36.00	0.400	35.17	7.825	7.700	—	10.336	1395	1447	1550	10960	11360	12170	5050	5090	5140
	40.00	0.450	39.33	7.725	7.600	7.625	11.557	1560	1618	1734	12330	12780	13700	6720	6830	7030
	44.00	0.500	43.43	7.625	7.500	—	12.763	1723	1787	1914	13700	14200	15220	9290	9420	9640
	49.00	0.557	48.04	7.511	7.386	—	14.118	1906	1977	2118	15260	15820	16950	12220	12480	12950
	49.10	0.562	48.44	7.501	7.376	—	14.236	1922	1993	2135	15390	15960	17100	12460	12730	13230
	52.00	0.595	51.08	7.435	7.310	—	15.010	2026	2101	2252	16300	16900	18110	14150	14490	15140
	54.00	0.625	53.45	7.375	7.250	—	15.708	2121	2199	2356	17120	17750	19020	15700	16110	16890
	58.70	0.687	58.30	7.251	7.126	—	17.132	2313	2399	2570	18820	19510	20910	18890	19440	20500
	63.50	0.750	63.14	7.125	7.000	—	18.555	2505	2598	2783	20540	21300	22830	21440	22230	23820
	68.10	0.812	67.82	7.001	6.876	—	19.931	2691	2790	2990	22240	23070	24710	23030	23880	25590
	72.70	0.875	72.49	6.875	6.750	—	21.304	2876	2983	3196	23970	24860	26630	24610	25520	27340
	77.10	0.937	77.01	6.751	6.626	—	22.631	3055	3168	3395	25670	26620	28520	26160	27130	29060
	81.50	1.000	81.51	6.625	6.500	—	23.955	3234	3354	3593	27390	28410	30430	27690	28710	30770
	83.20	1.025	83.28	6.575	6.450	—	24.473	3304	3426	3671	28080	29120	31200	28290	29330	31430
9	40.00	0.425	38.96	8.150	8.025	—	11.449	1546	1603	1717	11160	11570	12400	5290	5340	5410
9 3/8	39.00	0.400	38.38	8.575	8.450	8.500	11.278	1523	1579	1692	10080	10450	11200	3980	3980	3980
9 5/8	32.30	0.312	31.06	9.001	8.845	—	9.128	1232	1278	1369	7660	7940	8510	1710	1710	1710
	36.00	0.352	34.89	8.921	8.765	—	10.254	1384	1436	1538	8640	8960	9600	2480	2480	2480
	40.00	0.395	38.97	8.835	8.679	8.750	11.454	1546	1604	1718	9700	10050	10770	3530	3530	3530
	43.50	0.435	42.73	8.755	8.599	8.625	12.559	1695	1758	1884	10680	11070	11860	4700	4730	4750
	47.00	0.472	46.18	8.681	8.525	—	13.572	1832	1900	2036	11590	12010	12870	5820	5890	6010
	53.50	0.545	52.90	8.535	8.379	8.500	15.546	2099	2177	2332	13380	13870	14860	8690	8800	8960
	58.40	0.595	57.44	8.435	8.279	8.375	16.879	2279	2363	2532	14600	15150	16230	10980	11190	11560
	59.40	0.609	58.70	8.407	8.251	—	17.250	2329	2415	2587	14950	15500	16610	11640	11870	12300
	61.10	0.625	60.13	8.375	8.219	—	17.671	2386	2474	2651	15340	15910	17050	12370	12630	13120
	64.90	0.672	64.32	8.281	8.125	—	18.901	2552	2646	2835	16490	17110	18330	14540	14890	15570
	70.30	0.734	69.76	8.157	8.001	—	20.502	2768	2870	3075	18020	18680	20020	17390	17870	18800
	71.60	0.750	71.16	8.125	7.969	—	20.911	2823	2928	3137	18410	19090	20450	18120	18640	19630
	75.60	0.797	75.21	8.031	7.875	—	22.104	2984	3095	3316	19560	20290	21740	20270	20870	22050
	80.80	0.859	80.50	7.907	7.751	—	23.656	3194	3312	3548	21080	21870	23430	21950	22770	24390
	86.00	0.922	85.78	7.781	7.625	—	25.209	3403	3529	3781	22630	23470	25150	23380	24250	25980
	91.00	0.984	90.89	7.657	7.501	—	26.712	3606	3740	4007	24150	25050	26840	24780	25700	27540
9 3/4	59.20	0.595	58.23	8.560	8.404	8.500	17.113	2310	2396	2567	14420	14950	16020	10630	10820	11160
9 7/8	62.80	0.625	61.80	8.625	8.469	8.500	18.162	2452	2543	2724	14950	15510	16610	11640	11870	12300
	65.30	0.650	64.10	8.575	8.419	8.500	18.838	2543	2637	2826	15550	16130	17280	12770	13050	13570
	67.30	0.668	65.75	8.539	8.383	—	19.322	2608	2705	2898	15980	16570	17760	13570	13890	14480
	68.80	0.700	68.66	8.475	8.319	—	20.177	2724	2825	3027	16750	17370	18610	15000	15370	16090
	70.40	0.707	69.29	8.461	8.305	—	20.363	2749	2851	3054	16910	17540	18790	15310	15700	16450
	70.40	0.708	69.38	8.459	8.303	—	20.390	2753	2855	3058	16940	17570	18820	15360	15750	16500
	72.10	0.725	70.91	8.425	8.269	8.375	20.841	2813	2918	3126	17350	17990	19270	16120	16550	17370
	66.95	0.672	67.01	8.656	8.500	—	19.693	2659	2757	2954	15880	16460	17640	13370	13680	14260
10	68.42	0.688	68.49	8.624	8.468	8.500	20.127	2717	2818	3019	16250	16860	18060	14090	14430	15070
	68.80	0.700	69.59	8.600	8.444	—	20.452	2761	2863	3068	16540	17150	18380	14600	14960	15650
10 1/4	82.00	0.800	80.82	8.650	8.494	—	23.750	3206	3325	3563	18440	19120	20490	18180	18690	19690

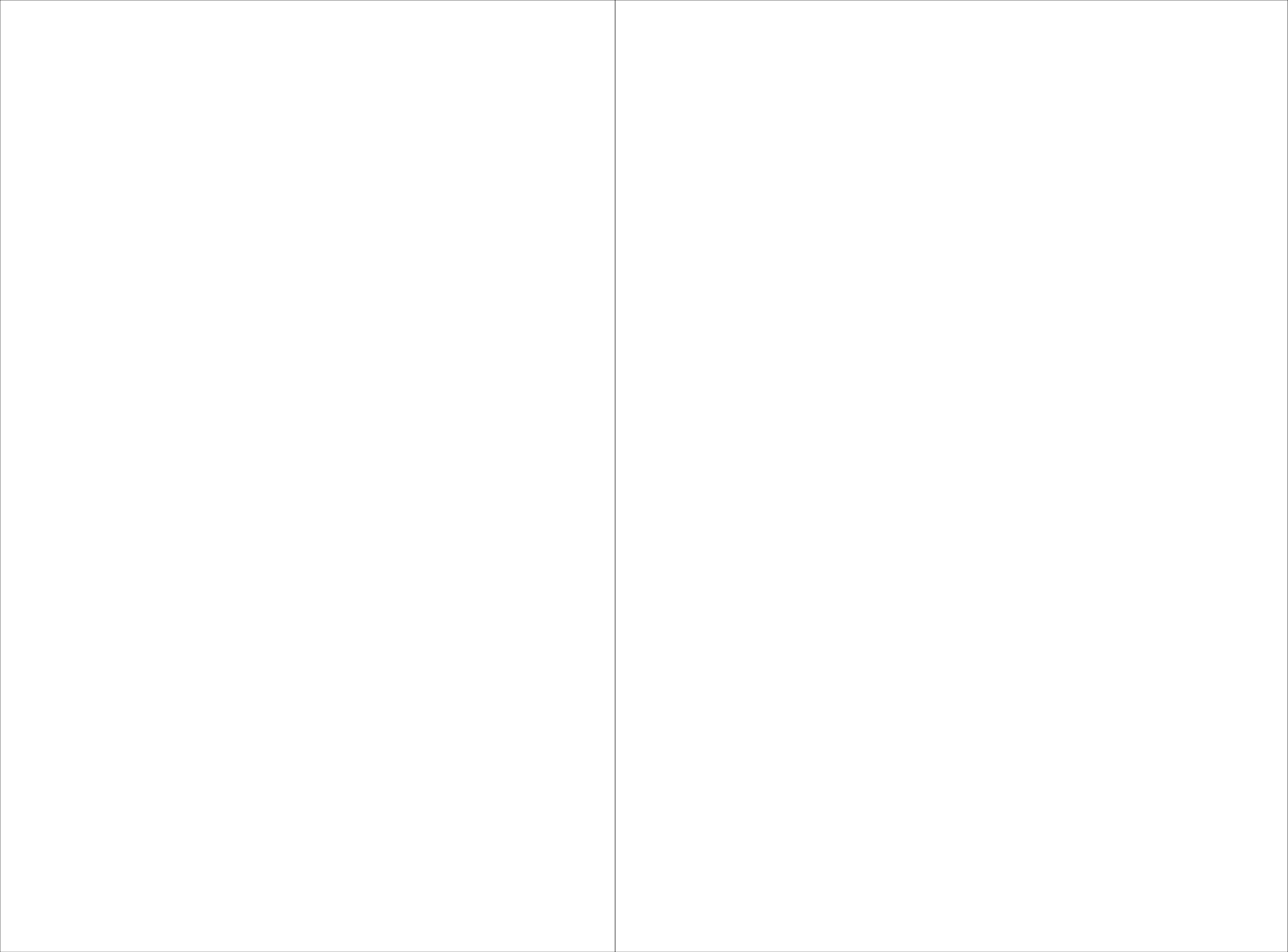
Deep Well Series | Casing | 10 3/4" TO 13 3/8"

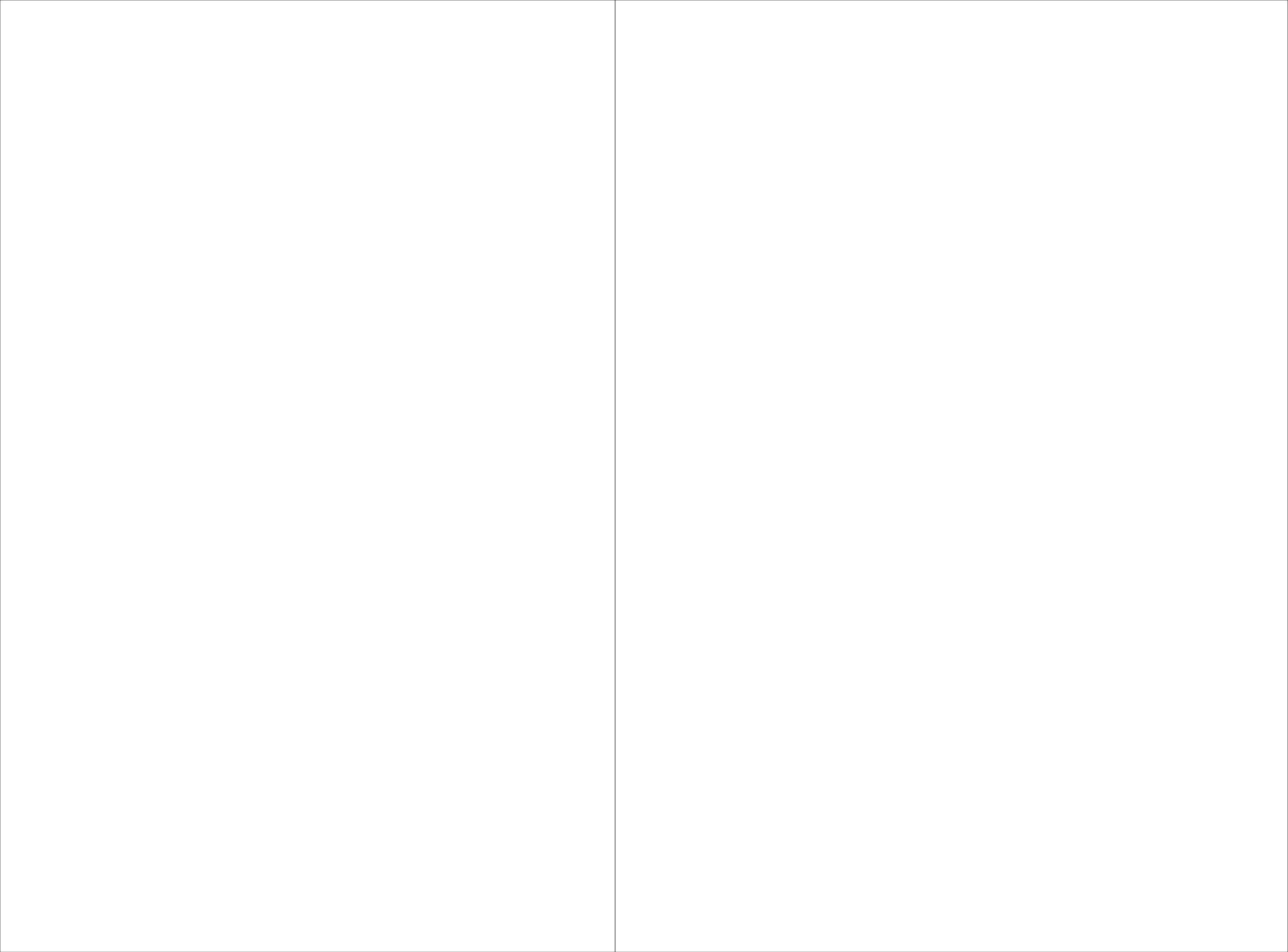
SPECIFIED MINIMUM YIELD STRENGTH			SPECIFIED MINIMUM YIELD STRENGTH			SPECIFIED MINIMUM YIELD STRENGTH		
135 ksi	140 ksi	150 ksi	135 ksi	140 ksi	150 ksi	135 ksi	140 ksi	150 ksi
Steel grades			Steel grades			Steel grades		
TN 135DW	TN 140DW	TN 150DW	TN 135DW	TN 140DW	TN 150DW	TN 135DW	TN 140DW	TN 150DW

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH			INTERNAL YIELD PRESSURE			COLLAPSE PRESSURE		
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb			PSI			PSI		
10 3/4	32.75	0.279	31.23	10.192	10.036	—	9.178	1239	1285	1377	6130	6360	6810	870	870	870
	40.50	0.350	38.91	10.050	9.894	—	11.435	1544	1601	1715	7690	7980	8550	1730	1730	1730
	45.50	0.400	44.26	9.950	9.794	9.875	13.006	1756	1821	1951	8790	9120	9770	2610	2610	2610
	51.00	0.450	49.55	9.850	9.694	—	14.561	1966	2039	2184	9890	10260	10990	3750	3750	3750
	55.50	0.495	54.26	9.760	9.604	9.625	15.947	2153	2233	2392	10880	11280	12090	4950	4990	5030
	60.70	0.545	59.45	9.660	9.504	—	17.473	2359	2446	2621	11980	12420	13310	6290	6390	6550
	65.70	0.595	64.59	9.560	9.404	9.504	18.982	2563	2658	2847	13080	13560	14530	8120	8200	8320
	71.10	0.650	70.18	9.450	9.294	—	20.625	2784	2887	3094	14280	14810	15870	10390	10570	10880
	73.20	0.672	72.40	9.406	9.250	—	21.276	2872	2979	3191	14770	15320	16410	11290	11510	11900
	76.60	0.700	75.20	9.350	9.194	—	22.101	2984	3094	3315	15380	15950	17090	12440	12710	13210
	79.20	0.734	78.59	9.282	9.126	—	23.096	3118	3233	3464	16130	16730	17920	13840	14170	14790
	80.80	0.750	80.18	9.250	9.094	—	23.562	3181	3299	3534	16480	17090	18310	14510	14870	15550
	85.30	0.797	84.80	9.156	9.000	—	24.921	3364	3489	3738	17520	18160	19460	16440	16880	17720
	91.20	0.859	90.83	9.032	8.876	—	26.692	3603	3737	4004	18880	19580	20980	19010	19560	20630
	97.10	0.922	96.87	8.906	8.750	—	28.467	3843	3985	4270	20260	21010	22510	21170	21950	23520
	102.90	0.984	102.73	8.782	8.626	—	30.190	4076	4227	4528	21630	22430	24030	22460	23290	24960
	104.30	1.000	104.23	8.750	8.594	—	30.631	4135	4288	4595	21980	22790	24420	22780	23620	25310
	108.70	1.047	108.60	8.656	8.500	—	31.916	4309	4468	4787	23010	23860	25570	23730	24610	26370
11 3/4	42.00	0.333	40.64	11.084	10.928	11.000	11.944	1612	1672	1792	6700	6940	7440	1130	1130	1130
	47.00	0.375	45.60	11.000	10.844	—	13.401	1809	1876	2010	7540	7820	8380	1630	1630	1630
	54.00	0.435	52.62	10.880	10.724	—	15.463	2088	2165	2319	8750	9070	9720	2570	2570	2570
	60.00	0.489	58.87	10.772	10.616	10.625	17.300	2335	2422	2595	9830	10200	10920	3680	3680	3680
	65.00	0.534	64.03	10.682	10.526	10.625	18.816	2540	2634	2822	10740	11130	11930	4780	4810	4840
	71.00	0.582	69.48	10.586	10.430	—	20.420	2757	2859	3063	11700	12140	13000	5950	6040	6170
	87.50	0.734	86.44	10.282	10.126	—	25.402	3429	3556	3810	14760	15300	16400	11270	11490	11880
	94.00	0.797	93.32	10.156	10.000	—	27.425	3702	3839	4114	16020	16620	17810	13660	13980	14580
	100.50	0.859	100.01	10.032	9.876	—	29.391	3968	4115	4409	17270	17910	19190	15980	16400	17210
	107.10	0.922	106.72	9.906	9.750	—	31.364	4234	4391	4705	18540	19220	20600	18370	18890	19910
	111.50	0.945	109.15	9.860	9.704	—	32.078	4331	4491	4812	19000	19700	21110	19230	19800	20890
	113.50	0.984	113.25	9.782	9.626	—	33.281	4493	4659	4992	19780	20520	21980	20700	21320	22540
	119.90	1.047	119.79	9.656	9.500	—	35.205	4753	4929	5281	21050	21830	23390	21920	22730	24350
11 7/8	58.80	0.470	57.30	10.935	10.779	10.875	16.840	2273	2358	2526	9350	9700	10390	3150	3150	3150
	71.80	0.582	70.26	10.711	10.555	10.625	20.648	2788	2891	3097	11580	12010	12870	5810	5880	6000
12	74.80	0.615	74.85	10.770	10.614	10.625	21.997	2970	3080	3300	12110	12560	13450	6450	6550	6730
	78.10	0.640	78.15	10.783	10.627	—	22.967	3101	3215	3445	12530	13000	13930	7110	7150	7320
12 3/4	88.00	0.672	86.76	11.406	11.250	—	25.498	3442	3570	3825	12450	12910	13840	6960	6990	7210
	94.20	0.734	94.28	11.282	11.126	—	27.708	3741	3879	4156	13600	14100	15110	9110	9230	9440
	101.70	0.797	101.84	11.156	11.000	—	29.929	4040	4190	4489	14770	15310	16410	11290	11510	11900
	109.10	0.859	109.19	11.032	10.876	—	32.089	4332	4493	4813	15920	16510	17690	13450	13760	14350
	116.50	0.922	116.58	10.906	10.750	—	34.260	4625	4796	5139	17080	17720	18980	15630	16040	16810
	123.70	0.984	123.77	10.782	10.626	—	36.373	4910	5092	5456	18230	18910	20260	17780	18280	19240
	130.90	1.047	130.99	10.656	10.500	—	38.494	5197	5389	5774	19400	20120	21560	19960	20560	21710
	137.90	1.109	138.01	10.532	10.376	—	40.558	5475	5678	6084	20550	21310	22830	21440	22230	23820
13 3/8	48.00	0.330	46.02	12.715	12.559	—	13.524	1826	1893	2029	5830	6040	6480	740	740	740
	54.50	0.380	52.79	12.615	12.459	—	15.513	2094	2172	2327	6710	6960	7460	1140	1140	1140
	61.00	0.430	59.50	12.515	12.359	—	17.487	2361	2448	2623	7600	7880	8440	1670	1670	1670
	68.00	0.480	66.17	12.415	12.259	—	19.445	2625	2722	2917	8480	8790	9420	2340	2340	2340
	72.00	0.514	70.67	12.347	12.191	12.250	20.768	2804	2907	3115	9080	9420	10090	2880	2880	2880
	77.00	0.550	75.40	12.275	12.119	—	22.160	2992	3102	3324	9710	10070	10790	3550	3550	3550
	80.70	0.580	79.33	12.215	12.059	—	23.314	3147	3264	3497	10240	10620	11380	4180	4180	4180
	85.00	0.608	82.98	12.159	12.003	—	24.386	3292	3414	3658	10740	11140	11930	4780	4810	4840
	86.00	0.625	85.19	12.125	11.969	12.000	25.035	3380	3505	3755	11040	11450	12270	5150	5190	5250
	92.50	0.672	91.25	12.031	11.875	—	26.818	3620	3755	4023	11870	12310	13190	6160	6250	6400
	98.00	0.719	97.28	11.937	11.781	—	28.587	3859	4002	4288	12700	13170	14110	7420	7480	7550

Deep Well Series | Casing | 13 3/8" TO 16"

								SPECIFIED MINIMUM YIELD STRENGTH			SPECIFIED MINIMUM YIELD STRENGTH			SPECIFIED MINIMUM YIELD STRENGTH		
								135 ksi	140 ksi	150 ksi	135 ksi	140 ksi	150 ksi	135 ksi	140 ksi	150 ksi
								Steel grades			Steel grades			Steel grades		
								TN 135DW	TN 140DW	TN 150DW	TN 135DW	TN 140DW	TN 150DW	TN 135DW	TN 140DW	TN 150DW
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH			INTERNAL YIELD PRESSURE			COLLAPSE PRESSURE		
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb			PSI			PSI		
13 3/8	100.30	0.734	99.19	11.907	11.751	—	29.149	3935	4081	4372	12970	13450	14410	7920	7990	8090
	108.10	0.797	107.16	11.781	11.625	—	31.493	4252	4409	4724	14080	14600	15640	10010	10170	10450
	115.70	0.859	114.93	11.657	11.501	—	33.776	4560	4729	5066	15170	15730	16860	12050	12310	12770
	123.40	0.922	122.74	11.531	11.375	—	36.071	4870	5050	5411	16290	16890	18100	14130	14470	15110
	130.80	0.984	130.34	11.407	11.251	—	38.305	5171	5363	5746	17380	18020	19310	16200	16630	17450
	138.30	1.047	137.98	11.281	11.125	—	40.550	5474	5677	6082	18490	19180	20550	18290	18810	19810
13 1/2	145.60	1.109	145.42	11.157	11.001	—	42.735	5769	5983	6410	19590	20310	21770	20330	20930	22120
	80.40	0.576	79.58	12.348	12.161	12.250	23.387	3157	3274	3508	10080	10450	11200	3980	3980	3980
	81.40	0.580	80.11	12.340	12.153	12.250	23.542	3178	3296	3531	10150	10530	11280	4060	4060	4060
	88.20	0.625	86.86	12.375	12.188	12.250	25.525	3446	3574	3829	10840	11240	12040	4900	4940	4970
	105.00	0.760	104.52	12.105	11.918	—	30.717	4147	4300	4608	13180	13670	14640	8310	8400	8540
	82.50	0.562	80.73	12.876	12.689	—	23.726	3203	3322	3559	9480	9840	10540	3300	3300	3300
14	86.00	0.600	85.95	12.800	12.613	—	25.258	3410	3536	3789	10120	10500	11250	4040	4040	4040
	93.00	0.650	92.76	12.700	12.513	—	27.261	3680	3817	4089	10970	11380	12190	5060	5100	5160
	94.80	0.656	93.58	12.688	12.501	—	27.500	3713	3850	4125	11070	11480	12300	5190	5230	5300
	99.30	0.688	97.91	12.624	12.437	—	28.773	3884	4028	4316	11610	12040	12900	5840	5920	6040
	99.60	0.700	99.52	12.600	12.413	—	29.248	3949	4095	4387	11810	12250	13130	6090	6180	6320
	104.20	0.734	104.09	12.532	12.345	—	30.590	4130	4283	4589	12390	12850	13760	6840	6910	7120
	106.00	0.750	106.23	12.500	12.313	—	31.220	4215	4371	4683	12660	13120	14060	7340	7380	7480
	110.00	0.772	109.17	12.456	12.269	—	32.082	4331	4491	4812	13030	13510	14480	8040	8120	8230
	111.00	0.779	110.10	12.442	12.255	—	32.356	4368	4530	4853	13150	13630	14610	8260	8350	8470
	112.60	0.797	112.49	12.406	12.219	12.250	33.058	4463	4628	4959	13450	13950	14940	8820	8930	9110
	113.00	0.800	112.89	12.400	12.213	12.250	33.175	4479	4645	4976	13500	14000	15000	8920	9040	9220
	120.00	0.850	119.49	12.300	12.113	—	35.115	4741	4916	5267	14340	14870	15940	10500	10690	11010
	77.50	0.500	77.50	14.000	13.813	—	22.777	3075	3189	3416	7870	8170	8750	1860	1860	1860
	109.00	0.715	109.19	13.570	13.383	—	32.088	4332	4492	4813	11260	11680	12510	5420	5480	5560
16	65.00	0.375	62.64	15.250	15.063	—	18.408	2485	2577	2761	5540	5740	6150	630	630	630
	75.00	0.438	72.86	15.124	14.937	—	21.414	2891	2998	3212	6470	6710	7190	1020	1020	1020
	84.00	0.495	82.05	15.010	14.823	—	24.112	3255	3376	3617	7310	7580	8120	1480	1480	1480
	94.50	0.562	92.75	14.876	14.689	14.750	27.257	3680	3816	4089	8300	8610	9220	2190	2190	2190
	95.00	0.566	93.38	14.868	14.681	14.750	27.444	3705	3842	4117	8360	8670	9290	2230	2230	2230
	96.00	0.575	94.81	14.850	14.663	14.750	27.864	3762	3901	4180	8490	8800	9430	2340	2340	2340
	102.90	0.625	102.72	14.750	14.563	—	30.189	4075	4226	4528	9230	9570	10250	3030	3030	3030
	109.00	0.656	107.60	14.688	14.501	14.600	31.622	4269	4427	4743	9690	10050	10760	3520	3520	3520
	118.00	0.715	116.83	14.570	14.383	—	34.334	4635	4807	5150	10560	10950	11730	4560	4580	4590
	128.00	0.781	127.06	14.438	14.251	—	37.341	5041	5228	5601	11530	11960	12810	5750	5820	5930
	137.90	0.843	136.59	14.314	14.127	—	40.141	5419	5620	6021	12450	12910	13830	6950	6980	7200
	147.30	0.906	146.19	14.188	14.001	—	42.962	5800	6015	6444	13380	13870	14860	8690	8800	8960

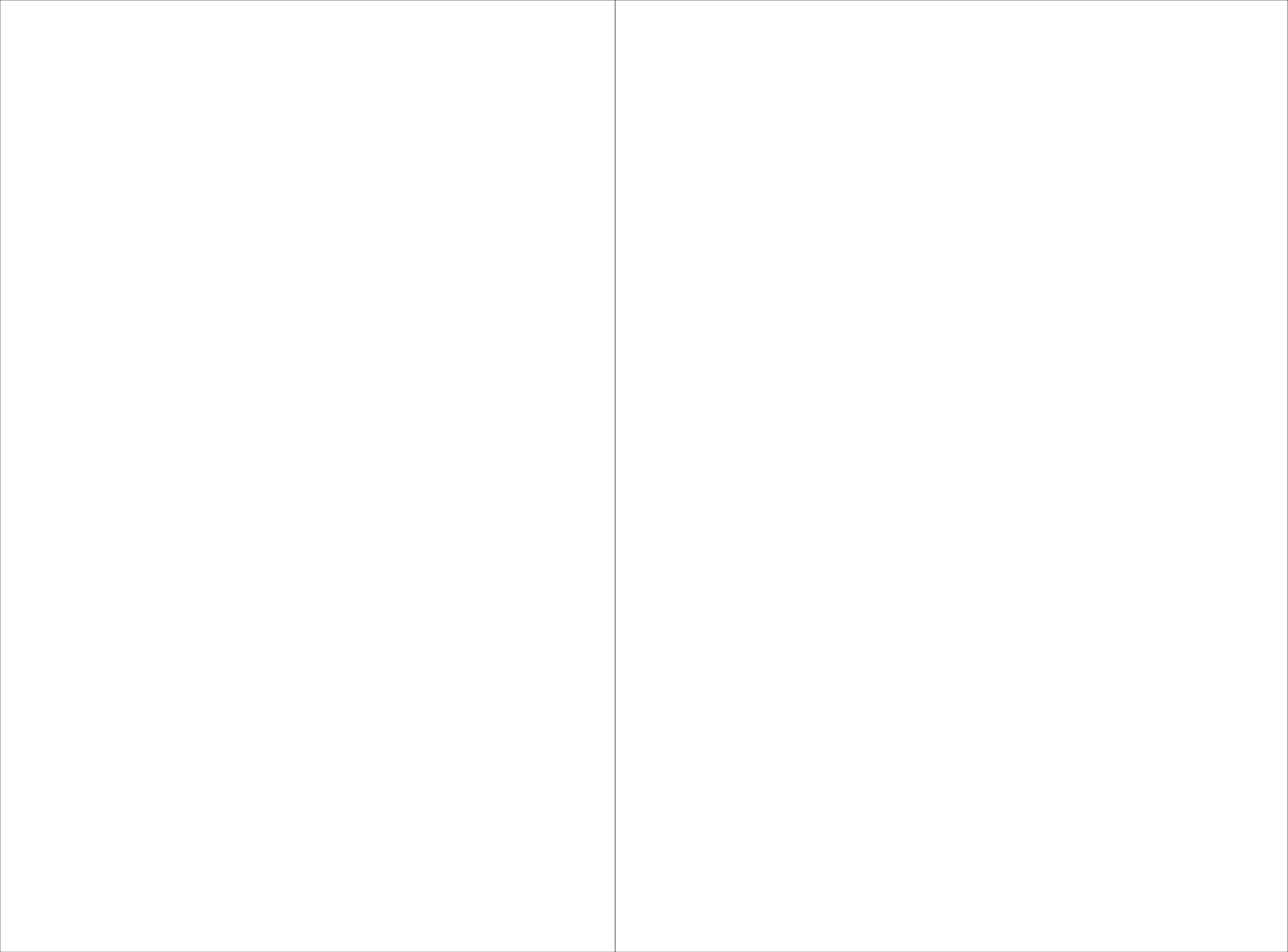


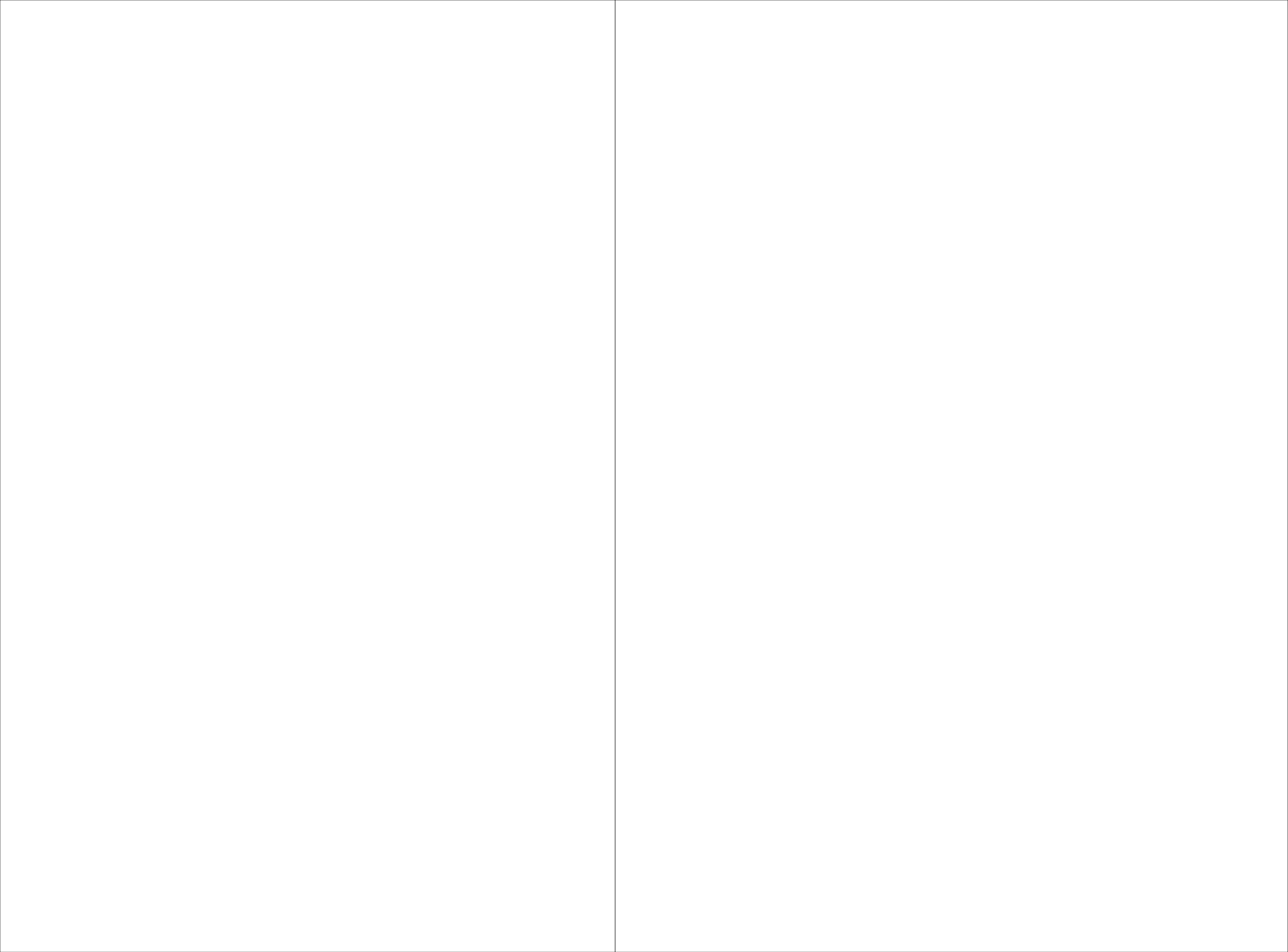


Critical Service Series | Casing | 7 3/4" TO 9 5/8"

SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH					
55 ksi	70 ksi	75 ksi	80 ksi	95 ksi	110 ksi	55 ksi	70 ksi	75 ksi	80 ksi	95 ksi	110 ksi	55 ksi	70 ksi	75 ksi	80 ksi	95 ksi	110 ksi
Steel grades						Steel grades						Steel grades					
TN 55CS	TN 70CS	TN 75CS	TN 80Cr3	TN 95Cr3	TN 110Cr3	TN 55CS	TN 70CS	TN 75CS	TN 80Cr3	TN 95Cr3	TN 110Cr3	TN 55CS	TN 70CS	TN 75CS	TN 80Cr3	TN 95Cr3	TN 110Cr3

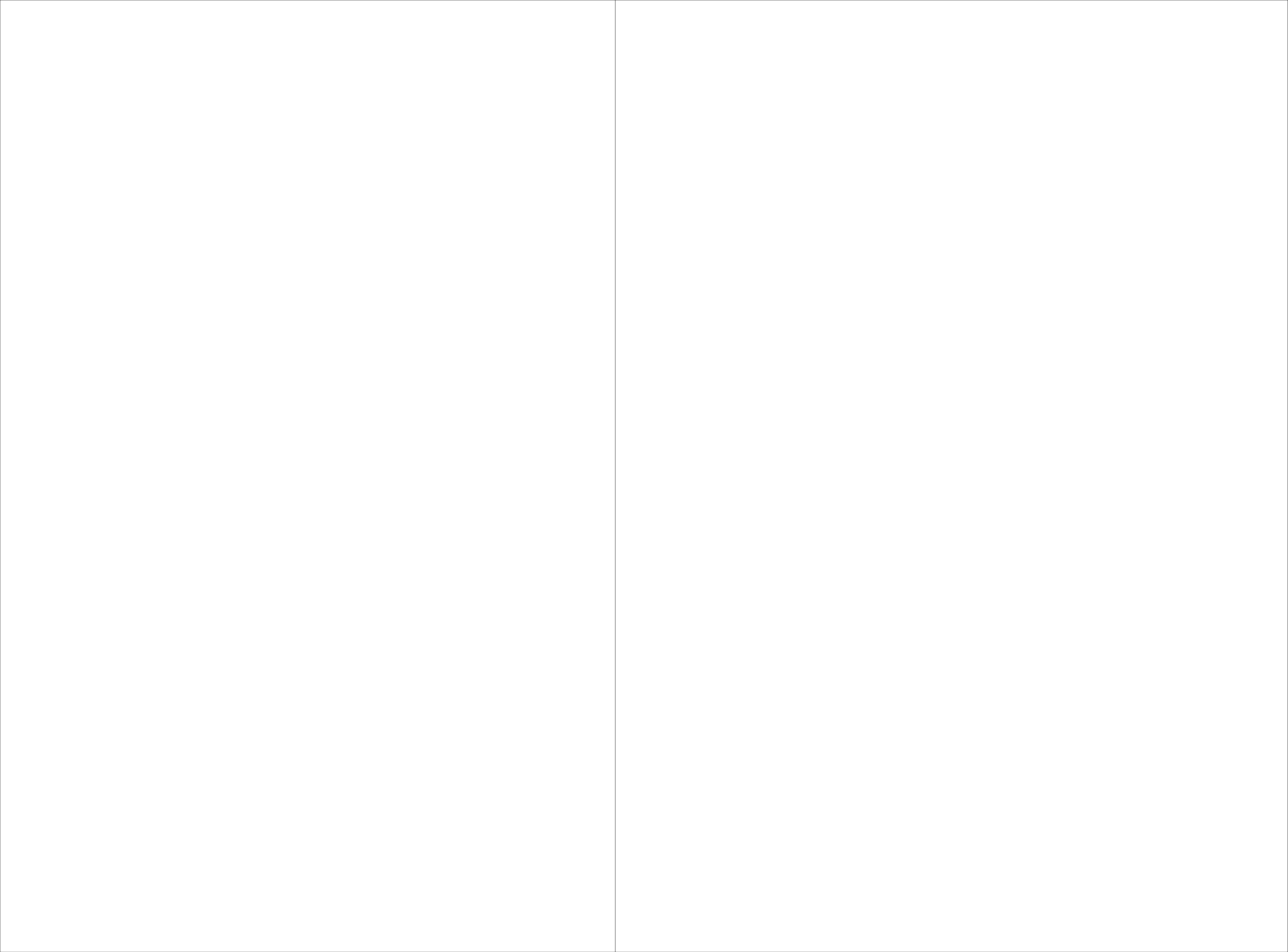
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH						INTERNAL YIELD PRESSURE						COLLAPSE PRESSURE		
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb						PSI						PSI		
7 3/4	56.10	0.750	56.12	6.250	6.125	—	16.493	—	—	—	1319	1567	1814	—	—	—	13550	16090	18630	—	—	—
8	31.00	0.375	30.57	7.250	7.125	—	8.983	—	—	—	719	853	988	—	—	—	6560	7790	9020	—	—	—
	70.80	0.937	70.75	6.126	6.001	—	20.791	—	—	—	1663	1975	2287	—	—	—	16400	19470	22550	—	—	—
	74.20	0.980	74.20	6.103	5.978	—	21.807	—	—	—	1745	2072	2399	—	—	—	17020	20210	23400	—	—	—
8 1/8	32.50	0.375	31.07	7.375	7.250	—	9.130	—	—	—	730	867	1004	—	—	—	6460	7670	8880	—	—	—
	35.50	0.420	34.59	7.285	7.160	—	10.167	—	—	—	813	966	1118	—	—	—	7240	8590	9950	—	—	—
	39.50	0.470	38.46	7.185	7.060	—	11.303	—	—	—	904	1074	1243	—	—	—	8100	9620	11140	—	—	—
8 5/8	24.00	0.264	23.60	8.097	7.972	—	6.934	—	—	—	555	659	763	—	—	—	4290	5090	5890	—	—	—
	28.00	0.304	27.04	8.017	7.892	—	7.947	—	—	—	636	755	874	—	—	—	4930	5860	6780	—	—	—
	32.00	0.352	31.13	7.921	7.796	7.875	9.149	—	—	—	732	869	1006	—	—	—	5710	6780	7860	—	—	—
	36.00	0.400	35.17	7.825	7.700	—	10.336	—	—	—	827	982	1137	—	—	—	6490	7710	8930	—	—	—
	40.00	0.450	39.33	7.725	7.600	7.625	11.557	—	—	—	925	1098	1271	—	—	—	7300	8670	10040	—	—	—
	44.00	0.500	43.43	7.625	7.500	—	12.763	—	—	—	1021	1212	1404	—	—	—	8120	9640	11160	—	—	—
	49.00	0.557	48.04	7.511	7.386	—	14.118	—	—	—	1129	1341	1553	—	—	—	9040	10740	12430	—	—	—
	49.10	0.562	48.44	7.501	7.376	—	14.236	—	—	—	1139	1352	1566	—	—	—	9120	10830	12540	—	—	—
	52.00	0.595	51.08	7.435	7.310	—	15.010	—	—	—	1201	1426	1651	—	—	—	9660	11470	13280	—	—	—
	54.00	0.625	53.45	7.375	7.250	—	15.708	—	—	—	1257	1492	1728	—	—	—	10140	12050	13950	—	—	—
	58.70	0.687	58.30	7.251	7.126	—	17.132	—	—	—	1371	1628	1885	—	—	—	11150	13240	15330	—	—	—
	63.50	0.750	63.14	7.125	7.000	—	18.555	—	—	—	1484	1763	2041	—	—	—	12170	14460	16740	—	—	—
	68.10	0.812	67.82	7.001	6.876	—	19.931	—	—	—	1594	1893	2192	—	—	—	13180	15650	18120	—	—	—
	72.70	0.875	72.49	6.875	6.750	—	21.304	—	—	—	1704	2024	2343	—	—	—	14200	16870	19530	—	—	—
	77.10	0.937	77.01	6.751	6.626	—	22.631	—	—	—	1810	2150	2489	—	—	—	15210	18060	20910	—	—	—
	81.50	1.000	81.51	6.625	6.500	—	23.955	—	—	—	1916	2276	2635	—	—	—	16230	19280	22320	—	—	—
	83.20	1.025	83.28	6.575	6.450	—	24.473	—	—	—	1958	2325	2692	—	—	—	16640	19760	22880	—	—	—
9	40.00	0.425	38.96	8.150	8.025	—	11.449	—	—	—	916	1088	1259	—	—	—	6610	7850	9090	—	—	—
9 3/8	39.00	0.400	38.38	8.575	8.450	8.500	11.278	—	—	—	902	1071	1241	—	—	—	5970	7090	8210	—	—	—
9 5/8	32.30	0.312	31.06	9.001	8.845	—	9.128	—	—	—	730	867	1004	—	—	—	4540	5390	6240	—	—	—
	36.00	0.352	34.89	8.921	8.765	—	10.254	—	—	—	820	974	1128	—	—	—	5120	6080	7040	—	—	—
	40.00	0.395	38.97	8.835	8.679	8.750	11.454	—	—	—	916	1088	1260	—	—	—	5750	6820	7900	—	—	—
	43.50	0.435	42.73	8.755	8.599	8.625	12.559	—	—	—	1005	1193	1381	—	—	—	6330	7510	8700	—	—	—
	47.00	0.472	46.18	8.681	8.525	—	13.572	—	—	—	1086	1289	1493	—	—	—	6870	8150	9440	—	—	—
	53.50	0.545	52.90	8.535	8.379	8.500	15.546	—	—	—	1244	1477	1710	—	—	—	7930	9410	10900	—	—	—
	58.40	0.595	57.44	8.435	8.279	8.375	16.879	—	—	—	1350	1604	1857	—	—	—	8650	10280	11900	—	—	—
	59.40	0.609	58.70	8.407	8.251	—	17.250	—	—	—	1380	1639	1897	—	—	—	8860	10520	12180	—	—	—
	61.10	0.625	60.13	8.375	8.219	—	17.671	—	—	—	1414	1679	1944	—	—	—	9090	10800	12500	—	—	—
	64.90	0.672	64.32	8.281	8.125	—	18.901	—	—	—	1512	1796	2079	—	—	—	9770	11610	13440	—	—	—
	70.30	0.734	69.76	8.157	8.001	—	20.502	—	—	—	1640	1948	2255	—	—	—	10680	12680	14680	—	—	—
	71.60	0.750	71.16	8.125	7.969	—	20.911	—	—	—	1673	1987	2300	—	—	—	10910	12950	15000	—	—	—
	75.60	0.797	75.21	8.031	7.875	—	22.104	—	—	—	1768	2100	2431	—	—	—	11590	13770	15940	—	—	—
	80.80	0.859	80.50	7.907	7.751	—	23.656	—	—	—	1892	2247	2602	—	—	—	12490	14840	17180	—	—	—
	86.00	0.922	85.78	7.781	7.625	—	25.209	—	—	—	2017	2395	2773	—	—	—	13410	15930	18440	—	—	—
	91.00	0.984	90.89	7.657	7.501	—	26.712	—	—	—	2137	2538	2938	—	—	—	14310	17000	19680	—	—	—





Low Temperature Series | Casing | 13 3/8" TO 16"

								SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH					SPECIFIED MINIMUM YIELD STRENGTH				
								55 ksi	80 ksi	95 ksi	110 ksi	125 ksi	55 ksi	80 ksi	95 ksi	110 ksi	125 ksi	55 ksi	80 ksi	95 ksi	110 ksi	125 ksi	
								Steel grades						Steel grades					Steel grades				
								TN 55LT	TN 80LT	TN 95LT	TN 110LT	TN 125LT	TN 55LT	TN 80LT	TN 95LT	TN 110LT	TN 125LT	TN 55LT	TN 80LT	TN 95LT	TN 110LT	TN 125LT	
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH						INTERNAL YIELD PRESSURE				COLLAPSE PRESSURE					
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb						PSI				PSI					
13 3/8	100.30	0.734	99.19	11.907	11.751	—	29.149	1603	2332	2769	3206	3644	5280	7680	9120	10560	12000	4850	6190	6830	7340	7730	
	108.10	0.797	107.16	11.781	11.625	—	31.493	1732	2519	2992	3464	3937	5740	8340	9910	11470	13040	5620	7350	8230	8990	9640	
	115.70	0.859	114.93	11.657	11.501	—	33.776	1858	2702	3209	3715	4222	6180	8990	10680	12360	14050	6380	8480	9600	10610	11510	
	123.40	0.922	122.74	11.531	11.375	—	36.071	1984	2886	3427	3968	4509	6630	9650	11460	13270	15080	7060	9640	10990	12250	13410	
	130.80	0.984	130.34	11.407	11.251	—	38.305	2107	3064	3639	4214	4788	7080	10300	12230	14160	16090	7500	10780	12380	13880	15300	
	138.30	1.047	137.98	11.281	11.125	—	40.550	2230	3244	3852	4460	5069	7530	10960	13010	15070	17120	7940	11550	13710	15540	17210	
	145.60	1.109	145.42	11.157	11.001	—	42.735	2350	3419	4060	4701	5342	7980	11610	13780	15960	18140	8360	12170	14450	16730	19010	
13 1/2	80.40	0.576	79.58	12.348	12.161	12.250	23.387	1286	1871	2222	2573	2923	4110	5970	7090	8210	9330	2840	3350	3640	3840	3960	
	81.40	0.580	80.11	12.340	12.153	12.250	23.542	1295	1883	2236	2590	2943	4140	6010	7140	8270	9400	2890	3390	3690	3910	4030	
13 5/8	88.20	0.625	86.86	12.375	12.188	12.250	25.525	1404	2042	2425	2808	3191	4420	6420	7630	8830	10030	3360	3980	4260	4570	4800	
	105.00	0.760	104.52	12.105	11.918	—	30.717	1689	2457	2918	3379	3840	5370	7810	9270	10740	12200	4990	6410	7090	7650	8090	
14	82.50	0.562	80.73	12.876	12.689	—	23.726	1305	1898	2254	2610	2966	3860	5620	6670	7730	8780	2420	2940	3150	3270	3300	
	86.00	0.600	85.95	12.800	12.613	—	25.258	1389	2021	2400	2778	3157	4120	6000	7120	8250	9370	2870	3380	3680	3890	4010	
	93.00	0.650	92.76	12.700	12.513	—	27.261	1499	2181	2590	2999	3408	4470	6500	7720	8940	10160	3460	4110	4360	4700	4950	
	94.80	0.656	93.58	12.688	12.501	—	27.500	1513	2200	2613	3025	3438	4510	6560	7790	9020	10250	3530	4220	4450	4800	5060	
	99.30	0.688	97.91	12.624	12.437	—	28.773	1583	2302	2733	3165	3597	4730	6880	8170	9460	10750	3900	4780	5120	5330	5660	
	99.60	0.700	99.52	12.600	12.413	—	29.248	1609	2340	2779	3217	3656	4810	7000	8310	9630	10940	4040	4990	5380	5630	5890	
	104.20	0.734	104.09	12.532	12.345	—	30.590	1682	2447	2906	3365	3824	5050	7340	8720	10090	11470	4450	5590	6100	6490	6740	
	106.00	0.750	106.23	12.500	12.313	—	31.220	1717	2498	2966	3434	3902	5160	7500	8910	10310	11720	4630	5870	6430	6880	7200	
	110.00	0.772	109.17	12.456	12.269	—	32.082	1765	2567	3048	3529	4010	5310	7720	9170	10620	12060	4890	6260	6910	7440	7840	
	111.00	0.779	110.10	12.442	12.255	—	32.356	1780	2588	3074	3559	4044	5360	7790	9250	10710	12170	4970	6380	7050	7610	8040	
	112.60	0.797	112.49	12.406	12.219	12.250	33.058	1818	2645	3141	3636	4132	5480	7970	9460	10960	12450	5180	6690	7430	8050	8550	
	113.00	0.800	112.89	12.400	12.213	12.250	33.175	1825	2654	3152	3649	4147	5500	8000	9500	11000	12500	5220	6740	7500	8130	8650	
120.00	0.850	119.49	12.300	12.113	—	35.115	1931	2809	3336	3863	4389	5840	8500	10090	11690	13280	5810	7620	8560	9380	10090		
15	77.50	0.500	77.50	14.000	13.813	—	22.777	1253	1822	2164	2505	2847	3210	4670	5540	6420	7290	1670	1850	1860	1860	1860	
	109.00	0.715	109.19	13.570	13.383	—	32.088	1765	2567	3048	3530	4011	4590	6670	7920	9180	10430	3660	4420	4680	4980	5270	
16	65.00	0.375	62.64	15.250	15.063	—	18.408	1012	1473	1749	2025	2301	2260	3280	3900	4510	5130	630	630	630	630	630	
	75.00	0.438	72.86	15.124	14.937	—	21.414	1178	1713	2034	2355	2677	2630	3830	4550	5270	5990	1020	1020	1020	1020	1020	
	84.00	0.495	82.05	15.010	14.823	—	24.112	1326	1929	2291	2652	3014	2980	4330	5140	5960	6770	1410	1480	1480	1480	1480	
	94.50	0.562	92.75	14.876	14.689	14.750	27.257	1499	2181	2589	2998	3407	3380	4920	5840	6760	7680	1870	2140	2190	2190	2190	
	95.00	0.566	93.38	14.868	14.681	14.750	27.444	1509	2196	2607	3019	3430	3400	4950	5880	6810	7740	1890	2180	2230	2230	2230	
	96.00	0.575	94.81	14.850	14.663	14.750	27.864	1533	2229	2647	3065	3483	3460	5030	5970	6920	7860	1950	2270	2340	2340	2340	
	102.90	0.625	102.72	14.750	14.563	—	30.189	1660	2415	2868	3321	3774	3760	5470	6490	7520	8550	2300	2770	2940	3030	3030	
	109.00	0.656	107.60	14.688	14.501	14.600	31.622	1739	2530	3004	3478	3953	3950	5740	6820	7890	8970	2560	3080	3320	3470	3520	
	118.00	0.715	116.83	14.570	14.383	—	34.334	1888	2747	3262	3777	4292	4300	6260	7430	8600	9780	3170	3680	4030	4300	4490	
	128.00	0.781	127.06	14.438	14.251	—	37.341	2054	2987	3547	4108	4668	4700	6830	8120	9400	10680	3850	4700	5020	5240	5570	
	137.90	0.843	136.59	14.314	14.127	—	40.141	2208	3211	3813	4416	5018	5070	7380	8760	10140	11530	4490	5650	6180	6570	6840	
	147.30	0.906	146.19	14.188	14.001	—	42.962	2363	3437	4081	4726	5370	5450	7930	9410	10900	12390	5130	6620	7340	7950	8440	



Thermal Service Series | Casing | 4 1/2" TO 6 5/8"

(6 5/8" TO 7 3/4" on reverse side)

SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH	
55 ksi	80 ksi	55 ksi	80 ksi	55 ksi	80 ksi
Steel grades		Steel grades		Steel grades	
TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH		INTERNAL YIELD PRESSURE		COLLAPSE PRESSURE	
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb		PSI		PSI	
4 1/2	9.50	0.205	9.41	4.090	3.965	—	2.766	152	221	4380	6380	3310	3900
	10.50	0.224	10.24	4.052	3.927	—	3.009	166	241	4790	6970	4010	4940
	11.00	0.237	10.80	4.026	3.901	—	3.174	175	254	5070	7370	4480	5640
	11.60	0.250	11.36	4.000	3.875	—	3.338	184	267	5350	7780	4960	6350
	12.60	0.271	12.25	3.958	3.833	—	3.600	198	288	5800	8430	5720	7500
	13.50	0.290	13.05	3.920	3.795	—	3.836	211	307	6200	9020	6420	8540
	15.10	0.337	15.00	3.826	3.701	3.750	4.407	242	353	7210	10480	7620	11090
	16.60	0.375	16.54	3.750	3.625	—	4.860	267	389	8020	11670	8400	12220
	17.00	0.380	16.74	3.740	3.615	—	4.918	271	393	8130	11820	8510	12370
	17.70	0.402	17.61	3.696	3.571	—	5.175	285	414	8600	12510	8950	13020
	18.90	0.430	18.71	3.640	3.515	—	5.498	302	440	9200	13380	9500	13820
	21.50	0.500	21.38	3.500	3.375	—	6.283	346	503	10690	15560	10860	15800
5	23.70	0.560	23.59	3.380	3.255	—	6.932	381	555	11980	17420	11980	17430
	26.10	0.630	26.06	3.240	3.115	—	7.660	421	613	13480	19600	13250	19270
	11.50	0.220	11.24	4.560	4.435	—	3.304	182	264	4240	6160	3060	3560
	13.00	0.253	12.84	4.494	4.369	—	3.773	208	302	4870	7080	4140	5140
	15.00	0.296	14.88	4.408	4.283	—	4.374	241	350	5700	8290	5560	7250
	18.00	0.362	17.95	4.276	4.151	—	5.275	290	422	6970	10140	7390	10500
	20.30	0.408	20.03	4.184	4.059	—	5.886	324	471	7850	11420	8250	12000
	20.80	0.422	20.65	4.156	4.031	—	6.069	334	486	8120	11820	8500	12360
	21.40	0.437	21.32	4.126	4.001	—	6.264	345	501	8410	12240	8770	12760
	23.20	0.478	23.11	4.044	3.919	—	6.791	373	543	9200	13380	9510	13830
	24.10	0.500	24.05	4.000	3.875	—	7.069	389	565	9630	14000	9900	14400
	27.00	0.560	26.58	3.880	3.755	—	7.811	430	625	10780	15680	10940	15910
5 1/2	26.70	0.562	26.66	3.876	3.751	—	7.836	431	627	10820	15740	10970	15960
	29.20	0.625	29.23	3.750	3.625	—	8.590	472	687	12030	17500	12030	17500
	31.60	0.687	31.67	3.626	3.501	—	9.309	512	745	13220	19240	13030	18960
	34.00	0.750	34.07	3.500	3.375	—	10.014	551	801	14440	21000	14020	20390
	14.00	0.244	13.71	5.012	4.887	—	4.029	222	322	4270	6210	3120	3620
	15.50	0.275	15.36	4.950	4.825	—	4.514	248	361	4810	7000	4040	4990
	17.00	0.304	16.89	4.892	4.767	—	4.962	273	397	5320	7740	4910	6290
	20.00	0.361	19.83	4.778	4.653	—	5.828	321	466	6320	9190	6610	8830
	23.00	0.415	22.56	4.670	4.545	—	6.630	365	530	7260	10560	7680	11160
	26.00	0.476	25.56	4.548	4.423	4.500	7.513	413	601	8330	12120	8700	12650
	26.80	0.500	26.73	4.500	4.375	—	7.854	432	628	8750	12730	9090	13220
	28.40	0.530	28.16	4.440	4.315	—	8.275	455	662	9280	13490	9580	13930
5 3/4	29.70	0.562	29.67	4.376	4.251	—	8.718	480	697	9840	14310	10090	14670
	32.00	0.612	31.98	4.276	4.151	—	9.398	517	752	10710	15580	10870	15820
	32.60	0.625	32.57	4.250	4.125	—	9.572	526	766	10940	15910	11080	16120
	35.30	0.687	35.35	4.126	4.001	—	10.388	571	831	12020	17490	12020	17480
	36.40	0.705	36.14	4.090	3.965	—	10.620	584	850	12340	17950	12290	17880
	38.00	0.750	38.08	4.000	3.875	—	11.192	616	895	13130	19090	12960	18850
	40.50	0.812	40.69	3.876	3.751	—	11.959	658	957	14210	20670	13850	20140
	43.10	0.875	43.26	3.750	3.625	—	12.714	699	1017	15310	22270	14710	21390
	18.00	0.312	18.14	5.126	5.001	—	5.330	293	426	5220	7600	4740	6040
	21.80	0.375	21.55	5.000	4.875	—	6.332	348	507	6280	9130	6550	8730
	24.20	0.420	23.93	4.910	4.785	—	7.033	387	563	7030	10230	7450	10650
6	18.80	0.304	18.51	5.392	5.267	—	5.440	299	435	4880	7090	4150	5150
	20.00	0.324	19.66	5.352	5.227	—	5.777	318	462	5200	7560	4700	5970
	23.00	0.380	22.83	5.240	5.115	—	6.709	369	537	6100	8870	6240	8270
6 5/8	20.00	0.288	19.51	6.049	5.924	—	5.734	315	459	4180	6090	2970	3480
	23.20	0.330	22.21	5.965	5.840	—	6.526	359	522	4790	6970	4010	4940
	24.00	0.352	23.60	5.921	5.796	—	6.937	382	555	5110	7440	4560	5760
	24.60	0.362	24.24	5.901	5.776	—	7.123	392	570	5260	7650	4810	6130

Thermal Service Series | Casing | 6 5/8" TO 7 3/4"

SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH	
55 ksi	80 ksi	55 ksi	80 ksi	55 ksi	80 ksi
Steel grades		Steel grades		Steel grades	
TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH		INTERNAL YIELD PRESSURE		COLLAPSE PRESSURE	
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb		PSI		PSI	
6 5/8	28.00	0.417	27.67	5.791	5.666	—	8.133	447	651	6060	8810	6170	8170
	32.00	0.475	31.23	5.675	5.550	—	9.177	505	734	6900	10040	7320	10320
	33.00	0.500	32.74	5.625	5.500	—	9.621	529	770	7260	10570	7680	11160
	35.00	0.525	34.23	5.575	5.450	—	10.061	553	805	7630	11090	8030	11670
	36.70	0.562	36.43	5.501	5.376	—	10.705	589	856	8160	11880	8540	12420
	40.20	0.625	40.09	5.375	5.250	—	11.781	648	942	9080	13210	9400	13670
	43.70	0.687	43.61	5.251	5.126	—	12.816	705	1025	9980	14520	10230	14880
	46.00	0.730	46.00	5.165	5.040	—	13.519	744	1082	10610	15430	10780	15680
	47.10	0.750	47.10	5.125	5.000	—	13.843	761	1107	10900	15850	11050	16070
	50.40	0.812	50.46	5.001	4.876	—	14.829	816	1186	11800	17160	11830	17200
	53.70	0.875	53.78	4.875	4.750	—	15.806	869	1264	12710	18490	12610	18340
	65.80	1.125	66.14	4.375	4.250	—	19.439	1069	1555	16340	23770	15500	22550
7	17.00	0.231	16.72	6.538	6.413	—	4.912	270	393	3180	4620	1630	1800
	20.00	0.272	19.56	6.456	6.331	—	5.749	316	460	3740	5440	2270	2740
	23.00	0.317	22.65	6.366	6.241	6.250	6.655	366	532	4360	6340	3270	3830
	24.75	0.343	24.41	6.314	6.189	—	7.173	395	574	4720	6860	3880	4740
	26.00	0.362	25.69	6.276	6.151	—	7.549	415	604	4980	7240	4320	5410
	29.00	0.408	28.75	6.184	6.059	6.125	8.449	465	676	5610	8160	5410	7020
	32.00	0.453	31.70	6.094	5.969	6.000	9.317	512	745	6230	9060	6470	8610
	35.00	0.498	34.61	6.004	5.879	—	10.172	559	814	6850	9960	7270	10180
	38.00	0.540	37.29	5.920	5.795	5.875	10.959	603	877	7430	10800	7830	11390
	41.00	0.590	40.43	5.820	5.695	—	11.881	653	950	8110	11800	8490	12350
	42.70	0.625	42.59	5.750	5.625	—	12.517	688	1001	8590	12500	8940	13010
	44.00	0.640	43.51	5.720	5.595	—	12.788	703	1023	8800	12800	9140	13290
	46.00	0.670	45.34	5.660	5.535	—	13.324	733	1066	9210	13400	9520	13850
	46.40	0.687	46.36	5.626	5.501	—	13.625	749	1090	9450	13740	9740	14160
	49.50	0.730	48.93	5.540	5.415	—	14.379	791	1150	10040	14600	10270	14940
	50.10	0.750	50.11	5.500	5.375	—	14.726	810	1178	10310	15000	10530	15310
	53.60	0.812	53.71	5.376	5.251	—	15.785	868	1263	11170	16240	11280	16410
	57.10	0.875	57.29	5.250	5.125	—	16.837	926	1347	12030	17500	12030	17500
	60.50	0.937	60.73	5.126	5.001	—	17.847	982	1428	12880	18740	12750	18550
	63.90	1.000	64.14	5.000	4.875	—	18.850	1037	1508	13750	20000	13470	19590
7 1/4	41.20	0.578	41.23	6.094	5.969	—	12.115	666	969	7670	11160	8070	11740
7 5/8	24.00	0.300	23.49	7.025	6.900	—	6.904	380	552	3790	5510	2330	2810
	26.40	0.328	25.59	6.969	6.844	—	7.519	414	602	4140	6020	2890	3400
	29.70	0.375	29.06	6.875	6.750	—	8.541	470	683	4730	6890	3910	4790
	33.70	0.430	33.07	6.765	6.640	—	9.720	535	778	5430	7900	5100	6560
	35.80	0.465	35.59	6.695	6.570	—	10.460	575	837	5870	8540	5850	7690
	39.00	0.500	38.08	6.625	6.500	—	11.192	616	895	6310	9180	6610	8820
	42.80	0.562	42.43	6.501	6.376	—	12.470	686	998	7090	10320	7510	10810
	45.30	0.595	44.71	6.435	6.310	6.375	13.141	723	1051	7510	10920	7910	11510
	47.10	0.625	46.77	6.375	6.250	—	13.744	756	1100	7890	11480	8280	12040
	51.20	0.687	50.95	6.251	6.126	—	14.974	824	1198	8670	12610	9020	13120
	52.80	0.712	52.62	6.201	6.076	—	15.463	850	1237	8990	13070	9310	13540
	55.30	0.750	55.12	6.125	6.000	—	16.199	891	1296	9470	13770	9750	14190
	59.20	0.812	59.14	6.001	5.876	—	17.380	956	1390	10250	14910	10470	15220
	63.20	0.875	63.14	5.875	5.750	—	18.555	1021	1484	11050	16070	11180	16260
	66.90	0.937	66.99	5.751	5.626	—	19.687	1083	1575	11830	17200	11850	17240
	70.70	1.000	70.82	5.625	5.500	—	20.813	1145	1665	12620	18360	12540	18240
7 3/4	46.10	0.595	45.51	6.560	6.435	6.500	13.374	736	1070	7390	10750	7790	11340
	47.60	0.625	47.60	6.500	6.375	—	13.990	769	1119	7760	11290	8160	11860
	48.60	0.640	48.64	6.470	6.345	6.375	14.296	786	1144	7950	11560	8330	12120
	51.80	0.687	51.87	6.376	6.251	—	15.244	838	1220	8530	12410	8890	12930
	54.20	0.712	53.57	6.326	6.201	6.250	15.743	866	1259	8840	12860	9180	13350

Thermal Service Series | Casing | 7 3/4" TO 10 1/4"

(10 3/4" TO 13 3/8" on reverse side)

SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH	
55 ksi	80 ksi	55 ksi	80 ksi	55 ksi	80 ksi
Steel grades		Steel grades		Steel grades	
TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH		INTERNAL YIELD PRESSURE		COLLAPSE PRESSURE	
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb		PSI		PSI	
7 3/4	56.10	0.750	56.12	6.250	6.125	—	16.493	907	1319	9310	13550	9620	13990
	31.00	0.375	30.57	7.250	7.125	—	8.983	494	719	4510	6560	3530	4220
	70.80	0.937	70.75	6.126	6.001	—	20.791	1144	1663	11270	16400	11370	16540
	74.20	0.980	74.20	6.103	5.978	—	21.807	1199	1745	11700	17020	11740	17080
8 1/8	32.50	0.375	31.07	7.375	7.250	—	9.130	502	730	4440	6460	3410	4040
	35.50	0.420	34.59	7.285	7.160	—	10.167	559	813	4980	7240	4320	5400
	39.50	0.470	38.46	7.185	7.060	—	11.303	622	904	5570	8100	5330	6920
8 5/8	24.00	0.264	23.60	8.097	7.972	—	6.934	381	555	2950	4290	1370	1430
	28.00	0.304	27.04	8.017	7.892	—	7.947	437	636	3390	4930	1880	2160
	32.00	0.352	31.13	7.921	7.796	7.875	9.149	503	732	3930	5710	2530	3050
	36.00	0.400	35.17	7.825	7.700	—	10.336	568	827	4460	6490	3450	4100
	40.00	0.450	39.33	7.725	7.600	7.625	11.557	636	925	5020	7300	4400	5520
	44.00	0.500	43.43	7.625	7.500	—	12.763	702	1021	5580	8120	5360	6950
	49.00	0.557	48.04	7.511	7.386	—	14.118	776	1129	6220	9040	6450	8580
	49.10	0.562	48.44	7.501	7.376	—	14.236	783	1139	6270	9120	6540	8710
	52.00	0.595	51.08	7.435	7.310	—	15.010	826	1201	6640	9660	7060	9650
	54.00	0.625	53.45	7.375	7.250	—	15.708	864	1257	6970	10140	7390	10510
	58.70	0.687	58.30	7.251	7.126	—	17.132	942	1371	7670	11150	8070	11730
	63.50	0.750	63.14	7.125	7.000	—	18.555	1021	1484	8370	12170	8730	12700
	68.10	0.812	67.82	7.001	6.876	—	19.931	1096	1594	9060	13180	9380	13650
	72.70	0.875	72.49	6.875	6.750	—	21.304	1172	1704	9760	14200	10020	14580
	77.10	0.937	77.01	6.751	6.626	—	22.631	1245	1810	10460	15210	10660	15500
	81.50	1.000	81.51	6.625	6.500	—	23.955	1318	1916	11160	16230	11280	16410
	83.20	1.025	83.28	6.575	6.450	—	24.473	1346	1958	11440	16640	11520	16760
9	40.00	0.425	38.96	8.150	8.025	—	11.449	630	916	4550	6610	3590	4310
9 3/8	39.00	0.400	38.38	8.575	8.450	8.500	11.278	620	902	4110	5970	2840	3350
9 5/8	32.30	0.312	31.06	9.001	8.845	—	9.128	502	730	3120	4540	1570	1710
	36.00	0.352	34.89	8.921	8.765	—	10.254	564	820	3520	5120	2020	2370
	40.00	0.395	38.97	8.835	8.679	8.750	11.454	630	916	3950	5750	2570	3090
	43.50	0.435	42.73	8.755	8.599	8.625	12.559	691	1005	4350	6330	3250	3810
	47.00	0.472	46.18	8.681	8.525	—	13.572	746	1086	4720	6870	3890	4760
	53.50	0.545	52.90	8.535	8.379	8.500	15.546	855	1244	5450	7930	5130	6620
	58.40	0.595	57.44	8.435	8.279	8.375	16.879	928	1350	5950	8650	5990	7890
	59.40	0.609	58.70	8.407	8.251	—	17.250	949	1380	6090	8860	6230	8260
	61.10	0.625	60.13	8.375	8.219	—	17.671	972	1414	6250	9090	6500	8660
	64.90	0.672	64.32	8.281	8.125	—	18.901	1040	1512	6720	9770	7150	9860
	70.30	0.734	69.76	8.157	8.001	—	20.502	1128	1640	7340	10680	7750	11270
	71.60	0.750	71.16	8.125	7.969	—	20.911	1150	1673	7500	10910	7910	11500
	75.60	0.797	75.21	8.031	7.875	—	22.104	1216	1768	7970	11590	8350	12150
	80.80	0.859	80.50	7.907	7.751	—	23.656	1301	1892	8590	12490	8940	13010
	86.00	0.922	85.78	7.781	7.625	—	25.209	1386	2017	9220	13410	9530	13860
	91.00	0.984	90.89	7.657	7.501	—	26.712	1469	2137	9840	14310	10100	14690
9 3/4	59.20	0.595	58.23	8.560	8.404	8.500	17.113	941	1369	5870	8540	5860	7700
9 7/8	62.80	0.625	61.80	8.625	8.469	8.500	18.162	999	1453	6090	8860	6230	8260
	65.30	0.650	64.10	8.575	8.419	8.500	18.838	1036	1507	6340	9220	6650	8880
	67.30	0.668	65.75	8.539	8.383	—	19.322	1063	1546	6510	9470	6940	9330
	68.80	0.700	68.66	8.475	8.319	—	20.177	1110	1614	6820	9920	7240	10120
	70.40	0.707	69.29	8.461	8.305	—	20.363	1120	1629	6890	10020	7310	10290
	70.40	0.708	69.38	8.459	8.303	—	20.390	1121	1631	6900	10040	7320	10320
10	72.10	0.725	70.91	8.425	8.269	8.375	20.841	1146	1667	7070	10280	7480	10740
	66.95	0.672	67.01	8.656	8.500	—	19.693	1083	1575	6470	9410	6870	9220
	68.42	0.688	68.49	8.624	8.468	8.500	20.127	1107	1610	6620	9630	7050	9610
	68.80	0.700	69.59	8.600	8.444	—	20.452	1125	1636	6740	9800	7160	9900
10 1/4	82.00	0.800	80.82	8.650	8.494	—	23.750	1306	1900	7510	10930	7920	11520

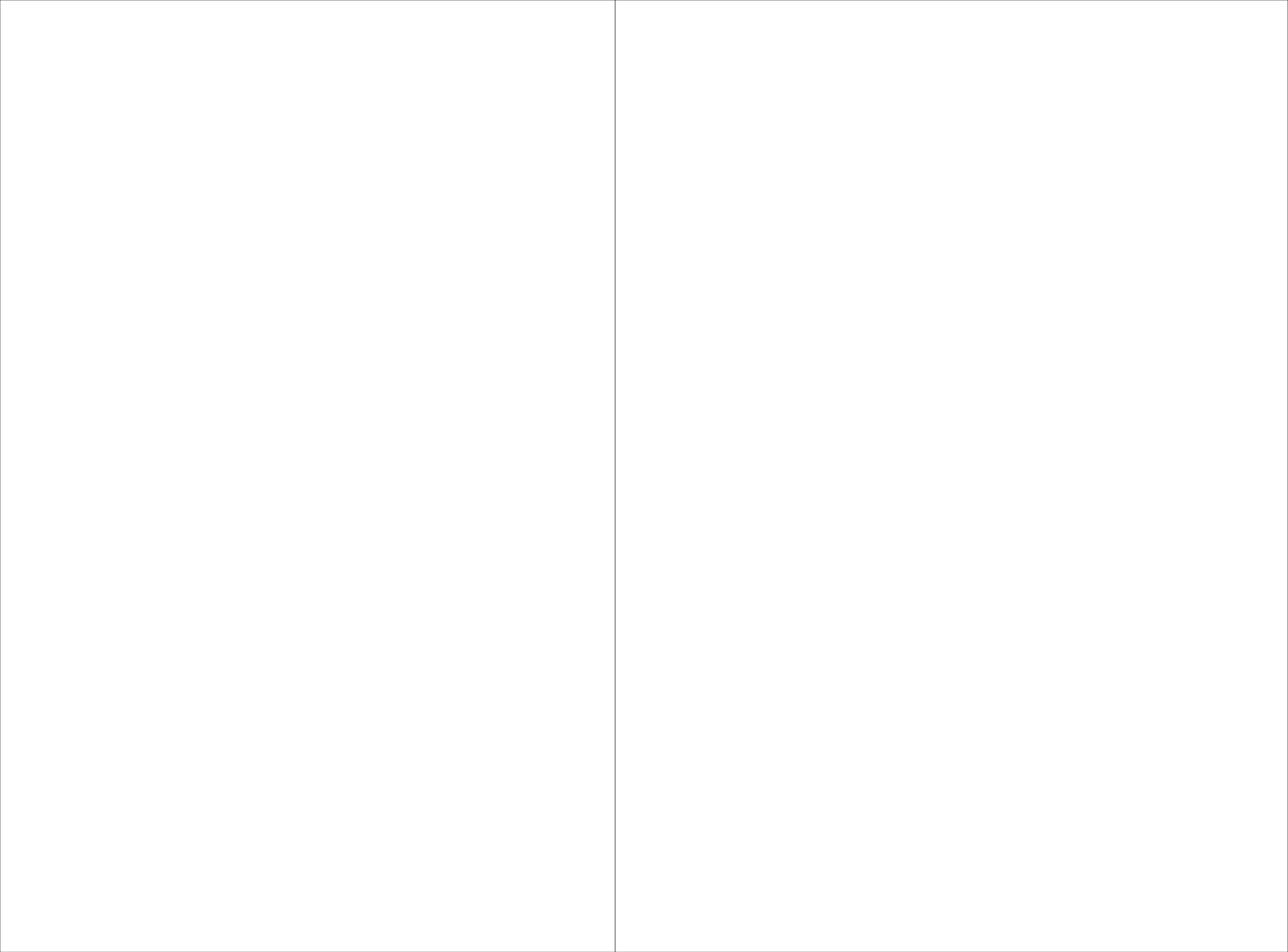
Thermal Service Series | Casing | 10 3/4" TO 13 3/8"

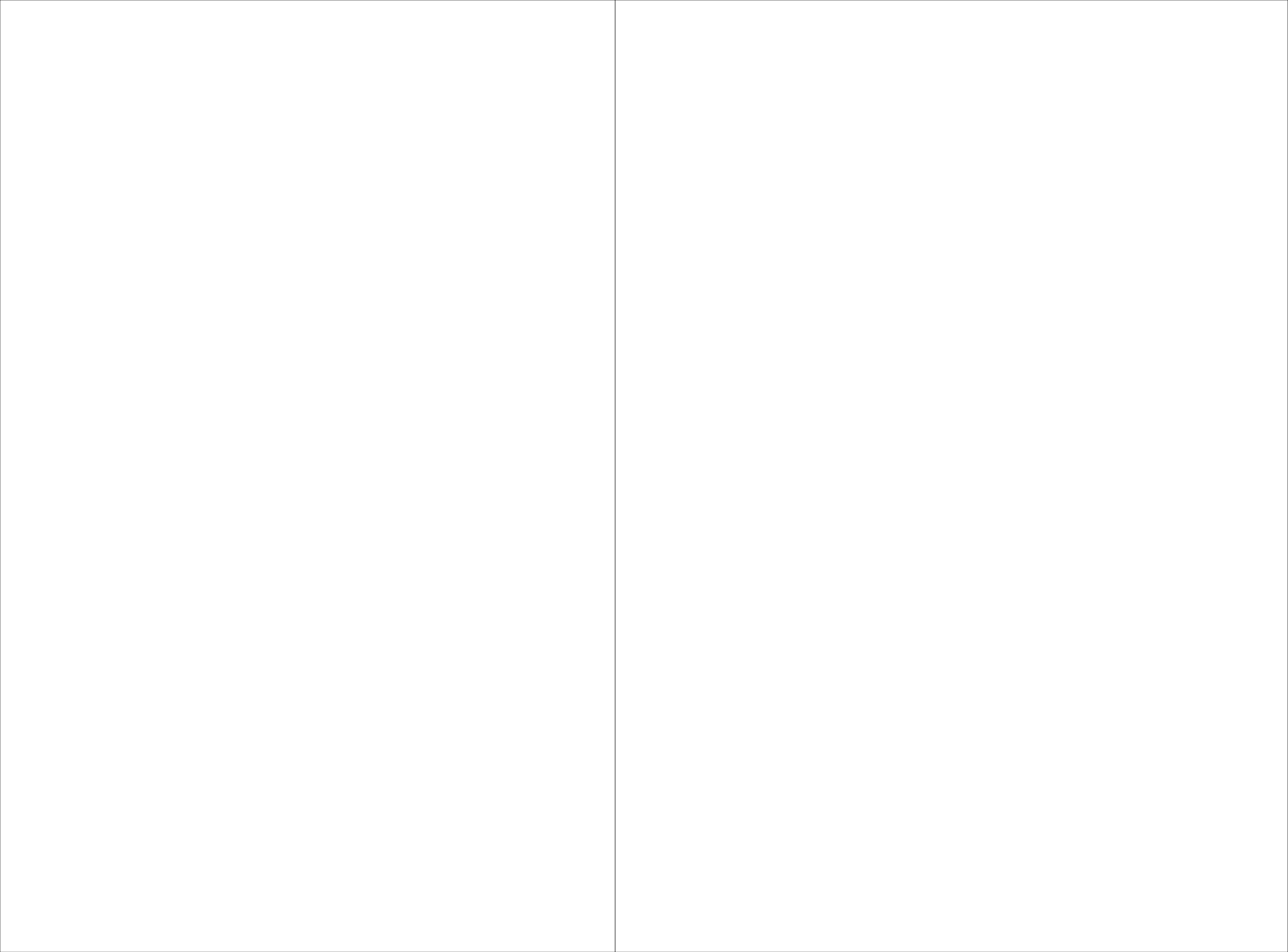
SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH	SPECIFIED MINIMUM YIELD STRENGTH	
55 ksi	80 ksi	55 ksi	80 ksi	55 ksi 80 ksi
Steel grades		Steel grades		Steel grades
TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL TN 80TH TN 80TL

OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH		INTERNAL YIELD PRESSURE		COLLAPSE PRESSURE	
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb		PSI		PSI	
10 3/4	32.75	0.279	31.23	10.192	10.036	—	9.178	505	734	2500	3630	870	870
	40.50	0.350	38.91	10.050	9.894	—	11.435	629	915	3130	4560	1580	1730
	45.50	0.400	44.26	9.950	9.794	9.875	13.006	715	1040	3580	5210	2090	2470
	51.00	0.450	49.55	9.850	9.694	—	14.561	801	1165	4030	5860	2700	3220
	55.50	0.495	54.26	9.760	9.604	9.625	15.947	877	1276	4430	6450	3390	4020
	60.70	0.545	59.45	9.660	9.504	—	17.473	961	1398	4880	7100	4160	5160
	65.70	0.595	64.59	9.560	9.404	9.504	18.982	1044	1519	5330	7750	4920	6300
	71.10	0.650	70.18	9.450	9.294	—	20.625	1134	1650	5820	8470	5760	7560
	73.20	0.672	72.40	9.406	9.250	—	21.276	1170	1702	6020	8750	6100	8060
	76.60	0.700	75.20	9.350	9.194	—	22.101	1216	1768	6270	9120	6530	8700
	79.20	0.734	78.59	9.282	9.126	—	23.096	1270	1848	6570	9560	7000	9480
	80.80	0.750	80.18	9.250	9.094	—	23.562	1296	1885	6720	9770	7140	9850
	85.30	0.797	84.80	9.156	9.000	—	24.921	1371	1994	7140	10380	7550	10920
	91.20	0.859	90.83	9.032	8.876	—	26.692	1468	2135	7690	11190	8090	11770
	97.10	0.922	96.87	8.906	8.750	—	28.467	1566	2277	8260	12010	8620	12550
	102.90	0.984	102.73	8.782	8.626	—	30.190	1660	2415	8810	12810	9150	13310
	104.30	1.000	104.23	8.750	8.594	—	30.631	1685	2450	8950	13020	9280	13500
	108.70	1.047	108.60	8.656	8.500	—	31.916	1755	2553	9370	13640	9670	14060
11 3/4	42.00	0.333	40.64	11.084	10.928	11.000	11.944	657	956	2730	3970	1120	1130
	47.00	0.375	45.60	11.000	10.844	—	13.401	737	1072	3070	4470	1510	1630
	54.00	0.435	52.62	10.880	10.724	—	15.463	850	1237	3560	5180	2070	2440
	60.00	0.489	58.87	10.772	10.616	10.625	17.300	951	1384	4010	5830	2660	3180
	65.00	0.534	64.03	10.682	10.526	10.625	18.816	1035	1505	4370	6360	3300	3870
	71.00	0.582	69.48	10.586	10.430	—	20.420	1123	1634	4770	6930	3970	4870
	87.50	0.734	86.44	10.282	10.126	—	25.402	1397	2032	6010	8750	6090	8050
	94.00	0.797	93.32	10.156	10.000	—	27.425	1508	2194	6530	9500	6960	9370
	100.50	0.859	100.01	10.032	9.876	—	29.391	1616	2351	7040	10230	7450	10660
	107.10	0.922	106.72	9.906	9.750	—	31.364	1725	2509	7550	10990	7960	11570
	111.50	0.945	109.15	9.860	9.704	—	32.078	1764	2566	7740	11260	8140	11840
	113.50	0.984	113.25	9.782	9.626	—	33.281	1830	2663	8060	11720	8440	12280
	119.90	1.047	119.79	9.656	9.500	—	35.205	1936	2816	8580	12470	8930	12990
11 7/8	58.80	0.470	57.30	10.935	10.779	10.875	16.840	926	1347	3810	5540	2350	2850
	71.80	0.582	70.26	10.711	10.555	10.625	20.648	1136	1652	4720	6860	3880	4750
12	74.80	0.615	74.85	10.770	10.614	10.625	21.997	1210	1760	4930	7180	4250	5300
	78.10	0.640	78.15	10.783	10.627	—	22.967	1263	1837	5110	7430	4550	5740
12 3/4	88.00	0.672	86.76	11.406	11.250	—	25.498	1402	2040	5070	7380	4490	5660
	94.20	0.734	94.28	11.282	11.126	—	27.708	1524	2217	5540	8060	5290	6850
	101.70	0.797	101.84	11.156	11.000	—	29.929	1646	2394	6020	8750	6100	8060
	109.10	0.859	109.19	11.032	10.876	—	32.089	1765	2567	6480	9430	6900	9260
	116.50	0.922	116.58	10.906	10.750	—	34.260	1884	2741	6960	10120	7380	10470
	123.70	0.984	123.77	10.782	10.626	—	36.373	2000	2910	7430	10800	7830	11390
	130.90	1.047	130.99	10.656	10.500	—	38.494	2117	3080	7900	11500	8290	12060
	137.90	1.109	138.01	10.532	10.376	—	40.558	2231	3245	8370	12180	8730	12700
13 3/8	48.00	0.330	46.02	12.715	12.559	—	13.524	744	1082	2370	3450	740	740
	54.50	0.380	52.79	12.615	12.459	—	15.513	853	1241	2730	3980	1130	1140
	61.00	0.430	59.50	12.515	12.359	—	17.487	962	1399	3090	4500	1540	1670
	68.00	0.480	66.17	12.415	12.259	—	19.445	1069	1556	3450	5020	1950	2260
	72.00	0.514	70.67	12.347	12.191	12.250	20.768	1142	1661	3700	5380	2230	2670
	77.00	0.550	75.40	12.275	12.119	—	22.160	1219	1773	3960	5760	2580	3100
	80.70	0.580	79.33	12.215	12.059	—	23.314	1282	1865	4170	6070	2950	3460
	85.00	0.608	82.98	12.159	12.003	—	24.386	1341	1951	4380	6360	3300	3870
	86.00	0.625	85.19	12.125	11.969	12.000	25.035	1377	2003	4500	6540	3510	4190
	92.50	0.672	91.25	12.031	11.875	—	26.818	1475	2145	4840	7030	4090	5050
	98.00	0.719	97.28	11.937	11.781	—	28.587	1572	2287	5170	7530	4660	5910

Thermal Service Series | Casing | 13 3/8" TO 16"

								SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH		SPECIFIED MINIMUM YIELD STRENGTH	
								55 ksi	80 ksi	55 ksi	80 ksi	55 ksi	80 ksi
								Steel grades		Steel grades		Steel grades	
								TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL	TN 55TH TN 55TL	TN 80TH TN 80TL
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS- SECTIONAL AREA	PIPE BODY YIELD STRENGTH		INTERNAL YIELD PRESSURE		COLLAPSE PRESSURE	
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb		PSI		PSI	
13 3/8	100.30	0.734	99.19	11.907	11.751	—	29.149	1603	2332	5280	7680	4850	6190
	108.10	0.797	107.16	11.781	11.625	—	31.493	1732	2519	5740	8340	5620	7350
	115.70	0.859	114.93	11.657	11.501	—	33.776	1858	2702	6180	8990	6380	8480
	123.40	0.922	122.74	11.531	11.375	—	36.071	1984	2886	6630	9650	7060	9640
	130.80	0.984	130.34	11.407	11.251	—	38.305	2107	3064	7080	10300	7500	10780
	138.30	1.047	137.98	11.281	11.125	—	40.550	2230	3244	7530	10960	7940	11550
	145.60	1.109	145.42	11.157	11.001	—	42.735	2350	3419	7980	11610	8360	12170
13 1/2	80.40	0.576	79.58	12.348	12.161	12.250	23.387	1286	1871	4110	5970	2840	3350
	81.40	0.580	80.11	12.340	12.153	12.250	23.542	1295	1883	4140	6010	2890	3390
13 5/8	88.20	0.625	86.86	12.375	12.188	12.250	25.525	1404	2042	4420	6420	3360	3980
	105.00	0.760	104.52	12.105	11.918	—	30.717	1689	2457	5370	7810	4990	6410
14	82.50	0.562	80.73	12.876	12.689	—	23.726	1305	1898	3860	5620	2420	2940
	86.00	0.600	85.95	12.800	12.613	—	25.258	1389	2021	4120	6000	2870	3380
	93.00	0.650	92.76	12.700	12.513	—	27.261	1499	2181	4470	6500	3460	4110
	94.80	0.656	93.58	12.688	12.501	—	27.500	1513	2200	4510	6560	3530	4220
	99.30	0.688	97.91	12.624	12.437	—	28.773	1583	2302	4730	6880	3900	4780
	99.60	0.700	99.52	12.600	12.413	—	29.248	1609	2340	4810	7000	4040	4990
	104.20	0.734	104.09	12.532	12.345	—	30.590	1682	2447	5050	7340	4450	5590
	106.00	0.750	106.23	12.500	12.313	—	31.220	1717	2498	5160	7500	4630	5870
	110.00	0.772	109.17	12.456	12.269	—	32.082	1765	2567	5310	7720	4890	6260
	111.00	0.779	110.10	12.442	12.255	—	32.356	1780	2588	5360	7790	4970	6380
	112.60	0.797	112.49	12.406	12.219	12.250	33.058	1818	2645	5480	7970	5180	6690
	113.00	0.800	112.89	12.400	12.213	12.250	33.175	1825	2654	5500	8000	5220	6740
	120.00	0.850	119.49	12.300	12.113	—	35.115	1931	2809	5840	8500	5810	7620
15	77.50	0.500	77.50	14.000	13.813	—	22.777	1253	1822	3210	4670	1670	1850
	109.00	0.715	109.19	13.570	13.383	—	32.088	1765	2567	4590	6670	3660	4420
16	65.00	0.375	62.64	15.250	15.063	—	18.408	1012	1473	2260	3280	630	630
	75.00	0.438	72.86	15.124	14.937	—	21.414	1178	1713	2630	3830	1020	1020
	84.00	0.495	82.05	15.010	14.823	—	24.112	1326	1929	2980	4330	1410	1480
	94.50	0.562	92.75	14.876	14.689	14.750	27.257	1499	2181	3380	4920	1870	2140
	95.00	0.566	93.38	14.868	14.681	14.750	27.444	1509	2196	3400	4950	1890	2180
	96.00	0.575	94.81	14.850	14.663	14.750	27.864	1533	2229	3460	5030	1950	2270
	102.90	0.625	102.72	14.750	14.563	—	30.189	1660	2415	3760	5470	2300	2770
	109.00	0.656	107.60	14.688	14.501	14.600	31.622	1739	2530	3950	5740	2560	3080
	118.00	0.715	116.83	14.570	14.383	—	34.334	1888	2747	4300	6260	3170	3680
	128.00	0.781	127.06	14.438	14.251	—	37.341	2054	2987	4700	6830	3850	4700
	137.90	0.843	136.59	14.314	14.127	—	40.141	2208	3211	5070	7380	4490	5650
	147.30	0.906	146.19	14.188	14.001	—	42.962	2363	3437	5450	7930	5130	6620





Martensitic Stainless Steels Series | Casing | 4 1/2" TO 6 5/8"

(6 5/8" TO 7 3/4" on reverse side)

								SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH					SPECIFIED MINIMUM YIELD STRENGTH				
								80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	
								Steel grades						Steel grades					Steel grades				
								TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH						INTERNAL YIELD PRESSURE					COLLAPSE PRESSURE				
in	lb/ft	in	lb/ft	in	in	in	in ²	x 1000 lb						PSI					PSI				
4 1/2	9.50	0.205	9.41	4.090	3.965	—	2.766	221	235	263	304	346	6380	6780	7570	8770	9970	3900	3970	4200	4500	4720	
	10.50	0.224	10.24	4.052	3.927	—	3.009	241	256	286	331	376	6970	7400	8280	9580	10890	4940	5080	5310	5550	5830	
	11.00	0.237	10.80	4.026	3.901	—	3.174	254	270	302	349	397	7370	7830	8760	10140	11520	5640	5830	6170	6560	6830	
	11.60	0.250	11.36	4.000	3.875	—	3.338	267	284	317	367	417	7780	8260	9240	10690	12150	6350	6590	7030	7580	8000	
	12.60	0.271	12.25	3.958	3.833	—	3.600	288	306	342	396	450	8430	8960	10010	11590	13170	7500	7810	8410	9200	9890	
	13.50	0.290	13.05	3.920	3.795	—	3.836	307	326	364	422	479	9020	9590	10710	12410	14100	8540	8920	9660	10680	11600	
	15.10	0.337	15.00	3.826	3.701	3.750	4.407	353	375	419	485	551	10480	11140	12450	14420	16380	11090	11670	12770	14350	15840	
	16.60	0.375	16.54	3.750	3.625	—	4.860	389	413	462	535	607	11670	12400	13850	16040	18230	12220	12990	14510	16810	19100	
	17.00	0.380	16.74	3.740	3.615	—	4.918	393	418	467	541	615	11820	12560	14040	16260	18470	12370	13150	14690	17010	19330	
	17.70	0.402	17.61	3.696	3.571	—	5.175	414	440	492	569	647	12510	13290	14850	17200	19540	13020	13830	15460	17900	20340	
	18.90	0.430	18.71	3.640	3.515	—	5.498	440	467	522	605	687	13380	14210	15890	18390	20900	13820	14690	16410	19010	21600	
	21.50	0.500	21.38	3.500	3.375	—	6.283	503	534	597	691	785	15560	16530	18470	21390	24310	15800	16790	18770	21730	24690	
	23.70	0.560	23.59	3.380	3.255	—	6.932	555	589	659	762	866	17420	18510	20690	23960	27220	17430	18510	20690	23960	27230	
	26.10	0.630	26.06	3.240	3.115	—	7.660	613	651	728	843	957	19600	20830	23280	26950	30630	19270	20470	22880	26500	30110	
5	11.50	0.220	11.24	4.560	4.435	—	3.304	264	281	314	363	413	6160	6550	7320	8470	9630	3560	3680	3890	4150	4310	
	13.00	0.253	12.84	4.494	4.369	—	3.773	302	321	358	415	472	7080	7530	8410	9740	11070	5140	5290	5560	5850	6050	
	15.00	0.296	14.88	4.408	4.283	—	4.374	350	372	416	481	547	8290	8810	9840	11400	12950	7250	7550	8110	8850	9480	
	18.00	0.362	17.95	4.276	4.151	—	5.275	422	448	501	580	659	10140	10770	12040	13940	15840	10500	11020	12030	13470	14830	
	20.30	0.408	20.03	4.184	4.059	—	5.886	471	500	559	647	736	11420	12140	13570	15710	17850	12000	12740	14240	16490	18560	
	20.80	0.422	20.65	4.156	4.031	—	6.069	486	516	577	668	759	11820	12550	14030	16250	18460	12360	13140	14680	17000	19320	
	21.40	0.437	21.32	4.126	4.001	—	6.264	501	532	595	689	783	12240	13000	14530	16820	19120	12760	13560	15160	17550	19940	
	23.20	0.478	23.11	4.044	3.919	—	6.791	543	577	645	747	849	13380	14220	15890	18400	20910	13830	14700	16430	19020	21620	
	24.10	0.500	24.05	4.000	3.875	—	7.069	565	601	672	778	884	14000	14880	16630	19250	21880	14400	15300	17100	19800	22500	
	27.00	0.560	26.58	3.880	3.755	—	7.811	625	664	742	859	976	15680	16660	18620	21560	24500	15910	16910	18890	21880	24860	
	26.70	0.562	26.66	3.876	3.751	—	7.836	627	666	744	862	979	15740	16720	18690	21640	24590	15960	16950	18950	21940	24930	
	29.20	0.625	29.23	3.750	3.625	—	8.590	687	730	816	945	1074	17500	18590	20780	24060	27340	17500	18590	20780	24060	27340	
	31.60	0.687	31.67	3.626	3.501	—	9.309	745	791	884	1024	1164	19240	20440	22840	26450	30060	18960	20140	22510	26070	29620	
	34.00	0.750	34.07	3.500	3.375	—	10.014	801	851	951	1102	1252	21000	22310	24940	28880	32810	20390	21670	24220	28040	31860	
5 1/2	14.00	0.244	13.71	5.012	4.887	—	4.029	322	342	383	443	504	6210	6600	7380	8540	9700	3620	3740	3970	4230	4400	
	15.50	0.275	15.36	4.950	4.825	—	4.514	361	384	429	497	564	7000	7440	8310	9630	10940	4990	5130	5380	5630	5890	
	17.00	0.304	16.89	4.892	4.767	—	4.962	397	422	471	546	620	7740	8220	9190	10640	12090	6290	6520	6940	7480	7890	
	20.00	0.361	19.83	4.778	4.653	—	5.828	466	495	554	641	729	9190	9760	10910	12630	14360	8830	9230	10010	11100	12080	
	23.00	0.415	22.56	4.670	4.545	—	6.630	530	564	630	729	829	10560	11220	12540	14530	16510	11160	11820	12940	14540	16070	
	26.00	0.476	25.56	4.548	4.423	4.500	7.513	601	639	714	826	939	12120	12870	14390	16660	18930	12650	13440	15030	17400	19770	
	26.80	0.500	26.73	4.500	4.375	—	7.854	628	668	746	864	982	12730	13520	15110	17500	19890	13220	14050	15700	18180	20660	
	28.40	0.530	28.16	4.440	4.315	—	8.275	662	703	786	910	1034	13490	14330	16020	18550	21080	13930	14800	16540	19150	21760	
	29.70	0.562	29.67	4.376	4.251	—	8.718	697	741	828	959	1090	14310	15200	16990	19670	22350	14670	15590	17430	20180	22930	
	32.00	0.612	31.98	4.276	4.151	—	9.398	752	799	893	1034	1175	15580	16550	18500	21420	24340	15820	16810	18780	21750	24720	
	32.60	0.625	32.57	4.250	4.125	—	9.572	766	814	909	1053	1197	15910	16900	18890	21870	24860	16120	17120	19140	22160	25180	
	35.30	0.687	35.35	4.126	4.001	—	10.388	831	883	987	1143	1298	17490	18580	20770	24040	27320	17480	18570	20760	24040	27310	
	36.40	0.705	36.14	4.090	3.965	—	10.620	850	903	1009</													

Martensitic Stainless Steels Series | Casing | 6 5/8" TO 7 3/4"

								SPECIFIED MINIMUM YIELD STRENGTH					SPECIFIED MINIMUM YIELD STRENGTH					SPECIFIED MINIMUM YIELD STRENGTH				
								80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi
								Steel grades					Steel grades					Steel grades				
								TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH					INTERNAL YIELD PRESSURE					COLLAPSE PRESSURE				
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb					PSI					PSI				
6 5/8	24.00	0.352	23.60	5.921	5.796	—	6.937	555	590	659	763	867	7440	7900	8830	10230	11620	5760	5960	6310	6730	7020
	24.60	0.362	24.24	5.901	5.776	—	7.123	570	605	677	783	890	7650	8130	9080	10520	11950	6130	6350	6760	7260	7630
	28.00	0.417	27.67	5.791	5.666	—	8.133	651	691	773	895	1017	8810	9360	10460	12120	13770	8170	8530	9220	10160	10990
	32.00	0.475	31.23	5.675	5.550	—	9.177	734	780	872	1010	1147	10040	10670	11920	13800	15680	10320	10830	11810	13220	14530
	33.00	0.500	32.74	5.625	5.500	—	9.621	770	818	914	1058	1203	10570	11230	12550	14530	16510	11160	11820	12940	14540	16070
	35.00	0.525	34.23	5.575	5.450	—	10.061	805	855	956	1107	1258	11090	11790	13170	15250	17330	11670	12400	13860	15860	17590
	36.70	0.562	36.43	5.501	5.376	—	10.705	856	910	1017	1178	1338	11880	12620	14100	16330	18560	12420	13200	14750	17080	19410
	40.20	0.625	40.09	5.375	5.250	—	11.781	942	1001	1119	1296	1473	13210	14030	15680	18160	20640	13670	14520	16230	18800	21360
	43.70	0.687	43.61	5.251	5.126	—	12.816	1025	1089	1218	1410	1602	14520	15430	17240	19960	22680	14880	15810	17660	20450	23240
	46.00	0.730	46.00	5.165	5.040	—	13.519	1082	1149	1284	1487	1690	15430	16390	18320	21210	24100	15680	16660	18620	21560	24500
	47.10	0.750	47.10	5.125	5.000	—	13.843	1107	1177	1315	1523	1730	15850	16840	18820	21790	24760	16070	17070	19080	22090	25110
	50.40	0.812	50.46	5.001	4.876	—	14.829	1186	1260	1409	1631	1854	17160	18230	20380	23590	26810	17200	18280	20430	23660	26880
7	53.70	0.875	53.78	4.875	4.750	—	15.806	1264	1344	1502	1739	1976	18490	19650	21960	25420	28890	18340	19490	21780	25220	28660
	65.80	1.125	66.14	4.375	4.250	—	19.439	1555	1652	1847	2138	2430	23770	25260	28230	32690	37150	22550	23960	26780	31010	35240
	17.00	0.231	16.72	6.538	6.413	—	4.912	393	418	467	540	614	4620	4910	5490	6350	7220	1800	1800	1800	1800	1800
	20.00	0.272	19.56	6.456	6.331	—	5.749	460	489	546	632	719	5440	5780	6460	7480	8500	2740	2800	2900	2980	2980
	23.00	0.317	22.65	6.366	6.241	6.250	6.655	532	566	632	732	832	6340	6740	7530	8720	9910	3830	3900	4140	4440	4650
	24.75	0.343	24.41	6.314	6.189	—	7.173	574	610	681	789	897	6860	7290	8150	9430	10720	4740	4870	5080	5280	5620
	26.00	0.362	25.69	6.276	6.151	—	7.549	604	642	717	830	944	7240	7690	8600	9950	11310	5410	5580	5880	6230	6450
	29.00	0.408	28.75	6.184	6.059	6.125	8.449	676	718	803	929	1056	8160	8670	9690	11220	12750	7020	7310	7830	8530	9100
	32.00	0.453	31.70	6.094	5.969	6.000	9.317	745	792	885	1025	1165	9060	9630	10760	12460	14160	8610	9000	9750	10780	11720
	35.00	0.498	34.61	6.004	5.879	—	10.172	814	865	966	1119	1272	9960	10580	11830	13700	15560	10180	10680	11650	13020	14310
	38.00	0.540	37.29	5.920	5.795	5.875	10.959	877	932	1041	1206	1370	10800	11480	12830	14850	16880	11390	12110	13440	15140	16750
	41.00	0.590	40.43	5.820	5.695	—	11.881	950	1010	1129	1307	1485	11800	12540	14010	16230	18440	12350	13130	14670	16990	19300
7 1/4	42.70	0.625	42.59	5.750	5.625	—	12.517	1001	1064	1189	1377	1565	12500	13280	14840	17190	19530	13010	13820	15450	17890	20330
	44.00	0.640	43.51	5.720	5.595	—	12.788	1023	1087	1215	1407	1598	12800	13600	15200	17600	20000	13290	14120	15780	18270	20760
	46.00	0.670	45.34	5.660	5.535	—	13.324	1066	1133	1266	1466	1665	13400	14240	15910	18420	20940	13850	14710	16440	19040	21630
	46.40	0.687	46.36	5.626	5.501	—	13.625	1090	1158	1294	1499	1703	13740	14600	16320	18890	21470	14160	15050	16820	19470	22130
	49.50	0.730	48.93	5.540	5.415	—	14.379	1150	1222	1366	1582	1797	14600	15510	17340	20080	22810	14940	15880	17750	20550	23350
	50.10	0.750	50.11	5.500	5.375	—	14.726	1178	1252	1399	1620	1841	15000	15940	17810	20630	23440	15310	16270	18180	21050	23920
	53.60	0.812	53.71	5.376	5.251	—	15.785	1263	1342	1500	1736	1973	16240	17260	19290	22330	25380	16410	17430	19480	22560	25640
	57.10	0.875	57.29	5.250	5.125	—	16.837	1347	1431	1600	1852	2105	17500	18590	20780	24060	27340	17500	18590	20780	24060	27340
	60.50	0.937	60.73	5.126	5.001	—	17.847	1428	1517	1696	1963	2231	18740	19910	22250	25770	29280	18550	19710	22030	25510	28990
	63.90	1.000	64.14	5.000	4.875	—	18.850	1508	1602	1791	2073	2356	20000	21250	23750	27500	31250	19590	20820	23270	26940	30610
7 1/4	41.20	0.578	41.23	6.094	5.969	—	12.115	969	1030	1151	1333	1514	11160	11860	13250	15350	17440	11740	12480	13940	16040	17800
7 5/8	24.00	0.300	23.49	7.025	6.900	—	6.904	552	587	656	759	863	5510	5850	6540	7570	8610	2810	2890	3000	3090	3100
	26.40	0.328	25.59	6.969	6.844	—	7.519	602	639	714	827	940	6020	6400	7150	8280	9410	3400	3510	3710	3920	4050
	29.70	0.375	29.06	6.875	6.750	—	8.541	683	726	811	940	1068	6890	7320	8180	9470	10760	4790	4920	5140	5350	5670
	33.70	0.430	33.07	6.765	6.640	—	9.720	778	826	923	1069	1215	7900	8390	9380	10860	12340	6560	6810	7280	7870	8350
	35.80	0.465	35.59	6.695	6.570	—	10.460	837	889	994	1151	1307	8540	9070	10140	11740	13340	7690	8020	8640	9470	10200
	39.00	0.500	38.08	6.625	6.500	—	11.192	895	951	1063	1231	1399	9180	9750	10900	12620	14340	8820	9220	10000	11080	12060
	42.80	0.562	42.43	6.501	6.376	—	12.470	998	1060	1185	1372	1559	10320	10960	12250	14190	16120	10810	11350	12410	13920	15350
	45.30	0.595	44.71	6.435	6.310	6.375	13.141	1051	1117	1248	1445	1643	10920	11610	12970	15020	17070	11510	12230	13660	15430	17090
	47.10	0.625	46.77	6.375	6.250	—	13.744	1100	1168	1306	1512	1718	11480	12190	13630	15780	17930	12040	12790	14300	16550	18700
	51.20	0.687	50.95	6.251	6.126	—	14.974	1198	1273	1423	1647	1872	12610	13400	14980	17340	19710	13120	13940	15580	18030	20490
	52.80	0.712	52.62	6.201	6.076	—	15.463	1237	1314	1469	1701	1933	13070	13890	15520	17980	20430	13540	14390	16080	18620	21160
	55.30	0.750	55.12	6.125	6.000	—	16.199	1296	1377	1539	1782	2025	13770	14630	16350	18930	21520	14190	15070	16850	19510	22160
7 3/4	59.20	0.812	59.14	6.001	5.876	—	17.380	1390	1477	1651	1912	2172	14910	15840	17700	20500	23300	15220	16180	18080	20930	23790
	63.20	0.875	63.14	5.875	5.750	—	18.555	1484	1577	1763	2041	2319	16070	17070	19080	22090	25100	16260	17280	19310	22360	25410</

Martensitic Stainless Steels Series | Casing | 7 3/4" TO 9 7/8"

(9 7/8" TO 13 3/8" on reverse side)

								SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH					SPECIFIED MINIMUM YIELD STRENGTH				
								80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	
								Steel grades						Steel grades					Steel grades				
								TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH						INTERNAL YIELD PRESSURE				COLLAPSE PRESSURE					
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb						PSI				PSI					
7 3/4	47.60	0.625	47.60	6.500	6.375	—	13.990	1119	1189	1329	1539	1749	11290	12000	13410	15520	17640	11860	12600	14090	16310	18160	
	48.60	0.640	48.64	6.470	6.345	6.375	14.296	1144	1215	1358	1573	1787	11560	12280	13730	15900	18060	12120	12880	14390	16670	18940	
	51.80	0.687	51.87	6.376	6.251	—	15.244	1220	1296	1448	1677	1905	12410	13190	14740	17060	19390	12930	13730	15350	17770	20200	
	54.20	0.712	53.57	6.326	6.201	6.250	15.743	1259	1338	1496	1732	1968	12860	13670	15270	17690	20100	13350	14190	15860	18360	20870	
	56.10	0.750	56.12	6.250	6.125	—	16.493	1319	1402	1567	1814	2062	13550	14400	16090	18630	21170	13990	14860	16610	19240	21860	
8	31.00	0.375	30.57	7.250	7.125	—	8.983	719	764	853	988	1123	6560	6970	7790	9020	10250	4220	4320	4450	4800	5070	
	70.80	0.937	70.75	6.126	6.001	—	20.791	1663	1767	1975	2287	2599	16400	17420	19470	22550	25620	16540	17580	19640	22740	25850	
	74.20	0.980	74.20	6.103	5.978	—	21.807	1745	1854	2072	2399	2726	17020	18080	20210	23400	26590	17080	18150	20280	23480	26690	
8 1/8	32.50	0.375	31.07	7.375	7.250	—	9.130	730	776	867	1004	1141	6460	6870	7670	8880	10100	4040	4120	4310	4630	4870	
	35.50	0.420	34.59	7.285	7.160	—	10.167	813	864	966	1118	1271	7240	7690	8590	9950	11310	5400	5570	5880	6220	6430	
	39.50	0.470	38.46	7.185	7.060	—	11.303	904	961	1074	1243	1413	8100	8600	9620	11140	12650	6920	7190	7700	8370	8930	
8 5/8	24.00	0.264	23.60	8.097	7.972	—	6.934	555	589	659	763	867	4290	4550	5090	5890	6700	1430	1430	1430	1430	1430	
	28.00	0.304	27.04	8.017	7.892	—	7.947	636	675	755	874	993	4930	5240	5860	6780	7710	2160	2190	2210	2210	2210	
	32.00	0.352	31.13	7.921	7.796	7.875	9.149	732	778	869	1006	1144	5710	6070	6780	7860	8930	3050	3140	3280	3420	3470	
	36.00	0.400	35.17	7.825	7.700	—	10.336	827	879	982	1137	1292	6490	6900	7710	8930	10140	4100	4180	4350	4690	4930	
	40.00	0.450	39.33	7.725	7.600	7.625	11.557	925	982	1098	1271	1445	7300	7760	8670	10040	11410	5520	5700	6020	6390	6630	
	44.00	0.500	43.43	7.625	7.500	—	12.763	1021	1085	1212	1404	1595	8120	8620	9640	11160	12680	6950	7230	7740	8420	8980	
	49.00	0.557	48.04	7.511	7.386	—	14.118	1129	1200	1341	1553	1765	9040	9610	10740	12430	14130	8580	8970	9710	10740	11660	
	49.10	0.562	48.44	7.501	7.376	—	14.236	1139	1210	1352	1566	1779	9120	9690	10830	12540	14250	8710	9110	9870	10930	11890	
	52.00	0.595	51.08	7.435	7.310	—	15.010	1201	1276	1426	1651	1876	9660	10260	11470	13280	15090	9650	10110	11010	12270	13430	
	54.00	0.625	53.45	7.375	7.250	—	15.708	1257	1335	1492	1728	1964	10140	10780	12050	13950	15850	10510	11030	12040	13490	14850	
	58.70	0.687	58.30	7.251	7.126	—	17.132	1371	1456	1628	1885	2142	11150	11850	13240	15330	17420	11730	12470	13930	16020	17770	
	63.50	0.750	63.14	7.125	7.000	—	18.555	1484	1577	1763	2041	2319	12170	12930	14460	16740	19020	12700	13500	15090	17470	19850	
	68.10	0.812	67.82	7.001	6.876	—	19.931	1594	1694	1893	2192	2491	13180	14000	15650	18120	20590	13650	14500	16210	18770	21320	
	72.70	0.875	72.49	6.875	6.750	—	21.304	1704	1811	2024	2343	2663	14200	15090	16870	19530	22190	14580	15490	17320	20050	22780	
	77.10	0.937	77.01	6.751	6.626	—	22.631	1810	1924	2150	2489	2829	15210	16160	18060	20910	23760	15500	16470	18410	21310	24220	
	81.50	1.000	81.51	6.625	6.500	—	23.955	1916	2036	2276	2635	2994	16230	17250	19280	22320	25360	16410	17430	19480	22560	25640	
	83.20	1.025	83.28	6.575	6.450	—	24.473	1958	2080	2325	2692	3059	16640	17680	19760	22880	26000	16760	17810	19910	23050	26190	
9	40.00	0.425	38.96	8.150	8.025	—	11.449	916	973	1088	1259	1431	6610	7020	7850	9090	10330	4310	4400	4550	4880	5150	
9 3/8	39.00	0.400	38.38	8.575	8.450	8.500	11.278	902	959	1071	1241	1410	5970	6350	7090	8210	9330	3350	3450	3640	3840	3960	
9 5/8	32.30	0.312	31.06	9.001	8.845	—	9.128	730	776	867	1004	1141	4540	4820	5390	6240	7090	1710	1710	1710	1710	1710	
	36.00	0.352	34.89	8.921	8.765	—	10.254	820	872	974	1128	1282	5120	5440	6080	7040	8000	2370	2410	2470	2480	2480	
	40.00	0.395	38.97	8.835	8.679	8.750	11.454	916	974	1088	1260	1432	5750	6100	6820	7900	8980	3090	3170	3320	3470	3530	
	43.50	0.435	42.73	8.755	8.599	8.625	12.559	1005	1068	1193	1381	1570	6330	6720	7510	8700	9890	3810	3880	4120	4420	4620	
	47.00	0.472	46.18	8.681	8.525	—	13.572	1086	1154	1289	1493	1697	6870	7290	8150	9440	10730	4760	4880	5090	5300	5640	
	53.50	0.545	52.90	8.535	8.379	8.500	15.546	1244	1321	1477	1710	1943	7930	8420	9410	10900	12390	6620	6870	7340	7950	8440	
	58.40	0.595	57.44	8.435	8.279	8.375	16.879	1350	1435	1604	1857	2110	8650	9200	10280	11900	13520	7890	8230	8880	9760	10530	
	59.40	0.609	58.70	8.407	8.251	—	17.250	1380	1466	1639	1897	2156	8860	9410	10520	12180	13840	8260	8620	9320	10280	11140	
	61.10	0.625	60.13	8.375	8.219	—	17.671	1414	1502	1679	1944	2209	9090	9660	10800	12500	14200	8660	9050	9810	10860		

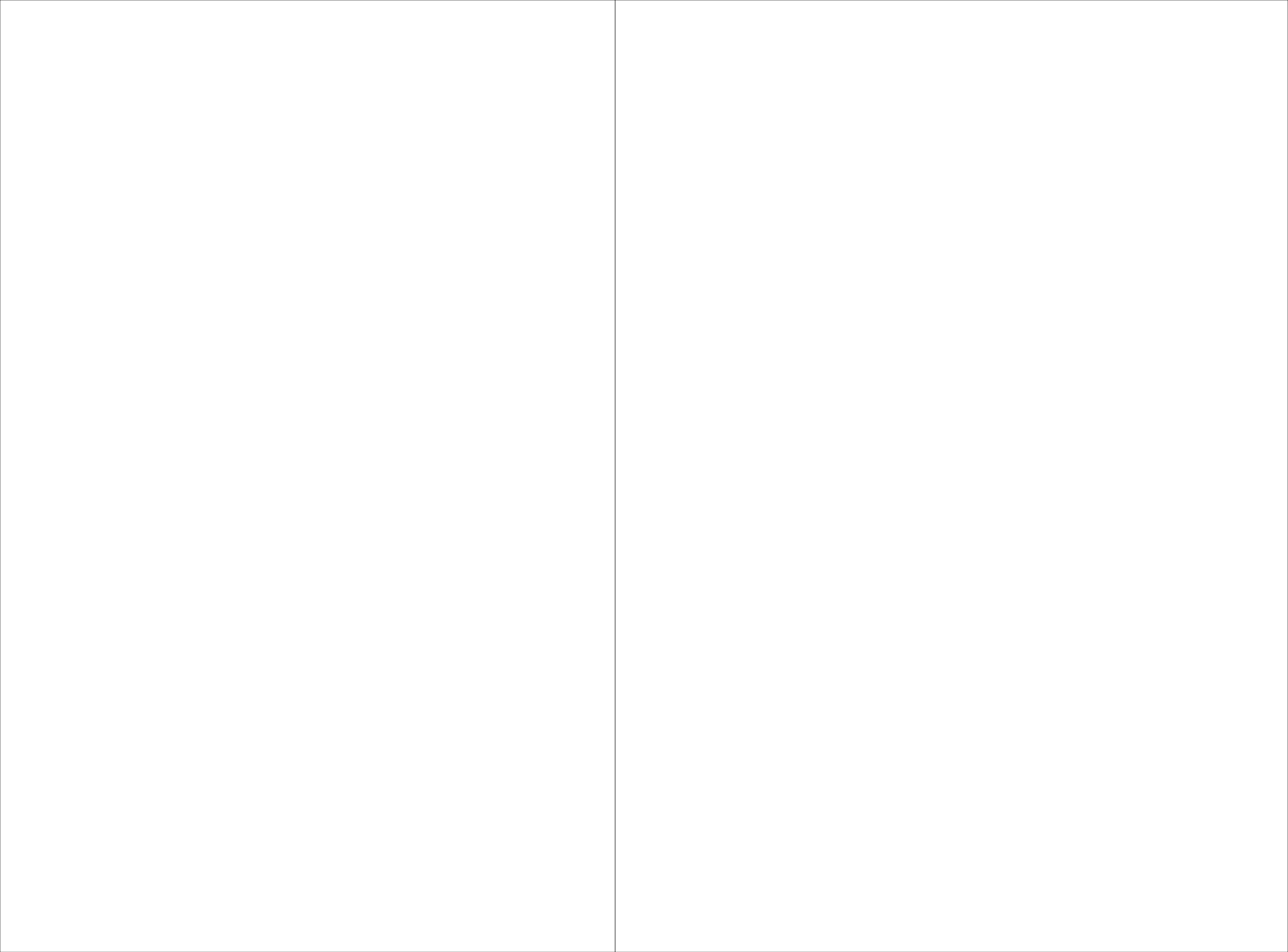
Martensitic Stainless Steels Series | Casing | 9 7/8" TO 13 3/8"

								SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH					SPECIFIED MINIMUM YIELD STRENGTH				
								80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	
								Steel grades						Steel grades					Steel grades				
								TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S		TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH						INTERNAL YIELD PRESSURE					COLLAPSE PRESSURE				
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb						PSI					PSI				
9 7/8	70.40	0.708	69.38	8.459	8.303	—	20.390	1631	1733	1937	2243	2549	10040	10660	11920	13800	15680	10320	10830	11810	13220	14530	
	72.10	0.725	70.91	8.425	8.269	8.375	20.841	1667	1771	1980	2292	2605	10280	10920	12210	14130	16060	10740	11280	12330	13830	15240	
10	66.95	0.672	67.01	8.656	8.500	—	19.693	1575	1674	1871	2166	2462	9410	10000	11170	12940	14700	9220	9650	10480	11650	12720	
	68.42	0.688	68.49	8.624	8.468	8.500	20.127	1610	1711	1912	2214	2516	9630	10230	11440	13240	15050	9610	10080	10960	12220	13370	
	68.80	0.700	69.59	8.600	8.444	—	20.452	1636	1738	1943	2250	2556	9800	10410	11640	13480	15310	9900	10380	11310	12620	13840	
10 1/4	82.00	0.800	80.82	8.650	8.494	—	23.750	1900	2019	2256	2613	2969	10930	11610	12980	15020	17070	11520	12230	13670	15450	17120	
10 3/4	32.75	0.279	31.23	10.192	10.036	—	9.178	734	780	872	1010	1147	3630	3860	4310	5000	5680	870	870	870	870	870	
	40.50	0.350	38.91	10.050	9.894	—	11.435	915	972	1086	1258	1429	4560	4840	5410	6270	7120	1730	1730	1730	1730	1730	
	45.50	0.400	44.26	9.950	9.794	9.875	13.006	1040	1106	1236	1431	1626	5210	5530	6190	7160	8140	2470	2520	2590	2610	2610	
	51.00	0.450	49.55	9.850	9.694	—	14.561	1165	1238	1383	1602	1820	5860	6230	6960	8060	9160	3220	3320	3480	3660	3740	
	55.50	0.495	54.26	9.760	9.604	9.625	15.947	1276	1356	1515	1754	1993	6450	6850	7660	8860	10070	4020	4090	4290	4610	4850	
	60.70	0.545	59.45	9.660	9.504	—	17.473	1398	1485	1660	1922	2184	7100	7540	8430	9760	11090	5160	5320	5590	5880	6070	
	65.70	0.595	64.59	9.560	9.404	9.504	18.982	1519	1613	1803	2088	2373	7750	8230	9200	10650	12110	6300	6540	6960	7500	7920	
	71.10	0.650	70.18	9.450	9.294	—	20.625	1650	1753	1959	2269	2578	8470	8990	10050	11640	13230	7560	7880	8480	9290	9990	
	73.20	0.672	72.40	9.406	9.250	—	21.276	1702	1808	2021	2340	2660	8750	9300	10390	12030	13670	8060	8420	9090	10010	10810	
	76.60	0.700	75.20	9.350	9.194	—	22.101	1768	1879	2100	2431	2763	9120	9690	10830	12530	14240	8700	9100	9860	10920	11870	
	79.20	0.734	78.59	9.282	9.126	—	23.096	1848	1963	2194	2541	2887	9560	10160	11350	13140	14940	9480	9930	10800	12020	13150	
	80.80	0.750	80.18	9.250	9.094	—	23.562	1885	2003	2238	2592	2945	9770	10380	11600	13430	15260	9850	10330	11250	12550	13760	
	85.30	0.797	84.80	9.156	9.000	—	24.921	1994	2118	2367	2741	3115	10380	11030	12330	14270	16220	10920	11470	12540	14070	15520	
	91.20	0.859	90.83	9.032	8.876	—	26.692	2135	2269	2536	2936	3337	11190	11890	13280	15380	17480	11770	12500	13970	16110	17870	
	97.10	0.922	96.87	8.906	8.750	—	28.467	2277	2420	2704	3131	3558	12010	12760	14260	16510	18760	12550	13330	14900	17250	19600	
	102.90	0.984	102.73	8.782	8.626	—	30.190	2415	2566	2868	3321	3774	12810	13620	15220	17620	20020	13310	14140	15810	18300	20800	
	104.30	1.000	104.23	8.750	8.594	—	30.631	2450	2604	2910	3369	3829	13020	13840	15470	17910	20350	13500	14340	16030	18560	21090	
	108.70	1.047	108.60	8.656	8.500	—	31.916	2553	2713	3032	3511	3989	13640	14490	16190	18750	21310	14060	14940	16700	19340	21970	
11 3/4	42.00	0.333	40.64	11.084	10.928	11.000	11.944	956	1015	1135	1314	1493	3970	4220	4710	5460	6200	1130	1130	1130	1130	1130	
	47.00	0.375	45.60	11.000	10.844	—	13.401	1072	1139	1273	1474	1675	4470	4750	5310	6140	6980	1630	1630	1630	1630	1630	
	54.00	0.435	52.62	10.880	10.724	—	15.463	1237	1314	1469	1701	1933	5180	5510	6150	7130	8100	2440	2490	2550	2570	2570	
	60.00	0.489	58.87	10.772	10.616	10.625	17.300	1384	1470	1643	1903	2162	5830	6190	6920	8010	9100	3180	3270	3440	3610	3680	
	65.00	0.534	64.03	10.682	10.526	10.625	18.816	1505	1599	1788	2070	2352	6360	6760	7560	8750	9940	3870	3940	4180	4480	4690	
	71.00	0.582	69.48	10.586	10.430	—	20.420	1634	1736	1940	2246	2552	6930	7370	8230	9530	10840	4870	5010	5240	5470	5760	
	87.50	0.734	86.44	10.282	10.126	—	25.402	2032	2159	2413	2794	3175	8750	9290	10390	12030	13660	8050	8400	9080	9990	10800	
	94.00	0.797	93.32	10.156	10.000	—	27.425	2194	2331	2605	3017	3428	9500	10090	11280	13060	14840	9370	9820	10670	11880	12980	
	100.50	0.859	100.01	10.032	9.876	—	29.391	2351	2498	2792	3233	3674	10230	10870	12150	14070	15990	10660	11200	12230	13710	15110	
	107.10	0.922	106.72	9.906	9.750	—	31.364	2509	2666	2980	3450	3920	10990	11670	13050	15110	17160	11570	12300	13740	15600	17290	
	111.50	0.945	109.15	9.860	9.704	—	32.078	2566	2727	3047	3529	4010	11260	11960	13370	15480	17590	11840	12580	14060	16280	18080	
	113.50	0.984	113.25	9.782	9.626	—	33.281	2663	2829	3162	3661	4160	11720	12460	13920	16120	18320	12280	13050	14580	16880	19180	
	119.90	1.047	119.79	9.656	9.500	—	35.205	2816	2992	3344	3873	4401	12470	13250	14810	17150	19490	12990	13800				

Martensitic Stainless Steels Series | Casing | 13 3/8" TO 16"

								SPECIFIED MINIMUM YIELD STRENGTH						SPECIFIED MINIMUM YIELD STRENGTH					SPECIFIED MINIMUM YIELD STRENGTH				
								80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	80 ksi	85 ksi	95 ksi	110 ksi	125 ksi	
								Steel grades						Steel grades					Steel grades				
								TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	TN 80Cr13	TN 85Cr13	TN 95Cr13 TN 95Cr13M TN 95Cr13S	TN 110Cr13M TN 110Cr13S	TN 125Cr13S	
OUTSIDE DIAMETER	NOMINAL LINEAR MASS T&C	WALL THICKNESS	PLAIN-END MASS	INSIDE DIAMETER	STANDARD DRIFT DIAMETER	ALTERNATIVE DRIFT DIAMETER	CROSS-SECTIONAL AREA	PIPE BODY YIELD STRENGTH						INTERNAL YIELD PRESSURE					COLLAPSE PRESSURE				
in	lb/ft	in	lb/ft	in	in	in	in²	x 1000 lb						PSI					PSI				
13 3/8	68.00	0.480	66.17	12.415	12.259	—	19.445	1556	1653	1847	2139	2431	5020	5340	5970	6910	7850	2260	2300	2330	2340	2340	
	72.00	0.514	70.67	12.347	12.191	12.250	20.768	1661	1765	1973	2284	2596	5380	5720	6390	7400	8410	2670	2730	2820	2880	2880	
	77.00	0.550	75.40	12.275	12.119	—	22.160	1773	1884	2105	2438	2770	5760	6120	6840	7920	9000	3100	3190	3340	3490	3550	
	80.70	0.580	79.33	12.215	12.059	—	23.314	1865	1982	2215	2565	2914	6070	6450	7210	8350	9490	3460	3570	3770	4000	4140	
	85.00	0.608	82.98	12.159	12.003	—	24.386	1951	2073	2317	2682	3048	6360	6760	7560	8750	9940	3870	3940	4180	4480	4690	
	86.00	0.625	85.19	12.125	11.969	12.000	25.035	2003	2128	2378	2754	3129	6540	6950	7770	9000	10220	4190	4280	4420	4770	5030	
	92.50	0.672	91.25	12.031	11.875	—	26.818	2145	2280	2548	2950	3352	7030	7470	8350	9670	10990	5050	5200	5450	5720	5950	
	98.00	0.719	97.28	11.937	11.781	—	28.587	2287	2430	2716	3145	3573	7530	8000	8940	10350	11760	5910	6120	6490	6950	7280	
	100.30	0.734	99.19	11.907	11.751	—	29.149	2332	2478	2769	3206	3644	7680	8160	9120	10560	12000	6190	6420	6830	7340	7730	
	108.10	0.797	107.16	11.781	11.625	—	31.493	2519	2677	2992	3464	3937	8340	8860	9910	11470	13040	7350	7650	8230	8990	9640	
	115.70	0.859	114.93	11.657	11.501	—	33.776	2702	2871	3209	3715	4222	8990	9550	10680	12360	14050	8480	8870	9600	10610	11510	
	123.40	0.922	122.74	11.531	11.375	—	36.071	2886	3066	3427	3968	4509	9650	10250	11460	13270	15080	9640	10100	10990	12250	13410	
130.80	0.984	130.34	11.407	11.251	—	38.305	3064	3256	3639	4214	4788	10300	10940	12230	14160	16090	10780	11320	12380	13880	15300		
138.30	1.047	137.98	11.281	11.125	—	40.550	3244	3447	3852	4460	5069	10960	11640	13010	15070	17120	11550	12270	13710	15540	17210		
145.60	1.109	145.42	11.157	11.001	—	42.735	3419	3632	4060	4701	5342	11610	12330	13780	15960	18140	12170	12930	14450	16730	19010		
13 1/2	80.40	0.576	79.58	12.348	12.161	12.250	23.387	1871	1988	2222	2573	2923	5970	6350	7090	8210	9330	3350	3450	3640	3840	3960	
	81.40	0.580	80.11	12.340	12.153	12.250	23.542	1883	2001	2236	2590	2943	6010	6390	7140	8270	9400	3390	3500	3690	3910	4030	
13 5/8	88.20	0.625	86.86	12.375	12.188	12.250	25.525	2042	2170	2425	2808	3191	6420	6820	7630	8830	10030	3980	4050	4260	4570	4800	
	105.00	0.760	104.52	12.105	11.918	—	30.717	2457	2611	2918	3379	3840	7810	8300	9270	10740	12200	6410	6650	7090	7650	8090	
14	82.50	0.562	80.73	12.876	12.689	—	23.726	1898	2017	2254	2610	2966	5620	5970	6670	7730	8780	2940	3020	3150	3270	3300	
	86.00	0.600	85.95	12.800	12.613	—	25.258	2021	2147	2400	2778	3157	6000	6370	7120	8250	9370	3380	3490	3680	3890	4010	
	93.00	0.650	92.76	12.700	12.513	—	27.261	2181	2317	2590	2999	3408	6500	6910	7720	8940	10160	4110	4200	4360	4700	4950	
	94.80	0.656	93.58	12.688	12.501	—	27.500	2200	2338	2613	3025	3438	6560	6970	7790	9020	10250	4220	4310	4450	4800	5060	
	99.30	0.688	97.91	12.624	12.437	—	28.773	2302	2446	2733	3165	3597	6880	7310	8170	9460	10750	4780	4910	5120	5330	5660	
	99.60	0.700	99.52	12.600	12.413	—	29.248	2340	2486	2779	3217	3656	7000	7440	8310	9630	10940	4990	5130	5380	5630	5890	
	104.20	0.734	104.09	12.532	12.345	—	30.590	2447	2600	2906	3365	3824	7340	7800	8720	10090	11470	5590	5770	6100	6490	6740	
	106.00	0.750	106.23	12.500	12.313	—	31.220	2498	2654	2966	3434	3902	7500	7970	8910	10310	11720	5870	6070	6430	6880	7200	
	110.00	0.772	109.17	12.456	12.269	—	32.082	2567	2727	3048	3529	4010	7720	8200	9170	10620	12060	6260	6490	6910	7440	7840	
	111.00	0.779	110.10	12.442	12.255	—	32.356	2588	2750	3074	3559	4044	7790	8280	9250	10710	12170	6380	6620	7050	7610	8040	
	112.60	0.797	112.49	12.406	12.219	12.250	33.058	2645	2810	3141	3636	4132	7970	8470	9460	10960	12450	6690	6950	7430	8050	8550	
	113.00	0.800	112.89	12.400	12.213	12.250	33.175	2654	2820	3152	3649	4147	8000	8500	9500	11000	12500	6740	7010	7500	8130	8650	
120.00	0.850	119.49	12.300	12.113	—	35.115	2809	2985	3336	3863	4389	8500	9030	10090	11690	13280	7620	7950	8560	9380	10090		
15	77.50	0.500	77.50	14.000	13.813	—	22.777	1822	1936	2164	2505	2847	4670	4960	5540	6420	7290	1850	1860	1860	1860	1860	
	109.00	0.715	109.19	13.570	13.383	—	32.088	2567	2727	3048	3530	4011	6670	7090	7920	9180	10430	4420	4520	4680	4980	5270	
16	65.00	0.375	62.64	15.250	15.063	—	18.408	1473	1565	1749	2025	2301	3280	3490	3900	4510	5130	630	630	630	630	630	
	75.00	0.438	72.86	15.124	14.937	—	21.414	1713	1820	2034	2355	2677	3830	4070	4550	5270	5990	1020	1020	1020	1020	1020	
	84.00	0.495	82.05	15.010	14.823	—	24.112	1929	2049	2291	2652	3014	4330	4600	5140	5960	6770	1480	1480	1480	1480	1480	
	94.50	0.562	92.75	14.876	14.689	14.750	27.257	2181	2317	2589	2998	3407	4920	5220	5840	6760	7680	2140	2170	2190	2190	2190	
	95.00	0.566	93.38	14.868	14.681	14.750	27.444	2196	2333	2607	3019	3430	4950	5260	5880	6810	7740	2180	2210	2230	2230	2230	
	96.00	0.575	94.81	14.850	14.663	14.750	27.864	2229	2368	2647	3065	3483	5030	5350	5970	6920	7860	2270	2300	2340	2340	2340	
	102.90	0.625	102.72	14.750	14.563	—	30.189	2415	2566	2868	3321	3774	5470	5810	6490	7520	8550	2770	2840	2940	3030	3030	
	109.00	0.656	107.60	14.688	14.501	14.600	31.622	2530	2688	3004	3478	3953	5740	6100	6820	7890	8970	3080	3170	3320	3470	3520	
	118.00	0.715	116.83	14.570	14.383	—	34.334	2747	2918	3262	3777	4292	6260	6650	7430	8600	9780	3680	3800	4030	4300	4490	
	128.00	0.781	127.06	14.438	14.251	—	37.341	2987	3174	35													

• The Plain End Mass value for the Martensitic Stainless Steel is calculated considering the mass correction factor 0.989.





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