



FRISA manufactures high quality ingots, billets and forged bars in materials such as carbon, alloy, tools steels and martensitic/austenitic stainless steels.



State of the art operations



- Heat size 110k lbs
- Ingot size from 13” to 80”

Steel Mill

Advanced technologies producing world class ingots

Materials

- Carbon and Alloy Steel
- Stainless Steel
- Tool Steel

MANUFACTURING PROCESS

Electric Arc Furnace	Heat size: 110k lbs
	Melting of scrap
	EAF is eccentric bottom tapping (EBT)
Secondary Metallurgical Treatment	Ladle Furnace
	Vaccum Oxygen Degassing Station
	Deslagging Station
Ingot Casting	Bottom poured ingots
	Casting car with 3 axis positioning
	Slide gate with 3 plates and Argon injection
	Argon shrouding between Ladle and Casting Trumpet
	Automatic control of casting speed
Heat Treatment	High Alumina holloware
	Annealing furnaces
	Slow Cooling Boxes



Open die

Wide variety of shapes and materials

- Blocks, Shafts, Discs, Hollow Forgings, Billets
- Max weight: 77,000 lbs.
- Max length: 36 ft.
- 5K T Press with 50T RB and 30T manipulators
- 2.5K T Press with 15T RB and 10T manipulators



We transform your steel
needs into
extraordinary solutions.

Our certifications

ISO 9001 ANAB
ISO 9001 UKAS
PED Pressure Equipment Directive

Our products



Round ingot



Square ingot

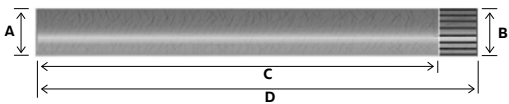


Polygonal ingot

Shown dimensions are nominal values
The polygonal Big End Up molds are suited for optimal steel cleanliness
Ingot weight and length can be slightly adjusted for optimal yield
One heat lot is approximately 50 MT (110,230 lbs) of uncropped ingots
We can provide different ingot sizes in one heat
Saw cutting can be provided up to 1,600 mm (63 in)

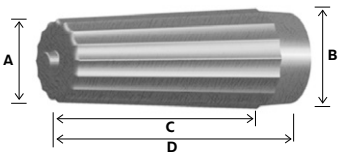
ROUND MOLDS

Ingot	Ingots per heat	Dimensions (in)				Weight (lbs)	
		A	B	C	D	Uncropped	Cropped
13 R	16	13	13	188	202	7,065	6,500
16R	10	16	16	194	208	10,995	10,143
20R	7	20	20	194	208	17,213	15,795
24R	5	24	24	179	193	23,314	21,270
31R	3	31	31	167	185	37,365	33,159
39R	2	39	39	158	185	54,657	48,091



POLYGONAL AND SQUARE MOLDS

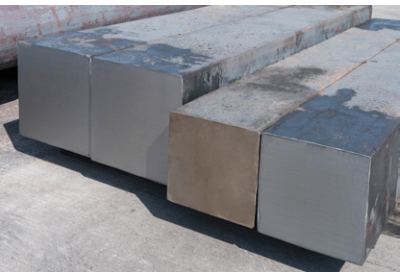
Ingot	Ingots per heat	Dimensions (in)				Weight (lbs)	
		A	B	C	D	Uncropped	Cropped
24SQ	8	24	24	85	100	14,021	11,200
40 SQ	3	37	41	83	98	37,068	31,054
49SQ	2	39	47	83	98	54,635	43,818
52 P	2	43	52	98	117	55,582	44,955
63P	1	53	60	128	148	104,559	87,927
69P	1	61	72	105	125	110,799	88,805
80P	1	73	80	78	101	126,623	95,188



Forged billets



Round bar



Square bar

Forged billets from 8” to 30”, round or RCS shape, sound center and UT tested.

CARBON & ALLOY STEEL	Max. O. D.	36 in	915 mm
	Min O. D.	9 in	229 mm
STAINLESS & TOOL STEEL	Length	14 to 20 ft	4,265 to 6,096 mm
	Max. Weight	45,000 lb	20,000 kg
CARBON & ALLOY STEEL	Max. Thickness	26 in	660 mm
	Min. Thickness	4 in	102 mm
STAINLESS & TOOL STEEL	Length	10 to 16 ft	3,048 to 4,877 mm
	Max. Weight	15,000 lb	6,800 kg
CARBON & ALLOY STEEL	Max. Thickness	26 in	660 mm
	Min. Thickness	4 in	102 mm
STAINLESS & TOOL STEEL	Max. Length	10 to 16 ft	3,048 to 4,977 mm
	Max. Weight	15,000 lb	6,800 kg

*All forged bar is rough turned finished and 100% UT accepted.
*If a size is needed but not specified on this size range, please don't hesitate to ask.



Heat Treatment

Our fully automated and digitally controlled equipment monitors each part of the process, ensuring adherence to customer specifications

Conditions

- Untreated
- Annealed
- Spheroidized Annealed
- Normalized
- Quenched and Tempered
- Normalized and Tempered
- Normalized, Quenched & Tempered
- Quenched and Double Tempered
- Stress Relieved
- Aging

GRADES

CARBON & LOW ALLOY STEEL		ALLOY STEEL		STAINLESS STEEL	
1010	ASTM A266	4130	ASTM A182F5	410	347
1018	ASTM A105	4130M	ASTM A182F11	420	321
1020	ASTM A350 LF2	4140	ASTM A182F22	F91	17-4PH
1022	ASTM A350 LF6	42CrMo4	ASTM A707	F9	15-5PH
1035	ASTM A350 F60	4145	CrMoV	F5	F51
1042	ASTM A694V	4150	NiCrMoV	304	F53
1045/50	ASTM A584B	4320	18CrNiMo7-6	316	
1080	X60V	4330/4330V	34CrNiMo6	310	

*Currently stock in Houston Location.

If you need a certain material not currently being manufactured, please do not hesitate to contact us.



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