



MECHANICAL OR STRUCTURAL PIPE

(Black or Varnished).

More resistance.
A true fact.



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High resistance pipe manufactured in black steel or varnish coated. Ideal for exterior applications and uses that require a great structural or mechanical resistance.

Diameters go from $\frac{3}{4}$ " to 6" in different thicknesses.

In Villacero we manufacture our varnished pipe utilizing a high technology cold formed process, approving the hydrostatic tests in accordance with national and international norms, thus guaranteeing its highest quality.



ADVANTAGES



VARNISHED

Facilitates the painting process and provides additional protection against corrosion.



CONSTRUCTION HIGHLY RESISTANT

Endures structural movements.



FACILITATES THE WELDING PROCESS

DEVELOPED WITH THE HIGHEST TECHNOLOGY

MAINTENANCE FREE

MEETS AND EXCEEDS NORMS

ASTM-A-500, ASTM-A-513, NMX-B-199, NMX-B-485.

SOME APPLICATIONS



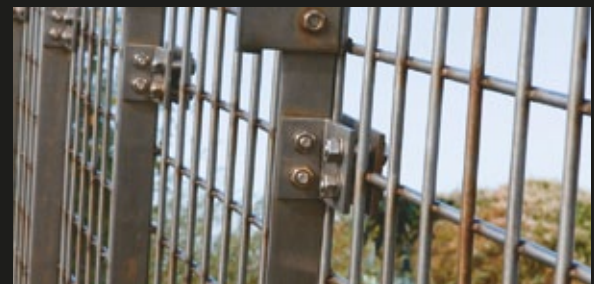
GUARDRAILS



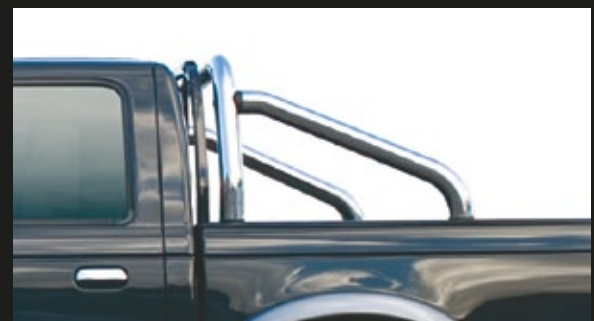
RESIDENTIAL AND INDUSTRIAL



ORNAMENTAL IRONWORKS



DOORS, GATES AND PROTECTORS



TRUCK ROLLBARS

INDUSTRIAL PIPE FOR STRUCTURAL USE SPECIFICATIONS, (ASTM A513)

DIAMETER	OUTSIDE DIAMETER		NOMINAL THICKNESS		WEIGHT				PACKAGE	
	inch	inch mm	inch	mm	lb/ft	kg/m	kg x 6.00m	lb x 20 ft	kg x package	pipes per package
3/4	1.050	26.7	0.075	1.905	0.782	1.163	6.980	15.634	886.505	127
1	1.315	33.4	0.075	1.905	0.994	1.480	8.878	19.883	1127.453	127
1 1/4	1.660	42.2	0.090	2.286	1.510	2.248	13.488	30.210	1713.001	127
1 1/2	1.900	48.3	0.090	2.286	1.741	2.592	15.550	34.828	1415.058	91
2	2.375	60.3	0.105	2.667	2.548	3.792	22.752	50.959	1387.895	61
2 1/2	2.875	73.0	0.105	2.667	3.109	4.627	27.764	62.184	1027.265	37
3	3.500	88.9	0.120	3.048	4.336	6.453	38.718	86.717	735.637	19
3 1/2	4.000	101.6	0.120	3.048	4.977	7.408	44.445	99.545	844.459	19
4	4.500	114.3	0.120	3.048	5.619	8.362	50.173	112.373	953.281	19
6	6.625	168.3	0.134	3.404	9.298	13.838	83.029	185.962	830.287	10

INDUSTRIAL PIPE FOR MECHANICAL USE SPECIFICATIONS, (ASTM A500)

DIAMETER	OUTSIDE DIAMETER		NOMINAL THICKNESS		WEIGHT				PACKAGE	
	inch	inch mm	inch	mm	lb/ft	kg/m	kg x 6.00m	lb x 20 ft	kg x package	pipes per package
3/4	1.050	26.7	0.113	2.870	1.132	1.685	10.107	22.637	1283.611	127
1	1.315	33.4	0.133	3.378	1.681	2.501	15.007	33.611	1365.596	91
1 1/4	1.660	42.2	0.140	3.556	2.275	3.386	20.313	45.497	1848.523	91
1 1/2	1.900	48.3	0.145	3.683	2.720	4.049	24.292	54.407	2210.539	91
2	2.375	60.3	0.154	3.912	3.656	5.442	32.650	73.127	1991.640	61
2 1/2	2.875	73.0	0.203	5.156	5.798	8.630	51.778	115.969	1915.781	37
3	3.500	88.9	0.216	5.486	7.583	11.285	67.712	151.658	1286.537	19
4	4.500	114.3	0.237	6.020	10.800	16.074	96.444	216.009	1832.437	19
6	6.625	168.3	0.280	7.112	18.992	28.265	169.590	379.837	1695.905	10

CHEMICAL AND PHYSICAL REQUIREMENTS FOR MECHANICAL AND STRUCTURAL PIPE NORMS

NORM	ASTM-A500 NMX-B-199	ASTM-A513 NMX-B-485
TENSION RESISTANCE MIN. kg/cm ² (lb/in ²)	3164(45,000)	3164(45,000)
FLUENCY LIMIT MIN. kg/cm ² (lb/in ²)	2320(33,000)	2250(32,000)
% OF ELONGATION IN 2" MIN.	22	22

MAXIMUM CHEMICAL COMPOSITION IN %

CARBON	0.260	0.150
MANGANESE	0.950	0.600
PHOSPHORUS	0.035	0.035
SULFUR	0.035	0.035



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ISO 9001:2008
FM 354351