Long Products Stainless Steel NAS 630	
ASTM Designation	EN Designation
XM-28	
S24100	

DESCRIPTION

XM-28 is a high manganese low nickel austenitic stainless steel, strengthened by extra nitrogen present in solid solution. High nitrogen provides significantly higher tensile strength and yield strength without adversely affecting elongation and reduction in area (ductility).
Due to lower %nickel compared to 304 and 316 type stainless steel, XM-28 provides a major cost advantage without adversely affecting corrosion resistance for many applications.
This grade is an excellent choice for rebar used in bridge construction and in marine environment.
Rebar is provided in as rolled (un-annealed) and pickled condition.

PRODUCTS AVAILABLE

Reinforcement Bars, Wire Rod See product sheet for dimensions, tolerances, finishes available and other details.

CHEMICAL COMPOSITION

C	Si	Mn	P	S	Cr	Ni	N
≤ 0.15	≤ 1.00	11.00-14.00	≤ 0.060	≤ 0.030	16.50-19.00	0.50-2.50	0.20-0.45

NOMINAL MECHANICAL PROPERTIES IN ANNELED CONDITION

Condition	Annealed	Rebar
UTS	110 ksi [760 MPa]	120 ksi [825 MPa]
0.2% YS	60 ksi [420 MPa]	75 ksi [520 MPa]
% Elongation 4d	50	40
% Reduction in Area	70	60

ANNEALING

Annealing is achieved by heating to between 1850°F and 2050°F for 60 minutes per inch thickness followed by water quenching. Controlled atmospheres are recommended in order to avoid excessive oxidation of the surface.
REBAR is not annealed.

PHYSICAL PROPERTIES

The values given below are at 20˚C unless otherwise specified

Density	0.28 lb/in^3
Specific Gravity	7.75
Mean Co-efficient of Thermal Expansion	10.3 x 10^-6 in/in/˚F
Modulus of Elasticity	29.0 x 10^3 ksi
Electricial Resistivity	421 ohms-cir-mi /ft

STRESS RELIEVING

It can be stress relieved at 750°F to 900°F for 90 minutes with little danger of sensitization. If stress relieving is carried out above 1100°F, there is a threat of grain boundary sensitization and loss of corrosion resistance.

HOT WORKABILITY

It can be readily forged, upset and hot headed. Uniform heating of the steel in the range of 2100°F to 2300°F is required. The finishing temperature should not be below 1650°F.

COLD WORKABILITY

This grade is extremely tough but ductile, and can be readily cold worked. Its work hardening rate is much higher than 300 series stainless steels. This limits the total deformation before intermediate annealing is required. Severe cold forming operations should be followed by annealing.

MACHINING

Like all the austenitic steels, this alloy machines with a rough and stringy swarf. Rigidly supported tools with as heavy a cut as possible should be used to prevent glazing.

WELDING

This grade can be welded satisfactorily using gas shielded processes using AWS E/ER240 or E/ER 308 filler. Resistance welding is also satisfactory. Oxyacetylene welding is not recommended. The weld discoloration should be removed by pickling and passivation to restore maximum corrosion resistance.

CORROSION RESISTANCE

This grade has good general corrosion resistance in a wide variety of corrosive media, including foodstuffs, sterilizing solutions, most organic chemicals and dyes and a wide variety of inorganic chemicals. In most corrosive solutions these grades would have a general corrosion resistance approaching that of type 304 SS.