

NF A49-402-88 STEEL TUBES SPIRAL FUSION WELDED NON ALLOY AND MICRO ALLOY STEEL TUBES FOR FLUID TRANSPORTING PIPES AND PRESSURE VESSELS

1. Chemical Composition

Grade	Mfg. Process	Chemical Composition (%)								
		C	Si	Mn	P	S	Ni	Cr	Mo	Others
TSE220	W	0.16Max	0.30Max	1.00Max	0.03Max	0.025Max	-	-	-	-
TSE250	W	0.17Max	0.30Max	1.00Max	0.03Max	0.025Max	-	-	Nb 0.4Max	-
TSE290	W	0.17Max	0.35Max	1.20Max	0.03Max	0.025Max	-	-	Nb 0.4Max	-
TSE320	W	0.17Max	0.35Max	1.20Max	0.03Max	0.025Max	-	-	Nb 0.4Max	-
TSE360	W	0.17Max	0.40Max	0.80~1.55	0.03Max	0.025Max	-	-	Nb 0.4Max	-
TSE415	W	0.17Max	0.45Max	0.80~1.55	0.03Max	0.025Max	-	-	Nb 0.01~0.05	V 0.06Max
TSE450	W	0.17Max	0.45Max	0.80~1.55	0.03Max	0.025Max	-	-	Nb 0.01~0.05	V 0.06Max
TSE480	W	0.17Max	0.45Max	0.80~1.55	0.03Max	0.025Max	-	-	Nb 0.01~0.05	V 0.06Max

2. Mechanical Properties

Grade	Tensile Test MPa or N/mm ²	
	Min Yield point	Tensile Strength
TSE220	220	370~480
TSE250	250	420~530
TSE290	290	420~530
TSE320	320	440~560
TSE360	360	480~620
TSE415	415	550~670
TSE450	450	560~680
TSE480	480	580~720