NF A49-243-85 STEEL TUBES LONGITUDINALLY PRESSURE WELDED TUBES D 168.3mm IN NOT ALLOYED AND FERRITIC ALLOYED STEELS USED AT ELEVATED TEMPERATURES

1. Chemical Composition

Grade	Mfg. Process	Chemical Composition (%)								
		C	Si	Mn	P	S	Ni	Cr	Mo	Others
TS37C	W	0.15Max	0.06~0.30	0.35~0.75	0.035Max	0.025Max	-	-	-	Cu 0.25Max Sn 0.030Max
TS42C	W	0.18Max	0.08~0.35	0.45~1.00	0.035Max	0.025Max	-	-	-	Cu 0.25Max Sn 0.030Max
TS48C	W	0.20Max	0.10~0.35	0.65~1.25	0.035Max	0.025Max	-	-	-	Cu 0.25Max Sn 0.030Max
TS52C	W	0.20Max	0.15`0.50	1.00~1.50	0.035Max	0.025Max	-	-	-	Cu 0.25Max Sn 0.030Max
TS15D3	W	0.12~0.20	0.15~0.35	0.50~0.90	0.030Max	0.025Max	0.30Max	0.30Max	0.25~0.35	Cu 0.25Max Sn 0.030Max Al 0.025Max
TS15CD2-05	W	0.10~0.18	0.10~0.35	0.50~0.90	0.030Max	0.025Max	0.40~0.65	0.40~0.65	0.45~0.60	Cu 0.25Max Sn 0.030Max Al 0.025Max
TS15CD4-05	W	0.08~0.20	0.10~0.40	0.40~0.85	0.035Max	0.030Max	0.75~1.25	0.75~1.25	0.40~0.60	Cu 0.25Max Sn 0.030Max Al 0.025Max

2. Mechanical Properties

Grade	Tensile Test MPa or N/mm^2		Remarks
	Min Yield point	Tensile Strength	(Similar to JIS)
TS37C	235	360~460	(STPG370)
TS42C	255	410~510	(STPG420)
TS48C	275	470~570	-
TS52C	355	510~630	-

TS15D3	265	430~530	-
TS15CD2-05	275	440~570	-
TS15CD4-05	295	470~610	-

JIS Number and Corresponding Foreign Standards

JIS			ASTM			BS			DIN			NF			ISO			Index Number
Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	
G3456		C	A106	GrA	C	3602	HFS360	C	17175	St35.8	C	A49-211	TU37b	C	2604/2	TS5	C	C004
	STPT370					"	CFS360	C	17177	St37.8	C	A49-213	TU37c	C	2604/3	TW9H	C	
	(STPT38)					"	ERW360	C				A49-243	TU37c	C				
						"	CEW360	C										
		C	A106	GrB	C	3602	HFS410	C	17175	St45.8	C	A49-211	TU42b	C	2604/2	TS9H	C	
	STPT410					"	CFS410	C	17177	St42.8	C	A49-213	TU42c	C				
	(STPT42)					"	ERW410	C				A49-243	TU42c	C				
						"	CEEW410	C										
		C	A106	GrC	C	3602	HFS460	C				A49-211	TU48b	C	2604/2	TS14	C	
	STPT480					"	CFS460	C				A49-213	TU48c	C				
	(STPT42)					"	ERW460	C										
						"	CEEW460	C										

JIS Number and Corresponding Foreign Standards

JIS			ASTM			BS			DIN			NF			ISO			Index Number
Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	Standard Number	Grade	Type	
G3461	STB340	C	A161	LC	C	3059	HFS320	C				A49-245	TS34e	C				C010
	(STB35)		A192	-	C	"	CFS320	C				"	TS34c	C				
			A226	-	C	"	ERW320	C										

			A556	GrA2	C	"	CEW320	C										
			A557	GrA2	C	"	S1 360	C										
						"	S2 360	C										
						"	ERW 360	C										
						"	CEW360	C										
						3606	ERW320	C										
						"	CEW320	C										
						"	CFS320	C										
	STB410	C	A179	GrC	C	3059	S1 440	C	17175	St45.8	C	A49-213	TU42c	C	2604/2	TS9H	C	
	(STB42)		A210	GrA1	C	"	S2 440	C	17177	St42.8	C	A49-215	TU42c	C	"	TW9H	C	
			A556	GrB2	C	"	ERW 440	C				A49-243	TS42c					
			A557	GrB2	C	"	CEW 440	C				A49-245	TS42c					
						3602	HFS 410	C				"	TS42c					
						"	CFS 410	C										
						"	ERW 410	C										
						"	CEW 410	C										
						3606	ERW 440	C										
						"	CEW 440	C										
						"	CFS 440	C										
STB510	C							C	17175	19Mn5	C	A49-213	TU52C	C	2604/2	TS18	C	
(STB52)								C				A49-248	TU52C	C				