CLASSIFICATION OF TTS (2013) ROLLS

Materials	Symbol	Casting Method	Carbon (%)	Barrel						Barrel Structure	Core Material	Application
				Hardness (HSC)	Tensile (kg/mm^2)	Elongation (%)	Fatigue (kg/mm^2)	Impact (kg.mm.)	Modulus of Elasticity (kg/mm^2)			
Special Cast Steel	TCPL	S	0.4~0.6	30~38	70~90	4.0~8.0	23~30	1.0~3.5	21000	Ferrite and fine pearlite matrix and secondary carbides.	Same as barrel material	Blooming, roughing and heavy section rolls, toughness.
	TCP-1	S	0.6~0.8	32~38	70~90	3.0~7.0	23~30	1.0~3.0	21000	Pearlitic matrix with primary and secondary carbides.	Do.	Do.
	TCP-2	S	0.8~1.0	35~40	75~95	2.0~5.0	25~31	0.7~2.5	21000	Do.	Do.	Do.
	TCP-3	S	1.0~1.2	37~42	70~80	1.0~3.0	23~26	0.5~1.5	21000	Do.	Do.	Blooming, roughing and heavy section rolls : toughness and wear-resistance requirements.
	TCP-4	S	1.2~1.4	37~42	65~75	1.0~2.0	21~25	0.4~1.5	21000	Do.	Do.	Do.
Adamite Steel	T2SL	S	1.4~1.6	40~45	60~70	0.5~2.0	20~23	0.3~0.6	20000	Pearlitic matrix with primary and secondary carbides.	Do.	Section and strip rolling ; medium and small : blooming rolling.
	T2SA	S	1.6~1.8	42~47	50~60	0.3~1.0	17~20	0.3~0.5	20000	Do.	Do.	Section intermediate rolling , wire rod and steel bar roughing.
	T2SB	S	1.8~2.0	43~48	45~55	0.2~0.7	15~18	0.2~0.4	20000	Do.	Do.	Section intermediate and finish rolling : wire rod intermediate rolling.
	T2SC	S	2.0~2.2	45~50	40~50	0.2~0.5	13~17	0.2~0.4	20000	Do.	Do.	Section finishing : wire rod intermediate rolling.
	T2SX	S	1.5~1.7	45~55	55~65	0.5~2.0	18~21	0.3~1.0	20000	Fine pearlitic matrix with primary and secondary carbides.	Do.	Section intermediate rolling , wire and steel bar roughing toughness requirement.
	T2SXG	S	1.6~1.8	40~53	65~75	1.0~2.5	20~25	0.3~1.0	20000	Fine pearlitic matrix with primary carbides and spheroidal graphite	Do.	Section intermediate rolling; wire rod and bar steel Roughing; toughness and heat-crack resistance requirement
	T2SY	S	1.3~1.5	40~50	65~75	1.0~3.0	21~25	0.3~1.0	20000	Fine pearlitic matrix with primary and secondary carbides.	Do.	Blooming , roughing and heavy section rolling toughness and heat-crack resistance requirement.
	T2SS	S	1.8~2.2	50~58	55~70	0.5~1.5	18~20	0.3~1.0	20000	Do.	Do.	Section and plate finishing; wire rod intermediate and finishing rolling
	T2DP	S / C	1.9~2.2	55~65	40~60	0.2~0.7	13~20	0.2~0.4	20000	Bainitic matrix with primary and secondary carbides.	Ductile or graphitic steel	Section, strip, wire rod, H beam, Intermediate and finishing rolling
Ductile (Nodular Iron)	T8SM	S	3.3~3.6	40~55	60~75	1.0~2.0	20~23	0.5~0.8	16000	Fine pearlitic matrix with primary carbides and spheroidal graphite.	Same as barrel material	Blooming , section , wire rod and bar roughing.
	T8X	S	3.3~3.6	45~50	55~65	0.7~1.5	18~21	0.3~0.6	16000	Ferrite and pearlite matrix with primary carbides and spheroidal graphite.	Do.	Section and bar intermediate and finishing : wire rod roughing and intermediate rolling.
	T8X	S	3.3~3.6	50~55	50~60	0.5~1.0	17~20	0.3~0.6	17000	Do.	Do.	Do.
	T8X	S	3.3~3.6	55~60	50~65	0.3~0.6	17~20	0.2~0.4	17000	Pearlitic matrix with primary carbides and spheroidal graphite.	Do.	Do.

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Ductile (Nodular Iron)	T8A	S	3.3~3.6	55~60	50~60	0.5~1.0	17~20	0.2~0.4	17000	Fine pearlite matrix with primary carbides and spheroidal graphite.	Same as barrel material	Plate intermediate and finish rolling : wire rod and bar intermediate rolling.
	T8A	S	3.3~3.6	60~65	45~55	0.3~0.6	15~18	0.2~0.4	17000	Do.	Do.	Do.
	T8AM	S	3.3~3.6	55~60	45~55	0.3~0.7	15~18	0.2~0.4	17000	Do.	Do.	Light section, beams, plate intermediate and finishing rolling
	T8AM	S	3.3~3.6	60~65	45~55	0.3~0.7	15~18	0.2~0.4	17000	Do.	Do.	Section , strip and bar finishing.
	T8AM	S	3.3~3.6	65~70	40~50	0.2~0.5	13~17	0.2~0.4	17000	Do.	Do.	Do.
	TH8AM	S/C	3.3~3.6	68~72	45~55	0.1~0.3	14~17	0.1~0.2	17000	Sorbite and Bainite matrix with primary carbides and spheroidal graphite.	Gray iron or ductile	Do.
	T8AC	S/C	3.3~3.6	50~75	60~90	0.2~0.4	12~15	0.2~0.4	17000	Bainitic and martensitic matrix (Acicular) with primary carbides and spheroidal graphite.	Do.	Bar, rod, beams, light section, medium and heavy section roughing, intermediate and finishing rolling.
Alloy Indeffinite Chill Iron	T7IC	S	3.1~3.5	50~75	35~45	0.2~0.4	10~13	0.1~0.3	17000	Pearlite, bainite matrix with primary carbides and flake graphite.	Same as barrel material	Wire rod and bar roughing. wire rod, bar and Plate intermediate. strip, bar and wire rod finishing rolling.
	T7X	C	3.1~3.5	60~65	35~45	0.2~0.5	12~15	0.1~0.3	17000	Pearlitic matrix with primary carbides and flake graphite	Gray iron or ductile	Plate intermediate finishing ; section, strip and bar finishing
	T7A	C	3.1~3.5	65~70	35~55	0.2~0.4	10~13	0.1~0.3	17000	Do.	Do.	Do.
	T7B	C	3.1~3.5	70~75	35~55	0.2~0.4	10~13	0.1~0.3	17000	Bainitic matrix with primary carbides and flake graphite	Do.	Plate and strip finishing ; section, strip and bar finishing
	T7C	C	3.1~3.5	75~83	35~55	0.2~0.4	10~13	0.1~0.3	17000	Martensite-bainite matrix with primary carbides and flake graphite	Do.	Plate and strip finishing
Cast Iron	TFCD	S	2.5~3.6	25~30	40~50	7.0~10.0	15~18	0.2~0.4	15000	Ferrite, pearlite matrix with spheroidal graphite	-	Machinery parts, mold for manufacturing
High Cr Iron	TW2HC	C	2.5~3.0	70~83	65~75	0.3~0.6	21~25	0.2~0.4	21000	Martensite-bainite matrix with primary carbides and flake graphite	Ductile	Strip mill front finishing stand.
Alloy Deffinite Chill Iron	T6X	C	3.2~3.6	65~70	25~35	0.1~0.2	8~12	0.1~0.2	18000	Fine Pearlite matrix with primary carbides (No graphite)	Gray iron or ductile	Wire rod and bar finishing , Strip finishing
	T6A	C	3.2~3.6	70~75	25~35	0.1~0.2	8~12	0.1~0.2	18000	Do.	Do.	Do.
	T6B	C	3.2~3.6	72~77	25~35	0.1~0.2	8~12	0.1~0.2	18000	Bainitic matrix with primary carbides (No graphite)	Do.	Do.
	T6C	C	3.2~3.6	77~83	25~35	0.1~0.3	8~12	0.1~0.2	18000	Martensite-bainite matrix with primary carbides (No graphite)	Do.	Do.

Remark : C → Centrifugal casting
S → Static casting