

**KALYANI
FORGE**

SUBJECT : Steel Specification Standard								DEPT. :		QA		
								REF. NO. :		QA-SD-05		
								FIRST RELEASED ON :				
								02/01/2004				
GRADE	% C	% Mn	% P	% S	% Si	% Cr	% Ni	% Mo	% Al	% Cu	% V	% Ti
Fe410WA	-	-	-	0.020	-	-	-	-	0.020	-	-	-
	0.23	1.50	0.035	0.035	0.40	-	-	-	0.040	-	-	-
SAE1006	-	0.25	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.08	0.40	0.035	0.035	0.35	-	-	-	0.040	-	-	-
SAE1010	0.08	0.30	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.13	0.60	0.035	0.035	0.35	-	-	-	0.040	-	-	-
C15	0.12	0.30	-	-	0.15	-	-	-	0.020	-	-	-
	0.18	0.60	0.045	0.045	0.35	-	-	-	0.040	-	-	-
S15C	0.13	0.30	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.18	0.60	0.03	0.035	0.35	-	-	-	0.040	-	-	-
15C8	0.10	0.60	-	-	0.15	-	-	-	0.020	-	-	-
	0.20	0.90	0.050	0.050	0.35	-	-	-	0.040	-	-	-
S20C	0.18	0.30	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.23	0.60	0.030	0.035	0.35	-	-	-	0.040	-	-	-
En5A	0.25	0.70	-	0.020	0.05	-	-	-	0.020	-	-	-
	0.30	0.90	0.035	0.035	0.35	-	-	-	0.040	-	-	-
C30	0.25	0.60	-	0.020	0.05	-	-	-	0.020	-	-	-
	0.35	0.90	0.035	0.035	0.35	-	-	-	0.040	-	-	-
35C8	0.30	0.60	-	-	0.15	-	-	-	0.020	-	-	-
	0.40	0.90	0.050	0.050	0.35	-	-	-	0.040	-	-	-
C35	0.32	0.50	-	-	0.15	-	-	-	0.020	-	-	-
	0.39	0.80	0.045	0.045	0.35	-	-	-	0.040	-	-	-
S35C / SAE1035	0.32	0.60	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.38	0.90	0.030	0.035	0.35	-	-	-	0.040	-	-	-
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GRADE	% C	% Mn	% P	% S	% Si	% Cr	% Ni	% Mo	% Al	% Cu	% V	% Ti
CK35M / 35C8M	0.35	0.60	-	0.020	0.15	0.20	-	-	0.020	-	-	-
	0.40	0.90	0.035	0.035	0.35	0.30	-	-	0.040	-	-	-
En8D	0.40	0.70	-	0.020	0.05	-	-	-	0.020	-	-	-
	0.45	0.90	0.035	0.035	0.35	-	-	-	0.040	-	-	-
45C8	0.40	0.60	-	-	0.15	-	-	-	0.020	-	-	-
	0.50	0.90	0.050	0.050	0.35	-	-	-	0.040	-	-	-
45C8 TELCO	0.42	0.60		0.020	0.10				0.020			-
	0.50	0.90	0.035	0.035	0.35				0.040			-
S45C	0.42	0.60	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.48	0.90	0.030	0.035	0.35	-	-	-	0.040	-	-	-
C43	0.40	0.50		0.020	0.15	-	-	-	0.020	-	-	-
	0.46	0.80	0.030	0.035	0.40				0.040	-	-	-
CK45/C45	0.42	0.50	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.50	0.80	0.035	0.035	0.35	-	-	-	0.040	-	-	-
CK45M	0.43	0.60	-	0.020	0.15	0.17	-	-	0.020	-	-	-
	0.48	0.75	0.035	0.035	0.35	0.23	-	-	0.040	-	-	-
SAE 1020	0.18	0.30	-	-	0.15	-	-	-	0.020	-	-	-
	0.23	0.60	0.040	0.050	0.35	-	-	-	0.040	-	-	-
CL-II	0.15	0.60	-	-	0.15	-	-	-	0.020	-	-	-
	0.25	0.90	0.050	0.050	0.35	-	-	-	0.040	-	-	-
SAE1030	0.28	0.60		0.020	0.15	-	-	-	0.020	-	-	-
	0.34	0.90	0.035	0.035	0.35	-	-	-	0.040	-	-	-

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GRADE	% C	% Mn	% P	% S	% Si	% Cr	% Ni	% Mo	% Al	% Cu	% V	% Ti
SAE 1038	0.35	0.60	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.42	0.90	0.035	0.035	0.35	-	-	-	0.040	-	-	-
S48C	0.45	0.60	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.51	0.90	0.030	0.035	0.35	-	-	-	0.040	-	-	-
S48C (M&M)	0.48	0.80	-	0.020	0.15	0.20	-	-	0.020	-	-	-
	0.51	0.90	0.030	0.035	0.35	0.30	-	-	0.040	-	-	-
SAE1019	0.15	0.70	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.20	1.00	0.035	0.035	0.35	-	-	-	0.040	-	-	-
En14A	0.15	1.30	-	0.020	0.1	-	-	-	0.020	-	-	-
	0.25	1.70	0.035	0.035	0.35	-	-	-	0.040	-	-	-
En15	0.35	1.60	-	0.020	0.10	-	-	-	0.020	-	-	-
	0.40	1.70	0.035	0.035	0.35	-	-	-	0.040	-	-	-
37C15	0.32	1.30	-	0.020	0.10	-	-	-	0.020	-	-	-
	0.42	1.70	0.035	0.035	0.35	-	-	-	0.040	-	-	-
S53C	0.50	0.60	-	-	0.15	-	-	-	0.020	-	-	-
	0.56	0.90	0.030	0.035	0.35	-	-	-	0.040	-	-	-
S55C	0.52	0.60	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.58	0.90	0.030	0.035	0.35	-	-	-	0.040	-	-	-
En9	0.50	0.50	-	0.020	0.05	-	-	-	0.020	-	-	-
	0.60	0.80	0.035	0.035	0.35	-	-	-	0.040	-	-	-

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GRADE	% C	% Mn	% P	% S	% Si	% Cr	% Ni	% Mo	% Al	% Cu	% V	% Ti			
SAE1055	0.50	0.60		0.020	0.15	-	-	-	0.020	-	-	-			
	0.60	0.90	0.035	0.035	0.35	-	-	-	0.040	-	-	-			
CF53	0.50	0.65	-	0.010	0.15	-	-	-	0.015	-	-	-			
	0.56	0.80	0.025	0.025	0.30	-	-	-	0.040	0.25	-	-			
XC45	0.45	0.60	-	0.015	0.10	-	-	-	0.015	-	-	-			
	0.50	0.80	0.025	0.030	0.40	-	-	-	0.040	0.25	-	-			
S48CS1	0.45	0.60	-	0.040	0.15	-	-	-	0.020	-	-	-			
	0.51	1.00	0.030	0.070	0.35	-	-	-	0.040	-	-	-			
En1A	0.07	0.80	-	0.200	-	-	-	-	0.020	-	-	-			
	0.15	1.20	0.070	0.300	0.10	-	-	-	0.040	-	-	-			
En8	0.35	0.60	-	0.02	0.05	-	-	-	0.020	-	-	-			
	0.45	1.00	0.035	0.035	0.35	-	-	-	0.040	-	-	-			
40C10S18	0.35	0.80	-	0.140	-	-	-	-	-	-	-	-			
	0.45	1.20	0.060	0.220	0.25	-	-	-	-	-	-	-			
En8M	0.35	1.00	-	0.120	-	-	-	-	-	-	-	-			
	0.45	1.30	0.060	0.200	0.25	-	-	-	-	-	-	-			
En32B	0.10	0.60	-	-	0.05	-	-	-	0.020	-	-	-			
	0.18	1.00	0.050	0.070	0.35	-	-	-	0.040	-	-	-			
SAE 1140	0.37	0.70	-	0.080	0.15	-	-	-	-	-	-	-			
	0.44	1.00	0.040	0.130	0.35	-	-	-	-	-	-	-			
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GRADE	% C	% Mn	% P	% S	% Si	% Cr	% Ni	% Mo	% Al	% Cu	% V	% Ti
SAE 1141	0.37	1.35	-	0.080	0.15	-	-	-	-	-	-	-
	0.45	1.65	0.040	0.130	0.35	-	-	-	-	-	-	-
SAE 1541	0.36	1.35	-	0.020	0.15	-	-	-	0.020	-	-	-
	0.44	1.65	0.035	0.035	0.35	-	-	-	0.040	-	-	-
16MnCr5 / 16MnCrS5	0.14	1.00	-	0.020	0.15	0.80	-	-	0.020	-	-	-
	0.19	1.30	0.035	0.035	0.40	1.10	-	-	0.040	-	-	-
20MnCr5	0.17	1.10	-	0.020	0.15	1.00	-	-	0.020	-	-	-
	0.22	1.40	0.035	0.035	0.40	1.30	-	-	0.040	-	-	-
SCr420H2V2	0.18	0.60	-	-	0.15	0.90	-	-	0.020	-	-	-
	0.23	0.85	0.030	0.030	0.35	1.20	-	-	0.040	-	-	-
34Cr4	0.30	0.60	-	0.020	0.15	0.90	-	-	0.020	-	-	-
	0.37	0.90	0.035	0.035	0.40	1.20	-	-	0.040	-	-	-
39Cr5	0.36	0.70	-	0.020	0.15	1.05	-	-	0.025	-	-	-
	0.42	1.00	0.035	0.040	0.30	1.30	-	-	0.040	-	-	-
40Cr4	0.35	0.60	-	0.020	0.10	0.90	-	-	0.020	-	-	-
	0.45	0.90	0.035	0.035	0.35	1.20	-	-	0.040	-	-	-
40Cr4B	0.35	0.60	-	0.020	0.10	1.00	-	-	0.020	-	-	-
	0.40	0.90	0.035	0.035	0.35	1.20	-	-	0.040	-	-	-
530A32	0.36	0.60		0.025	0.10	0.90	-	-	0.020	-	-	-
	0.44	0.90	0.035	0.035	0.35	1.20	-	-	0.040	-	-	-
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GRADE	% C	% Mn	% P	% S	% Si	% Cr	% Ni	% Mo	% Al	% Cu	% V	% Ti
41Cr4	0.38	0.50	-	0.020	0.15	0.90	-	-	0.020	-	-	-
	0.44	0.80	0.035	0.035	0.35	1.20	-	-	0.040	-	-	-
41Cr4 (BAL)	0.41	0.75	-	0.015	0.15	1.05	-	-	0.015	-	-	-
	0.45	0.90	0.035	0.035	0.40	1.20	-	-	0.035	-	-	-
41Cr4M	0.44	0.60	-	0.020	0.15	1.05	-	-	0.020	-	-	-
	0.49	0.90	0.030	0.035	0.35	1.20	-	-	0.040	-	-	-
En16C	0.35	1.30	-	0.020	0.10	-	-	0.20	0.020	-	-	-
	0.40	1.80	0.035	0.035	0.35	-	-	0.35	0.040	-	-	-
605M36	0.32	1.30	-	0.020	0.10	-	-	0.22	0.020	-	-	-
	0.40	1.70	0.035	0.035	0.35	-	-	0.32	0.040	-	-	-
En19	0.35	0.50	-	0.020	0.10	0.90	-	0.20	0.020	-	-	-
	0.45	0.80	0.035	0.035	0.35	1.50	-	0.40	0.040	-	-	-
EN19A	0.35	0.50	-	0.020	0.10	0.90	-	0.20	0.020	-	-	-
	0.45	0.80	0.035	0.035	0.35	1.20	-	0.35	0.040	-	-	-
En19C	0.40	0.50	-	0.020	0.10	0.90	-	0.20	0.020	-	-	-
	0.45	0.80	0.035	0.035	0.35	1.20	-	0.35	0.040	-	-	-
En24	0.35	0.45	-	0.020	0.10	0.90	1.30	0.20	0.020	-	-	-
	0.45	0.70	0.035	0.035	0.35	1.40	1.80	0.35	0.040	-	-	-
En353	-	0.50	-	0.020	-	0.75	1.00	0.08	0.020	-	-	-
	0.20	1.00	0.035	0.035	0.35	1.25	1.50	0.15	0.040	-	-	-
En354		0.50	-	0.020	-	0.75	1.50	0.10	0.020	-	-	-
	0.20	1.00	0.035	0.035	0.35	1.25	2.00	0.20	0.040	-	-	-
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GRADE	% C	% Mn	% P	% S	% Si	% Cr	% Ni	% Mo	% Al	% Cu	% V	% Ti
40Cr4Mo3	0.35	0.50		0.020	0.10	0.90	-	0.20	0.020	-	-	-
	0.45	0.80	0.035	0.035	0.35	1.20	-	0.35	0.040	-	-	-
42CrMo4 / 42CrMoS4	0.38	0.50	-	0.020	0.15	0.90	-	0.15	0.020	-	-	-
	0.45	0.80	0.035	0.035	0.40	1.20	-	0.30	0.040	-	-	-
SAE4140H	0.37	0.65	-	0.020	0.15	0.75	-	0.15	0.020	-	-	-
	0.44	1.10	0.035	0.035	0.30	1.20	-	0.25	0.040	-	-	-
SAE8620	0.18	0.70	-	0.020	0.15	0.40	0.40	0.15	0.020	-	-	-
	0.23	0.90	0.035	0.035	0.30	0.60	0.70	0.25	0.040	-	-	-
SAE8620H	0.17	0.60	-	0.020	0.15	0.35	0.35	0.15	0.020	-	-	-
	0.23	0.95	0.035	0.035	0.30	0.65	0.75	0.25	0.040	-	-	-
SAE8620HM	0.17	0.60		0.015	0.20	0.35	0.35	0.15	0.020	-	-	-
	0.23	0.95	0.03	0.035	0.35	0.65	0.75	0.25	0.040	-	-	-
SCM415H	0.12	0.55	-	-	0.15	0.85	-	0.15	0.020	-	-	-
	0.18	0.90	0.030	0.030	0.35	1.25	-	0.35	0.040	-	-	-
SCM420H (HHML)	0.17	0.55	-	0.010	0.15	0.85	-	0.10	0.020	-	-	-
	0.23	0.90	0.030	0.030	0.35	1.25	-	0.25	0.040	-	-	-
SCM420H (BAL)	0.17	0.55	-	0.015	-	0.85	-	0.15	0.015			
	0.23	0.90	0.035	0.035	0.25	1.25	-	0.35	0.035			
SCM420H	0.17	0.55	-	-	0.15	0.85	-	0.15	0.020	-	-	-
	0.23	0.90	0.030	0.030	0.35	1.25	-	0.35	0.040	-	-	-
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GRADE	% C	% Mn	% P	% S	% Si	% Cr	% Ni	% Mo	% Al	% Cu	% V	% Ti
SCM420H	0.18	0.60	-	-	0.15	0.90	-	0.15	0.020	-	-	-
TVSM	0.23	0.85	0.030	0.030	0.35	1.20	-	0.30	0.040	-	-	-
SCM420KC1	0.17	0.55	-	-	0.15	0.85	-	0.15	0.020	-	-	-
	0.23	0.90	0.030	0.030	0.35	1.25	-	0.35	0.040	-	-	-
DSG-1	0.15	0.60	-	0.010	-	0.90	-	0.40	0.020	-	-	-
	0.21	0.90	0.015	0.020	0.15	1.20	-	0.50	0.040	-	-	-
38MnSiVS5 /	0.35	1.30	-	0.045	0.50	0.10	0.10	-	0.020	-	0.08	-
KRUPP1538	0.40	1.50	0.035	0.065	0.70	0.20	0.20	-	0.030	-	0.12	0.015
45M5BTUA2	0.41	0.95	-	0.060	0.10	-	-	-	0.015	-	-	-
*	0.45	1.30	0.025	0.090	0.40	0.25	0.25	0.05	0.040	0.40	-	0.010
St 52-3	-	-	-	-	-	-	-	-	0.020	-	-	-
	0.20	1.80	0.035	0.035	0.55	-	-	-	0.040	-	-	-
45S20U	0.39	0.66		0.150	0.07	-	-	-	-	-	-	-
	0.53	1.15	0.065	0.280	0.33	-	-	-	-	-	-	-
<p>Note :</p> <p>a) For all other grades, chemical composition shall be as per relevent international standard. However S % & Al % shall be maintained at a minimum 0.020 % for all grades, except the resulpharised grades.</p> <p>b) In case of S48C & S53C, Ni + Cr should be less than 0.35 %</p> <p>c) For Grade 45M5BTUA2 the Mn euivalevt should be 1.50 to 1.65</p>												
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