

4140 / 42CrMo4 Equivalents - 10 quenched-and-tempered alloy steels across AISI, EN 10083-3, old DIN / AFNOR, BS 970, J

4140 = 42CrMo4 / 1.7225 = SCM440 = 42CrMo = 708M40 (EN19) = 42CD4: C 0.38-0.43 (SAE) / 0.38-0.45 (EN), Cr 0.80-1.10 / 0.90-1.20, Mo 0.15-0.25 / 0.15-0.30 %. 4340 has no EN twin (34CrNiMo6 nearest: C 0.30-0.38, Ni 1.30-1.70, Cr 1.30-1.70). 40Cr = 41Cr4 / 5140 / SCr440, NOT 4140 (no Mo). +QT strength by section for 42CrMo4: Re 900 / Rm 1100-1300 MPa at <=16 mm, 750 / 1000-1200 at 16-40, 650 / 900-1100 at 40-100, 550 / 800-950 at 100-160, 500 / 750-900 at 160-250.

EKINSUN LTD - shafts, studs, pins, gears and fasteners machined in the drawing's grade and condition from one piece - <https://www.ekinsun.com/materials/4140-42crmo4-steel-equivalents/>

Crosswalk

AISI / SAE	EN 10083-3 (number)	Old DIN / AFNOR	BS 970	JIS	GB/T 3077	Rating
Cr-Mo steels - the 4140 / 42CrMo4 family						
4140	42CrMo4 (1.7225)	42CrMo4 (AFNOR 42CD4)	708M40 (EN19)	SCM440	42CrMo	direct
4142	42CrMo4 (1.7225)	42CrMo4	708M40	SCM440	42CrMo	direct
4130	25CrMo4 (nearest; 30CrMo4 not in EN 10083) (1.7218)	25CrMo4	708A30 (std)	SCM430	30CrMo	nearest
4150	50CrMo4 (1.7228)	50CrMo4	708M50 (std)	SCM445 (std)	-	direct
4135 / 4137 (nearest)	34CrMo4 (1.7220)	34CrMo4	708A37 (std)	SCM435	35CrMo	nearest
4140 (resulphurised, std)	42CrMoS4 (1.7227)	42CrMoS4	-	-	-	substitute
Ni-Cr-Mo steels - the 4340 / 34CrNiMo6 family						
4340	34CrNiMo6 (nearest; 36CrNiMo4 / 40NiCrMo7 also cited) (1.6582 (1...	34CrNiMo6	817M40 (EN24)	SNCM439	40CrNiMoA	nearest
4340 (nearest)	34CrNiMo6 (1.6582)	34CrNiMo6 (AFNOR 35NCD6)	817M40 (nearest)	SNCM439 (nearest)	40CrNiMoA (nearest)	nearest
Cr steels - the 5140 / 41Cr4 / 40Cr family						
5140	41Cr4 (1.7035)	41Cr4 (AFNOR 42C4)	530M40 (EN18)	SCr440	40Cr	nearest
5140 (nearest)	41Cr4 (nearest) (1.7035)	41Cr4	530M40	SCr440	40Cr	nearest

Composition bands, mass % - US (SAE J404) | EN (EN 10083-3; GB band on the 40Cr row)

Grade	C US	C EN	Cr US	Cr EN	Mo US	Mo EN	Ni US	Ni EN
4140 / 42CrMo4	0.38-0.43	0.38-0.45	0.80-1.10	0.90-1.20	0.15-0.25	0.15-0.30	-	-
4142 / 42CrMo4	0.40-0.45	0.38-0.45	0.80-1.10	0.90-1.20	0.15-0.25	0.15-0.30	-	-
4130 / 25CrMo4	0.28-0.33	0.22-0.29 (std)	0.80-1.10	0.90-1.20 (std)	0.15-0.25	0.15-0.30 (std)	-	-
4150 / 50CrMo4	0.48-0.53	0.46-0.54 (std)	0.80-1.10	0.90-1.20 (std)	0.15-0.25	0.15-0.30 (std)	-	-
4135 / 4137 / 34CrMo4	0.33-0.38 (4135, std)	0.30-0.37 (std)	0.80-1.10 (std)	0.90-1.20 (std)	0.15-0.25 (std)	0.15-0.30 (std)	-	-
4140 / 42CrMoS4	0.38-0.43	0.38-0.45 (std)	0.80-1.10	0.90-1.20 (std)	0.15-0.25	0.15-0.30 (std)	-	- (S 0.020-0.040)
4340 / 34CrNiMo6	0.38-0.43	0.30-0.38	0.70-0.90	1.30-1.70	0.20-0.30	0.15-0.30	1.70-2.00	1.30-1.70
4340 / 34CrNiMo6	0.38-0.43 (4340)	0.30-0.38	0.70-0.90	1.30-1.70	0.20-0.30	0.15-0.30	1.70-2.00	1.30-1.70
5140 / 41Cr4	0.38-0.43 (std)	0.38-0.45 (std)	0.70-0.90 (std)	0.90-1.20 (std)	-	-	-	-
5140 / 41Cr4	0.38-0.43 (std)	0.37-0.44 (40Cr, std)	0.70-0.90 (std)	0.80-1.10 (std)	-	-	-	-

Conditions: +A soft annealed (~240 HB), +N normalised, +QT quenched and tempered (28-34 HRC typical); US 'annealed' / 'HT'. Hardenability: plain Cr (41Cr4 / 5140 / 40Cr) through-hardens to ~25 mm, Cr-Mo (42CrMo4 / 4140) to ~60-80 mm, Ni-Cr-Mo (34CrNiMo6 / 4340) beyond 100 mm. Heat treatment 42CrMo4: harden 820-860 C oil, temper 540-680 C; induction hardening 53 HRC min. 'std' = band from the standard's table.