EMUGE HIGH PERFORMANCE TOOLS

SFM Chart

MultiTAP

Material Group		Hardness Range			Material Example	SFM
		HRC	BHN	N/mm2		
1	**Steel Materials**					
1.1	Cold-extrusion steels, Magnetic soft iron	—	≤ 120	≤ 400	1008 / 1010	15 - 80
1.2	Free cutting steels, General construction steels	—	≤ 180	≤ 600	1008 / 1010 / 12L14 / A36 11L17 / 1140 / 12L15	15 - 80
1.3	Free cutting steels, Construction steels, Alloyed steels, Steel castings	≤ 25	≤ 250	≤ 850	1018 / 1060 / 4130 / 4140 / 41L30 41L45 / 86L20 / 86L40 / 1045	15 - 65
1.4	Crome alloy steel, Cold work steels, Heat-treatable steels, Nitriding steels	≤ 35	≤ 320	≤ 1100	5115 / A29 / A519 / J404 / 4130 / 8030 4140 / 4330 / Nitrally 125, 135, 230	5 - 35
1.1	Corrosion/acid-proof steels, Heat-resistant steels	≤ 25	≤ 250	≤ 850	303 / 304 / 316 / 316L / 416 / 420	5 - 35
1.11	Corrosion/acid-proof steels, Heat-resistant steels	≤35	≤ 320	≤ 1100	410 / 420 / Cf8m / 17-4PH	5 - 25
2	**Cast Materials**					
2.1	Cast iron	—	≤ 280	—	ASTM A48 / SAE J431c / 1800	35 -65
2.2	Cast iron with nodular graphite	—	—	≤ 1000	ASTM A48 class 20, 30, 35, 40	15 - 65
2.3	Cast iron with vermiucular graphite	—	≤ 280	—	—	15 - 50
2.4	Malleable cast iron	—	—	≤ 700	ASTM A47 grade 32510, 35018	35 - 65
3	**Copper, Copper Alloys, Bronze, Brass**					
3.1	Pure Copper and low alloyed copper	—	≤ 150	≤ 500	—	15 - 65
3.2	Copper-zinc alloys (brass, long chipping)	—	—	—	—	35 - 130
3.3	Copper-zinc alloys (brass, short chipping)	—	—	—	—	35 - 130
3.4	Copper-aluminum alloys (alubronze, long chipping) Copper -tin alloys (bronze, long chipping)	—	—	—	—	5 - 35
3.5	Copper -tin alloys (bronze, short chipping)	—	—	—	—	15 - 65
5	**Aluminum Alloys**					
5.1	Aluminum wrought alloys	—	—	—	2014 / 2117 / 5050 / 6061 / 7004	35 - 65
5.2	Aluminum cast alloys ≤ 5% Si	—	—	—	201 / 213 / 295 / 435.3 / 511.0	35 - 65
5.3	Aluminum cast alloys 5% < Si ≤ 12%	—	—	—	319 / 333 / 343 / 356 / 369 / 380	35 - 65
5.4	Aluminum cast alloys 12% < Si ≤ 17%	—	—	—	390 / 393 / 413	15 - 50