



Machining Data for DR Drills

ISO	Material	Condition	Tensile Strength [N/mm ²]	Hardness HB	Mat. No.	Cutting Speed ⁽¹⁾			Feed vs. Insert Size mm/rev							
						Vc m/min IC808/908/08 central	Vc m/min IC8080/9080 external	Vc m/min IC5500 external	DR-04 AL/DT/HD	DR-05 GF/DT/AL/HD	DR-06 GF/DT/AL/HD	DR-07 GF/DT/AL/HD	DR-09/10 GF/DT/AL/HD	DR-11/12 GF/DT/AL/HD	DR-14/16 GF/DT/AL/HD	
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1	200-300	260-390	150-240	0.04-0.08 0.02-0.06	0.06-0.10 0.10-0.15 0.04-0.08	0.07-0.12 0.10-0.16 0.04-0.08	0.08-0.12 0.12-0.18 0.05-0.10	0.10-0.15 0.14-0.22 0.05-0.10	0.12-0.16 0.15-0.25 0.08-0.15	0.14-0.17 0.16-0.26 0.08-0.15
		≥ 0.25 %C	Annealed	650	190	2										
		< 0.55 %C	Quenched and tempered	850	250	3										
		≥ 0.55 %C	Annealed	750	220	4										
		≥ 0.55 %C	Quenched and tempered	1000	300	5										
	Low alloy steel and cast steel (less than 5% of alloying elements)	Annealed	600	200	6	150-220	190-290	120-200								
		Quenched and tempered	930	275	7											
		Quenched and tempered	1000	300	8	120-180	160-230									
			1200	350	9											
	High alloyed steel, cast steel and tool steel	Annealed	680	200	10	120-190	160-250									
		Quenched and tempered	1100	325	11			100-160	210-310							
	Stainless steel and cast steel	Ferritic/martensitic	680	200	12	160-240	210-310				150-240					
		Martensitic	820	240	13											
M	Stainless steel and cast steel	Austenitic, duplex	600	180	14	160-240	210-310		0.04-0.08	0.06-0.10	0.06-0.10	0.06-0.12	0.08-0.12	0.10-0.14	0.12-0.20	
K	Grey cast iron (GG)	Ferritic/pearlitic		180	15	150-250	190-320	0.08-0.16	0.10-0.22	0.10-0.22	0.10-0.22	0.15-0.25	0.18-0.30	0.20-0.34		
		Pearlitic /martensitic		260	16											
	Nodular cast iron (GGG)	Ferritic		160	17	120-180	160-230									
		Pearlitic		250	18											
	Malleable cast iron	Ferritic		130	19											
		Pearlitic		230	20											
N	Aluminum-wrought alloys	Not Hardenable		60	21	150-300	190-390	0.08-0.24	0.12-0.25	0.12-0.25	0.12-0.25	0.20-0.30	0.2-0.35	0.28-0.45		
		Hardenable		100	22											
	Aluminum-cast alloys	≤12% Si	Not Hardenable		75										23	
		>12% Si	Hardenable		90										24	
	Copper alloys	>12% Si	High temperature		130										25	
		>1% Pb	Free cutting		110										26	
		Brass		90	27											
			Electrolitic copper		100										28	
	Non metallic	Duroplastics, fiber plastics			29											
		Hard rubber			30											
S	High temperature alloys	Fe based	Annealed		200	31	20-50	30-60	0.03-0.07	0.04-0.08	0.04-0.08	0.05-0.09	0.07-0.10	0.08-0.12	0.10-0.14	
			Hardened		280	32										
		Ni or Co based	Annealed		250	33										
			Hardened		350	34										
			Cast		320	35										
	Titanium alloys	Pure	400	36	50-60	60-80										
		Alpha+beta alloys, hardened	1050	37												
H	Hardened steel	Hardened		55 HRC	38	20-50	30-60	0.04-0.08	0.05-0.08	0.05-0.08	0.06-0.09	0.07-0.10	0.08-0.12	0.10-0.14		
		Hardened		60 HRC	39											
	Chilled cast iron	Cast	400	40												
	Cast iron	Hardened		55 HRC	41											

- Grades: first choice IC808, IC8080.
- This table refers to 2/3xD drill ratio usage. For 4xD ratio decrease cutting data by 15%.
- Chipformer should be selected based on our geometry range recommendations.
- When using external coolant supply only, reduce cutting speed by 10%.
- Use internal coolant supply when machining austenitic stainless steel.

⁽¹⁾ Central insert should always be IC808/IC908.

- This table refers to 2/3xD drill lengths. For 4xD and 5xD drills, decrease cutting data by 15%.
- When using only external coolant supply, reduce cutting speed by 10%.
- Use internal coolant supply when machining austenitic stainless steel.