



## Recommended Rotational Speeds for Mineral Exploration Bits

The following table defines the recommended rotational speed ranges for various common bit sizes as a function of cutting media type:

Bit Size	Recommended Rotational Speed (Rev / Minute)							
	Impregnated Diamond		Surface-Set Diamond		"Carbide-Chip" Type Tungsten-Carbide		"Saw-Tooth" Type Tungsten-Carbide	
	Max	Min	Max	Min	Max	Min	Max	Min
E	2027	1221	1243	466	-	-	-	-
A	1589	957	978	367	733	244	-	-
B	1271	766	782	293	586	195	293	68
N	1005	605	618	232	464	155	232	54
H	792	477	487	183	366	122	183	43
P	620	374	382	143	286	95	143	33
36mm	2103	1267	1294	485	-	-	-	-
46mm	1643	990	1012	380	759	253	-	-
56mm	1351	814	832	312	624	208	312	73
66mm	1147	691	706	265	529	176	265	62
76mm	966	600	613	230	460	153	230	54
86mm	880	530	541	203	406	135	203	47
101mm	749	452	461	173	346	115	173	40
116mm	652	393	401	151	301	100	151	35
131mm	578	348	356	133	267	89	133	31
146mm	518	312	319	120	239	80	120	28

Bit Size	Recommended Rotational Speed (Rev / Minute)							
	Geotechnical Triangular-TSP Type		Geotechnical Cubic-TSP Type		Geotechnical Pax-Set Types		Geotechnical TSP-Sawtooth Type	
	Max	Min	Max	Min	Max	Min	Max	Min
E	1243	466	932	466	-	-	-	-
A	978	367	733	367	611	244	-	-
B	782	293	586	293	489	195	293	68
N	618	232	464	232	386	155	232	54
H	487	183	366	183	305	122	183	43
P	382	143	286	143	238	95	143	33
36mm	1294	485	970	485	-	-	-	-
46mm	1012	380	759	380	-	-	-	-
56mm	832	312	624	312	-	-	-	-
66mm	706	265	529	265	-	-	-	-
76mm	613	230	460	230	383	153	230	77
86mm	541	203	406	203	338	135	203	68
101mm	461	173	346	173	288	115	173	58
116mm	401	151	301	151	251	100	151	50
131mm	356	133	267	133	222	89	133	44
146mm	319	120	239	120	199	80	120	40

### **Calculation of Rotational Speed (Imperial System)**

The following formula may be used to determine the required rotational speed range (**S**) for any bit or casing shoe:

$$S = \frac{12}{\pi D} P$$

Where:

“ *D* “ represents the mean outside diameter of the bit crown in “inches”. Normally, this value is considered to be the mid-point of the outside set diameter tolerance.

“ *P* “ represents the peripheral speed of the outside diameter of the bit crown in “feet per minute”. In order to establish the rotational speed range, it is necessary to perform this calculation twice: where one calculation is used to determine the minimum recommended rotational speed and the other calculation is used to determine the maximum recommended rotational speed. The value of “ *P* “ is a function of the bit or casing shoe type and the normal minimum and maximum values are given in the table below:

Bit or Casing Shoe Type	Normal Peripheral Speed Values (“ <i>P</i> ”)	
	Minimum	Maximum
Impregnated Diamond	470 feet / minute	780 feet / minute
Surface-Set Diamond	180 feet / minute	480 feet / minute
Geotechnical Triangular-TSP Set	180 feet / minute	480 feet / minute
Geotechnical Cubic-TSP Set	180 feet / minute	360 feet / minute
Geotechnical Pax (PCD)-Set	120 feet / minute	300 feet / minute
Geotechnical TSP Sawtooth	42 feet / minute	180 feet / minute
Tungsten-Carbide (“Carbide-Chip” Type)	120 feet / minute	360 feet / minute
Tungsten-Carbide (“Sawtooth” Type)	42 feet / minute	180 feet / minute

### **Calculation of Rotational Speed (Metric System)**

The following formula may be used to determine the required rotational speed range (**S**) for any bit or casing shoe:

$$S = \frac{1000}{\pi D} P$$

Where:

“ *D* “ represents the mean outside diameter of the bit crown in “millimetres”. Normally, this value is considered to be the mid-point of the outside set diameter tolerance.

“ *P* “ represents the peripheral speed of the outside diameter of the bit crown in “metres per minute”. In order to establish the rotational speed range, it is necessary to perform this calculation twice: where one calculation is used to determine the minimum recommended rotational speed and the other calculation is used to determine the maximum recommended rotational speed. The value of “ *P* “ is a function of the bit or casing shoe type and the normal minimum and maximum values are given in the table below:

Bit or Casing Shoe Type	Normal Peripheral Speed Values ("P")	
	Minimum	Maximum
Impregnated Diamond	140 metres / minute	240 metres / minute
Surface-Set Diamond	54 metres / minute	144 metres / minute
Geotechnical Triangular-TSP Set	54 metres / minute	144 metres / minute
Geotechnical Cubic-TSP Set	54 metres / minute	108 metres / minute
Geotechnical Pax (PCD)-Set	36 metres / minute	90 metres / minute
Geotechnical TSP Sawtooth	12 metres / minute	54 metres / minute
Tungsten-Carbide ("Carbide-Chip" Type)	36 metres / minute	108 metres / minute
Tungsten-Carbide ("Sawtooth" Type)	12 metres / minute	54 metres / minute

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The technical application data in this document is intended as a basic guideline for the selection of the appropriate tools for your job. As drilling conditions and the capabilities of drilling equipment vary considerably from site to site, it is impossible to define absolute parameters for the application of our drilling tools. Some experimentation on the part of the end user may be required as parameters outside those recommended in Dimatec's product literature may be applicable. Every effort has been made to ensure the accuracy of the data contained in this document. Dimatec Inc. cannot accept any liability due to errors or omissions in the data we provide. Dimatec Inc. is constantly working to improve our products and therefore reserve the right to make changes to materials, specifications, prices and technical data without prior notice.

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