



**MICRO GRAIN SOLID CARBIDE  
STRAIGHT SHANK DRILLS  
(JOBBER SERIES)**

Specifications Conform to:  
IS 5101 / DIN 338  
Dimensions in mm



| Drill Diameter h7 | Shank Diameter h6 | Flute Length | Overall Length |
|-------------------|-------------------|--------------|----------------|
| 1.00              | 1.00              | 12           | 34             |
| 1.10              | 1.10              | 14           | 36             |
| 1.20              | 1.20              | 16           | 38             |
| 1.30              | 1.30              | 16           | 38             |
| 1.40              | 1.40              | 18           | 40             |
| 1.50              | 1.50              | 18           | 40             |
| 1.60              | 1.60              | 20           | 43             |
| 1.70              | 1.70              | 20           | 43             |
| 1.80              | 1.80              | 22           | 46             |
| 1.90              | 1.90              | 22           | 46             |
| 2.00              | 2.00              | 24           | 49             |
| 2.10              | 2.10              | 24           | 49             |
| 2.20              | 2.20              | 27           | 53             |
| 2.30              | 2.30              | 27           | 53             |
| 2.40              | 2.40              | 30           | 57             |
| 2.50              | 2.50              | 30           | 57             |
| 2.60              | 2.60              | 30           | 57             |
| 2.70              | 2.70              | 33           | 61             |
| 2.80              | 2.80              | 33           | 61             |
| 2.90              | 2.90              | 33           | 61             |
| 3.00              | 3.00              | 33           | 61             |
| 3.10              | 3.10              | 36           | 65             |
| 3.20              | 3.20              | 36           | 65             |
| 3.30              | 3.30              | 36           | 65             |
| 3.40              | 3.40              | 39           | 70             |

| Drill Diameter h7 | Shank Diameter h6 | Flute Length | Overall Length |
|-------------------|-------------------|--------------|----------------|
| 3.50              | 3.50              | 39           | 70             |
| 3.60              | 3.60              | 39           | 70             |
| 3.70              | 3.70              | 39           | 70             |
| 3.80              | 3.80              | 43           | 75             |
| 3.90              | 3.90              | 43           | 75             |
| 4.00              | 4.00              | 43           | 75             |
| 4.10              | 4.10              | 43           | 75             |
| 4.20              | 4.20              | 43           | 75             |
| 4.30              | 4.30              | 47           | 80             |
| 4.40              | 4.40              | 47           | 80             |
| 4.50              | 4.50              | 47           | 80             |
| 4.60              | 4.60              | 47           | 80             |
| 4.70              | 4.70              | 47           | 80             |
| 4.80              | 4.80              | 52           | 86             |
| 4.90              | 4.90              | 52           | 86             |
| 5.00              | 5.00              | 52           | 86             |
| 5.10              | 5.10              | 52           | 86             |
| 5.20              | 5.20              | 52           | 86             |
| 5.30              | 5.30              | 52           | 86             |
| 5.40              | 5.40              | 57           | 93             |
| 5.50              | 5.50              | 57           | 93             |
| 5.60              | 5.60              | 57           | 93             |
| 5.70              | 5.70              | 57           | 93             |
| 5.80              | 5.80              | 57           | 93             |
| 5.90              | 5.90              | 57           | 93             |

SPIRAL ANGLE : 30° | POINT ANGLE : 118°

Drills are also available with Coating - TIN / TIALN / TiCN



**MICRO GRAIN SOLID CARBIDE  
STRAIGHT SHANK DRILLS  
(JOBBER SERIES)**

Specifications Conform to :  
IS 5101 / DIN 338  
Dimensions in mm



| Drill Diameter<br>h7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 6.00                 | 6.00                 | 57           | 93             |
| 6.10                 | 6.10                 | 63           | 101            |
| 6.20                 | 6.20                 | 63           | 101            |
| 6.30                 | 6.30                 | 63           | 101            |
| 6.40                 | 6.40                 | 63           | 101            |
| 6.50                 | 6.50                 | 63           | 101            |
| 6.60                 | 6.60                 | 63           | 101            |
| 6.70                 | 6.70                 | 63           | 101            |
| 6.80                 | 6.80                 | 69           | 109            |
| 6.90                 | 6.90                 | 69           | 109            |
| 7.00                 | 7.00                 | 69           | 109            |
| 7.10                 | 7.10                 | 69           | 109            |
| 7.20                 | 7.20                 | 69           | 109            |
| 7.30                 | 7.30                 | 69           | 109            |
| 7.40                 | 7.40                 | 69           | 109            |
| 7.50                 | 7.50                 | 69           | 109            |
| 7.60                 | 7.60                 | 75           | 117            |
| 7.70                 | 7.70                 | 75           | 117            |
| 7.80                 | 7.80                 | 75           | 117            |
| 7.90                 | 7.90                 | 75           | 117            |
| 8.00                 | 8.00                 | 75           | 117            |
| 8.10                 | 8.10                 | 75           | 117            |
| 8.20                 | 8.20                 | 75           | 117            |
| 8.30                 | 8.30                 | 75           | 117            |
| 8.40                 | 8.40                 | 75           | 117            |
| 8.50                 | 8.50                 | 75           | 117            |
| 8.60                 | 8.60                 | 81           | 125            |
| 8.70                 | 8.70                 | 81           | 125            |
| 8.80                 | 8.80                 | 81           | 125            |
| 8.90                 | 8.90                 | 81           | 125            |
| 9.00                 | 9.00                 | 81           | 125            |
| 9.10                 | 9.10                 | 81           | 125            |
| 9.20                 | 9.20                 | 81           | 125            |

| Drill Diameter<br>h7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 9.30                 | 9.30                 | 81           | 125            |
| 9.40                 | 9.40                 | 81           | 125            |
| 9.50                 | 9.50                 | 81           | 125            |
| 9.60                 | 9.60                 | 87           | 133            |
| 9.70                 | 9.70                 | 87           | 133            |
| 9.80                 | 9.80                 | 87           | 133            |
| 9.90                 | 9.90                 | 87           | 133            |
| 10.00                | 10.00                | 87           | 133            |
| 10.10                | 10.10                | 87           | 133            |
| 10.20                | 10.20                | 87           | 133            |
| 10.30                | 10.30                | 87           | 133            |
| 10.40                | 10.40                | 87           | 133            |
| 10.50                | 10.50                | 87           | 133            |
| 10.60                | 10.60                | 87           | 133            |
| 10.70                | 10.70                | 94           | 142            |
| 10.80                | 10.80                | 94           | 142            |
| 10.90                | 10.90                | 94           | 142            |
| 11.00                | 11.00                | 94           | 142            |
| 11.10                | 11.10                | 94           | 142            |
| 11.20                | 11.20                | 94           | 142            |
| 11.30                | 11.30                | 94           | 142            |
| 11.40                | 11.40                | 94           | 142            |
| 11.50                | 11.50                | 94           | 142            |
| 11.60                | 11.60                | 94           | 142            |
| 11.70                | 11.70                | 94           | 142            |
| 11.80                | 11.80                | 94           | 142            |
| 11.90                | 11.90                | 101          | 151            |
| 12.00                | 12.00                | 101          | 151            |
| 12.10                | 12.10                | 101          | 151            |
| 12.20                | 12.20                | 101          | 151            |
| 12.30                | 12.30                | 101          | 151            |
| 12.40                | 12.40                | 101          | 151            |
| 12.50                | 12.50                | 101          | 151            |

HELIX ANGLE : 30° | POINT ANGLE : 118°  
Drills are also available with Coating - TIN / TiAlN / TiCN



**MICRO GRAIN SOLID CARBIDE  
STRAIGHT SHANK DRILLS  
(JOBBER SERIES)**

Specifications Conform to :  
IS 5101 / DIN 338  
Dimensions in mm



| Drill Diameter h7 | Shank Diameter h6 | Flute Length | Overall Length |
|-------------------|-------------------|--------------|----------------|
| 12.60             | 12.60             | 101          | 151            |
| 12.70             | 12.70             | 101          | 151            |
| 12.80             | 12.80             | 101          | 151            |
| 12.90             | 12.90             | 101          | 151            |
| 13.00             | 13.00             | 101          | 151            |
| 13.10             | 13.10             | 101          | 151            |
| 13.20             | 13.20             | 101          | 151            |
| 13.30             | 13.30             | 108          | 160            |
| 13.40             | 13.40             | 108          | 160            |
| 13.50             | 13.50             | 108          | 160            |
| 13.60             | 13.60             | 108          | 160            |
| 13.70             | 13.70             | 108          | 160            |
| 13.80             | 13.80             | 108          | 160            |
| 13.90             | 13.90             | 108          | 160            |
| 14.00             | 14.00             | 108          | 160            |
| 14.25             | 14.25             | 114          | 169            |
| 14.50             | 14.50             | 114          | 169            |
| 14.75             | 14.75             | 114          | 169            |
| 15.00             | 15.00             | 114          | 169            |
| 15.25             | 15.25             | 120          | 178            |
| 15.50             | 15.50             | 120          | 178            |
| 15.75             | 15.75             | 120          | 178            |
| 16.00             | 16.00             | 120          | 178            |
| 17.00             | 17.00             | 125          | 184            |
| 18.00             | 18.00             | 130          | 191            |
| 19.00             | 19.00             | 135          | 198            |
| 20.00             | 20.00             | 140          | 205            |

HELIX ANGLE : 30° | POINT ANGLE : 118°  
Drills are also available with Coating - TIN / TIALN / TiCN



**MICRO GRAIN SOLID CARBIDE  
STRAIGHT SHANK DRILLS  
(STUB SERIES)**

Specifications Conform to :  
DIN 6539  
Dimensions in mm



| Drill Diameter<br>h7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 1.00                 | 1.00                 | 6            | 26             |
| 1.10                 | 1.10                 | 7            | 28             |
| 1.20                 | 1.20                 | 8            | 30             |
| 1.30                 | 1.30                 | 8            | 30             |
| 1.40                 | 1.40                 | 9            | 32             |
| 1.50                 | 1.50                 | 9            | 32             |
| 1.60                 | 1.60                 | 10           | 34             |
| 1.70                 | 1.70                 | 10           | 34             |
| 1.80                 | 1.80                 | 11           | 36             |
| 1.90                 | 1.90                 | 11           | 36             |
| 2.00                 | 2.00                 | 12           | 38             |
| 2.10                 | 2.10                 | 12           | 38             |
| 2.20                 | 2.20                 | 13           | 40             |
| 2.30                 | 2.30                 | 13           | 40             |
| 2.40                 | 2.40                 | 14           | 43             |
| 2.50                 | 2.50                 | 14           | 43             |
| 2.60                 | 2.60                 | 14           | 43             |
| 2.70                 | 2.70                 | 16           | 46             |
| 2.80                 | 2.80                 | 16           | 46             |
| 2.90                 | 2.90                 | 16           | 46             |
| 3.00                 | 3.00                 | 16           | 46             |
| 3.10                 | 3.10                 | 18           | 49             |
| 3.20                 | 3.20                 | 18           | 49             |
| 3.30                 | 3.30                 | 18           | 49             |
| 3.40                 | 3.40                 | 20           | 52             |

| Drill Diameter<br>h7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 3.50                 | 3.50                 | 20           | 52             |
| 3.60                 | 3.60                 | 20           | 52             |
| 3.70                 | 3.70                 | 20           | 52             |
| 3.80                 | 3.80                 | 22           | 55             |
| 3.90                 | 3.90                 | 22           | 55             |
| 4.00                 | 4.00                 | 22           | 55             |
| 4.10                 | 4.10                 | 22           | 55             |
| 4.20                 | 4.20                 | 22           | 55             |
| 4.30                 | 4.30                 | 24           | 58             |
| 4.40                 | 4.40                 | 24           | 58             |
| 4.50                 | 4.50                 | 24           | 58             |
| 4.60                 | 4.60                 | 24           | 58             |
| 4.70                 | 4.70                 | 24           | 58             |
| 4.80                 | 4.80                 | 26           | 62             |
| 4.90                 | 4.90                 | 26           | 62             |
| 5.00                 | 5.00                 | 26           | 62             |
| 5.20                 | 5.20                 | 26           | 62             |
| 5.50                 | 5.50                 | 28           | 66             |
| 5.80                 | 5.80                 | 28           | 66             |
| 6.00                 | 6.00                 | 28           | 66             |
| 6.10                 | 6.10                 | 31           | 70             |
| 6.20                 | 6.20                 | 31           | 70             |
| 6.30                 | 6.30                 | 31           | 70             |
| 6.40                 | 6.40                 | 31           | 70             |
| 6.50                 | 6.50                 | 31           | 70             |

| Drill Diameter<br>h7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 6.60                 | 6.60                 | 31           | 70             |
| 6.70                 | 6.70                 | 31           | 70             |
| 6.80                 | 6.80                 | 34           | 74             |
| 6.90                 | 6.90                 | 34           | 74             |
| 7.00                 | 7.00                 | 34           | 74             |
| 7.10                 | 7.10                 | 34           | 74             |
| 7.20                 | 7.20                 | 34           | 74             |
| 7.30                 | 7.30                 | 34           | 74             |
| 7.40                 | 7.40                 | 34           | 74             |
| 7.50                 | 7.50                 | 34           | 74             |
| 7.60                 | 7.60                 | 37           | 79             |
| 8.00                 | 8.00                 | 37           | 79             |
| 8.10                 | 8.10                 | 37           | 79             |
| 8.20                 | 8.20                 | 37           | 79             |
| 8.30                 | 8.30                 | 37           | 79             |
| 8.40                 | 8.40                 | 37           | 79             |
| 8.50                 | 8.50                 | 37           | 79             |
| 8.60                 | 8.60                 | 40           | 84             |
| 8.70                 | 8.70                 | 40           | 84             |
| 8.80                 | 8.80                 | 40           | 84             |
| 8.90                 | 8.90                 | 40           | 84             |
| 9.00                 | 9.00                 | 40           | 84             |

HELIX ANGLE : 30° | POINT ANGLE : 118°  
Drills are also available with Coating - TIN / TiAlN / TiCN



**MICRO GRAIN SOLID CARBIDE  
STRAIGHT SHANK DRILLS  
(STUB SERIES)**

Specifications Conform to :  
DIN 6539  
Dimensions in mm



| Drill Diameter h7 | Shank Diameter h6 | Flute Length | Overall Length |
|-------------------|-------------------|--------------|----------------|
| 9.10              | 9.10              | 40           | 84             |
| 9.20              | 9.20              | 40           | 84             |
| 9.30              | 9.30              | 40           | 84             |
| 9.40              | 9.40              | 40           | 84             |
| 9.50              | 9.50              | 40           | 84             |
| 9.60              | 9.60              | 43           | 89             |
| 9.70              | 9.70              | 43           | 89             |
| 9.80              | 9.80              | 43           | 89             |
| 9.90              | 9.90              | 43           | 89             |
| 10.00             | 10.00             | 43           | 89             |
| 10.10             | 10.10             | 43           | 89             |
| 10.20             | 10.20             | 43           | 89             |
| 10.30             | 10.30             | 43           | 89             |
| 10.40             | 10.40             | 43           | 89             |
| 10.50             | 10.50             | 43           | 89             |
| 10.60             | 10.60             | 43           | 89             |
| 10.70             | 10.70             | 47           | 95             |
| 10.80             | 10.80             | 47           | 95             |
| 10.90             | 10.90             | 47           | 95             |
| 11.00             | 11.00             | 47           | 95             |
| 11.10             | 11.10             | 47           | 95             |
| 11.20             | 11.20             | 47           | 95             |
| 11.30             | 11.30             | 47           | 95             |
| 11.40             | 11.40             | 47           | 95             |
| 11.50             | 11.50             | 47           | 95             |
| 11.60             | 11.60             | 47           | 95             |
| 11.70             | 11.70             | 47           | 95             |
| 11.80             | 11.80             | 47           | 95             |
| 11.90             | 11.90             | 51           | 102            |
| 12.00             | 12.00             | 51           | 102            |
| 12.10             | 12.10             | 51           | 102            |

| Drill Diameter h7 | Shank Diameter h6 | Flute Length | Overall Length |
|-------------------|-------------------|--------------|----------------|
| 12.20             | 12.20             | 51           | 102            |
| 12.30             | 12.30             | 51           | 102            |
| 12.40             | 12.40             | 51           | 102            |
| 12.50             | 12.50             | 51           | 102            |
| 12.60             | 12.60             | 51           | 102            |
| 12.70             | 12.70             | 51           | 102            |
| 12.80             | 12.80             | 51           | 102            |
| 12.90             | 12.90             | 51           | 102            |
| 13.00             | 13.00             | 51           | 102            |
| 13.10             | 13.10             | 51           | 102            |
| 13.20             | 13.20             | 51           | 102            |
| 13.30             | 13.30             | 54           | 107            |
| 13.40             | 13.40             | 54           | 107            |
| 13.50             | 13.50             | 54           | 107            |
| 13.60             | 13.60             | 54           | 107            |
| 13.70             | 13.70             | 54           | 107            |
| 13.80             | 13.80             | 54           | 107            |
| 13.90             | 13.90             | 54           | 107            |
| 14.00             | 14.00             | 54           | 107            |
| 14.50             | 14.50             | 56           | 111            |
| 15.00             | 15.00             | 56           | 111            |
| 15.50             | 15.50             | 58           | 115            |
| 16.00             | 16.00             | 58           | 115            |
| 16.50             | 16.50             | 60           | 119            |
| 17.00             | 17.00             | 60           | 119            |
| 17.50             | 17.50             | 62           | 123            |
| 18.00             | 18.00             | 62           | 123            |
| 18.50             | 18.50             | 64           | 127            |
| 19.00             | 19.00             | 64           | 127            |
| 19.50             | 19.50             | 66           | 131            |
| 20.00             | 20.00             | 66           | 131            |

HELIX ANGLE : 30° | POINT ANGLE : 118°

Drills are also available with Coating - TIN / TiAlN / TiCN



**MICRO GRAIN SOLID CARBIDE  
STEPPED SHANK DRILLS (SHORT SERIES)  
WITH INTERNAL COOLANT HOLES**

Specifications Conform to :  
DIN 6537K  
Dimensions in mm



| Drill Diameter<br>m7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 5.00                 | 6.0                  | 28           | 66             |
| 5.10                 | 6.0                  | 28           | 66             |
| 5.20                 | 6.0                  | 28           | 66             |
| 5.50                 | 6.0                  | 28           | 66             |
| 5.55                 | 6.0                  | 28           | 66             |
| 5.80                 | 6.0                  | 28           | 66             |
| 6.00                 | 6.0                  | 28           | 66             |
| 6.10                 | 8.0                  | 34           | 79             |
| 6.20                 | 8.0                  | 34           | 79             |
| 6.30                 | 8.0                  | 34           | 79             |
| 6.50                 | 8.0                  | 34           | 79             |
| 6.60                 | 8.0                  | 34           | 79             |
| 6.80                 | 8.0                  | 34           | 79             |
| 6.90                 | 8.0                  | 34           | 79             |
| 7.00                 | 8.0                  | 34           | 79             |
| 7.10                 | 8.0                  | 41           | 79             |
| 7.40                 | 8.0                  | 41           | 79             |
| 7.50                 | 8.0                  | 41           | 79             |
| 7.80                 | 8.0                  | 41           | 79             |
| 8.00                 | 8.0                  | 41           | 79             |
| 8.10                 | 10.0                 | 47           | 89             |
| 8.40                 | 10.0                 | 47           | 89             |
| 8.50                 | 10.0                 | 47           | 89             |
| 8.60                 | 10.0                 | 47           | 89             |
| 8.70                 | 10.0                 | 47           | 89             |
| 8.80                 | 10.0                 | 47           | 89             |
| 9.00                 | 10.0                 | 47           | 89             |
| 9.30                 | 10.0                 | 47           | 89             |
| 9.50                 | 10.0                 | 47           | 89             |
| 9.60                 | 10.0                 | 47           | 89             |
| 9.80                 | 10.0                 | 47           | 89             |
| 10.00                | 10.0                 | 47           | 89             |
| 10.20                | 12.0                 | 55           | 102            |
| 10.40                | 12.0                 | 55           | 102            |
| 10.50                | 12.0                 | 55           | 102            |
| 10.60                | 12.0                 | 55           | 102            |
| 10.80                | 12.0                 | 55           | 102            |
| 11.00                | 12.0                 | 55           | 102            |

| Drill Diameter<br>m7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 11.20                | 12.0                 | 55           | 102            |
| 11.50                | 12.0                 | 55           | 102            |
| 11.80                | 12.0                 | 55           | 102            |
| 12.00                | 12.0                 | 55           | 102            |
| 12.20                | 14.0                 | 60           | 107            |
| 12.25                | 14.0                 | 60           | 107            |
| 12.50                | 14.0                 | 60           | 107            |
| 12.70                | 14.0                 | 60           | 107            |
| 12.75                | 14.0                 | 60           | 107            |
| 12.80                | 14.0                 | 60           | 107            |
| 13.00                | 14.0                 | 60           | 107            |
| 13.10                | 14.0                 | 60           | 107            |
| 13.50                | 14.0                 | 60           | 107            |
| 13.80                | 14.0                 | 60           | 107            |
| 14.00                | 14.0                 | 60           | 107            |
| 14.25                | 16.0                 | 65           | 115            |
| 14.50                | 16.0                 | 65           | 115            |
| 14.75                | 16.0                 | 65           | 115            |
| 14.80                | 16.0                 | 65           | 115            |
| 15.00                | 16.0                 | 65           | 115            |
| 15.10                | 16.0                 | 65           | 115            |
| 15.50                | 16.0                 | 65           | 115            |
| 15.80                | 16.0                 | 65           | 115            |
| 16.00                | 16.0                 | 65           | 115            |
| 16.50                | 18.0                 | 73           | 123            |
| 16.75                | 18.0                 | 73           | 123            |
| 16.80                | 18.0                 | 73           | 123            |
| 17.00                | 18.0                 | 73           | 123            |
| 17.50                | 18.0                 | 73           | 123            |
| 17.80                | 18.0                 | 73           | 123            |
| 18.00                | 18.0                 | 73           | 123            |
| 18.50                | 20.0                 | 79           | 131            |
| 18.80                | 20.0                 | 79           | 131            |
| 19.00                | 20.0                 | 79           | 131            |
| 19.50                | 20.0                 | 79           | 131            |
| 19.80                | 20.0                 | 79           | 131            |
| 20.00                | 20.0                 | 79           | 131            |

**TYPE OF SHANK :** Parallel Shank as per DIN 6535 HA. | **HELIX ANGLE :** 30° | **POINT ANGLE :** 140°  
Drills are also available with - TIN Coating / TiAlN Coating / TiCN Coating

**Application:-** Machining for steels and Heat Resistant steels.



**MICRO GRAIN SOLID CARBIDE  
STEPPED SHANK DRILLS (LONG SERIES)  
WITH INTERNAL COOLANT HOLES**

Specifications Conform to :  
DIN 6537K  
Dimensions in mm



| Drill Diameter<br>m7 | Shank Diam-<br>eter<br>h6 | Flute Length | Overall Length |
|----------------------|---------------------------|--------------|----------------|
| 5.00                 | 6.0                       | 44           | 82             |
| 5.10                 | 6.0                       | 44           | 82             |
| 5.20                 | 6.0                       | 44           | 82             |
| 5.50                 | 6.0                       | 44           | 82             |
| 5.55                 | 6.0                       | 44           | 82             |
| 5.80                 | 6.0                       | 44           | 82             |
| 6.00                 | 6.0                       | 44           | 82             |
| 6.10                 | 8.0                       | 53           | 91             |
| 6.20                 | 8.0                       | 53           | 91             |
| 6.30                 | 8.0                       | 53           | 91             |
| 6.50                 | 8.0                       | 53           | 91             |
| 6.60                 | 8.0                       | 53           | 91             |
| 6.80                 | 8.0                       | 53           | 91             |
| 6.90                 | 8.0                       | 53           | 91             |
| 7.00                 | 8.0                       | 53           | 91             |
| 7.10                 | 8.0                       | 53           | 91             |
| 7.40                 | 8.0                       | 53           | 91             |
| 7.50                 | 8.0                       | 53           | 91             |
| 7.80                 | 8.0                       | 53           | 91             |
| 8.00                 | 8.0                       | 53           | 91             |
| 8.10                 | 10.0                      | 61           | 103            |
| 8.40                 | 10.0                      | 61           | 103            |
| 8.50                 | 10.0                      | 61           | 103            |
| 8.60                 | 10.0                      | 61           | 103            |
| 8.70                 | 10.0                      | 61           | 103            |
| 8.80                 | 10.0                      | 61           | 103            |
| 9.00                 | 10.0                      | 61           | 103            |
| 9.30                 | 10.0                      | 61           | 103            |
| 9.50                 | 10.0                      | 61           | 103            |
| 9.60                 | 10.0                      | 61           | 103            |
| 9.80                 | 10.0                      | 61           | 103            |
| 10.00                | 10.0                      | 61           | 103            |
| 10.20                | 12.0                      | 71           | 118            |
| 10.40                | 12.0                      | 71           | 118            |
| 10.50                | 12.0                      | 71           | 118            |
| 10.60                | 12.0                      | 71           | 118            |
| 10.80                | 12.0                      | 71           | 118            |
| 11.00                | 12.0                      | 71           | 118            |

| Drill Diameter<br>m7 | Shank Diam-<br>eter<br>h6 | Flute Length | Overall Length |
|----------------------|---------------------------|--------------|----------------|
| 11.20                | 12.0                      | 71           | 118            |
| 11.50                | 12.0                      | 71           | 118            |
| 11.80                | 12.0                      | 71           | 118            |
| 12.00                | 12.0                      | 71           | 118            |
| 12.20                | 14.0                      | 77           | 124            |
| 12.25                | 14.0                      | 77           | 124            |
| 12.50                | 14.0                      | 77           | 124            |
| 12.70                | 14.0                      | 77           | 124            |
| 12.75                | 14.0                      | 77           | 124            |
| 12.80                | 14.0                      | 77           | 124            |
| 13.00                | 14.0                      | 77           | 124            |
| 13.10                | 14.0                      | 77           | 124            |
| 13.50                | 14.0                      | 77           | 124            |
| 13.80                | 14.0                      | 77           | 124            |
| 14.00                | 14.0                      | 77           | 124            |
| 14.25                | 16.0                      | 83           | 133            |
| 14.50                | 16.0                      | 83           | 133            |
| 14.75                | 16.0                      | 83           | 133            |
| 14.80                | 16.0                      | 83           | 133            |
| 15.00                | 16.0                      | 83           | 133            |
| 15.10                | 16.0                      | 83           | 133            |
| 15.50                | 16.0                      | 83           | 133            |
| 15.80                | 16.0                      | 83           | 133            |
| 16.00                | 16.0                      | 83           | 133            |
| 16.50                | 18.0                      | 93           | 143            |
| 16.75                | 18.0                      | 93           | 143            |
| 16.80                | 18.0                      | 93           | 143            |
| 17.00                | 18.0                      | 93           | 143            |
| 17.50                | 18.0                      | 93           | 143            |
| 17.80                | 18.0                      | 93           | 143            |
| 18.00                | 18.0                      | 93           | 143            |
| 18.50                | 20.0                      | 101          | 153            |
| 18.80                | 20.0                      | 101          | 153            |
| 19.00                | 20.0                      | 101          | 153            |
| 19.50                | 20.0                      | 101          | 153            |
| 19.80                | 20.0                      | 101          | 153            |
| 20.00                | 20.0                      | 101          | 153            |

**TYPE OF SHANK :** Parallel Shank as per DIN 6535 HA. | **HELIX ANGLE :** 30° | **POINT ANGLE :** 140° |  
Drills are also available with TIN Coating / TIALN Coating/ TiCN Coating  
**Application:-** Machining for steels and Heat Resistant steels.



**MICRO GRAIN SOLID CARBIDE INTERNAL  
COOLANT BURNISHING DRILLS  
(SHORT SERIES)**

Specifications Conform to :  
DIN 6537K  
Dimensions in mm



| Drill Diameter<br>m7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 5.00                 | 6.0                  | 28           | 66             |
| 5.10                 | 6.0                  | 28           | 66             |
| 5.20                 | 6.0                  | 28           | 66             |
| 5.50                 | 6.0                  | 28           | 66             |
| 5.55                 | 6.0                  | 28           | 66             |
| 5.80                 | 6.0                  | 28           | 66             |
| 6.00                 | 6.0                  | 28           | 66             |
| 6.10                 | 8.0                  | 34           | 79             |
| 6.20                 | 8.0                  | 34           | 79             |
| 6.30                 | 8.0                  | 34           | 79             |
| 6.50                 | 8.0                  | 34           | 79             |
| 6.60                 | 8.0                  | 34           | 79             |
| 6.80                 | 8.0                  | 34           | 79             |
| 6.90                 | 8.0                  | 34           | 79             |
| 7.00                 | 8.0                  | 34           | 79             |
| 7.10                 | 8.0                  | 41           | 79             |
| 7.40                 | 8.0                  | 41           | 79             |
| 7.50                 | 8.0                  | 41           | 79             |
| 7.80                 | 8.0                  | 41           | 79             |
| 8.00                 | 8.0                  | 41           | 79             |
| 8.10                 | 10.0                 | 47           | 89             |
| 8.40                 | 10.0                 | 47           | 89             |
| 8.50                 | 10.0                 | 47           | 89             |
| 8.60                 | 10.0                 | 47           | 89             |
| 8.70                 | 10.0                 | 47           | 89             |
| 8.80                 | 10.0                 | 47           | 89             |
| 9.00                 | 10.0                 | 47           | 89             |
| 9.30                 | 10.0                 | 47           | 89             |
| 9.50                 | 10.0                 | 47           | 89             |
| 9.60                 | 10.0                 | 47           | 89             |
| 9.80                 | 10.0                 | 47           | 89             |
| 10.00                | 10.0                 | 47           | 89             |
| 10.20                | 12.0                 | 55           | 102            |
| 10.40                | 12.0                 | 55           | 102            |
| 10.50                | 12.0                 | 55           | 102            |
| 10.60                | 12.0                 | 55           | 102            |
| 10.80                | 12.0                 | 55           | 102            |
| 11.00                | 12.0                 | 55           | 102            |

| Drill Diameter<br>m7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 11.20                | 12.0                 | 55           | 102            |
| 11.50                | 12.0                 | 55           | 102            |
| 11.80                | 12.0                 | 55           | 102            |
| 12.00                | 12.0                 | 55           | 102            |
| 12.20                | 14.0                 | 60           | 107            |
| 12.25                | 14.0                 | 60           | 107            |
| 12.50                | 14.0                 | 60           | 107            |
| 12.70                | 14.0                 | 60           | 107            |
| 12.75                | 14.0                 | 60           | 107            |
| 12.80                | 14.0                 | 60           | 107            |
| 13.00                | 14.0                 | 60           | 107            |
| 13.10                | 14.0                 | 60           | 107            |
| 13.50                | 14.0                 | 60           | 107            |
| 13.80                | 14.0                 | 60           | 107            |
| 14.00                | 14.0                 | 60           | 107            |
| 14.25                | 16.0                 | 65           | 115            |
| 14.50                | 16.0                 | 65           | 115            |
| 14.75                | 16.0                 | 65           | 115            |
| 14.80                | 16.0                 | 65           | 115            |
| 15.00                | 16.0                 | 65           | 115            |
| 15.10                | 16.0                 | 65           | 115            |
| 15.50                | 16.0                 | 65           | 115            |
| 15.80                | 16.0                 | 65           | 115            |
| 16.00                | 16.0                 | 65           | 115            |
| 16.50                | 18.0                 | 73           | 123            |
| 16.75                | 18.0                 | 73           | 123            |
| 16.80                | 18.0                 | 73           | 123            |
| 17.00                | 18.0                 | 73           | 123            |
| 17.50                | 18.0                 | 73           | 123            |
| 17.80                | 18.0                 | 73           | 123            |
| 18.00                | 18.0                 | 73           | 123            |
| 18.50                | 20.0                 | 79           | 131            |
| 18.80                | 20.0                 | 79           | 131            |
| 19.00                | 20.0                 | 79           | 131            |
| 19.50                | 20.0                 | 79           | 131            |
| 19.80                | 20.0                 | 79           | 131            |
| 20.00                | 20.0                 | 79           | 131            |

Drills are also available with TIN Coating / TiAlN Coating/ TiCN Coating | TYPE OF FLUTE : Two Straight Flute with Four Margins | POINT ANGLE : 120 |

**TYPE OF SHANK :** Parallel Shank as per DIN 6535 HA

**Application:-** Machining for Cast Iron, Aluminium Silicon Alloy and Aluminium Alloy only.





**MICRO GRAIN SOLID CARBIDE INTERNAL  
COOLANT BURNISHING DRILLS  
(LONG SERIES)**

Specifications Conform to :  
DIN 6537L  
Dimensions in mm



| Drill Diameter<br>m7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 5.00                 | 6.0                  | 44           | 82             |
| 5.10                 | 6.0                  | 44           | 82             |
| 5.20                 | 6.0                  | 44           | 82             |
| 5.50                 | 6.0                  | 44           | 82             |
| 5.55                 | 6.0                  | 44           | 82             |
| 5.80                 | 6.0                  | 44           | 82             |
| 6.00                 | 6.0                  | 44           | 82             |
| 6.10                 | 8.0                  | 53           | 91             |
| 6.20                 | 8.0                  | 53           | 91             |
| 6.30                 | 8.0                  | 53           | 91             |
| 6.50                 | 8.0                  | 53           | 91             |
| 6.60                 | 8.0                  | 53           | 91             |
| 6.80                 | 8.0                  | 53           | 91             |
| 6.90                 | 8.0                  | 53           | 91             |
| 7.00                 | 8.0                  | 53           | 91             |
| 7.10                 | 8.0                  | 53           | 91             |
| 7.40                 | 8.0                  | 53           | 91             |
| 7.50                 | 8.0                  | 53           | 91             |
| 7.80                 | 8.0                  | 53           | 91             |
| 8.00                 | 8.0                  | 53           | 91             |
| 8.10                 | 10.0                 | 61           | 103            |
| 8.40                 | 10.0                 | 61           | 103            |
| 8.50                 | 10.0                 | 61           | 103            |
| 8.60                 | 10.0                 | 61           | 103            |
| 8.70                 | 10.0                 | 61           | 103            |
| 8.80                 | 10.0                 | 61           | 103            |
| 9.00                 | 10.0                 | 61           | 103            |
| 9.30                 | 10.0                 | 61           | 103            |
| 9.50                 | 10.0                 | 61           | 103            |
| 9.60                 | 10.0                 | 61           | 103            |
| 9.80                 | 10.0                 | 61           | 103            |
| 10.00                | 10.0                 | 61           | 103            |
| 10.20                | 12.0                 | 71           | 118            |
| 10.40                | 12.0                 | 71           | 118            |
| 10.50                | 12.0                 | 71           | 118            |
| 10.60                | 12.0                 | 71           | 118            |
| 10.80                | 12.0                 | 71           | 118            |
| 11.00                | 12.0                 | 71           | 118            |

| Drill Diameter<br>m7 | Shank Diameter<br>h6 | Flute Length | Overall Length |
|----------------------|----------------------|--------------|----------------|
| 11.20                | 12.0                 | 71           | 118            |
| 11.50                | 12.0                 | 71           | 118            |
| 11.80                | 12.0                 | 71           | 118            |
| 12.00                | 12.0                 | 71           | 118            |
| 12.20                | 14.0                 | 77           | 124            |
| 12.25                | 14.0                 | 77           | 124            |
| 12.50                | 14.0                 | 77           | 124            |
| 12.70                | 14.0                 | 77           | 124            |
| 12.75                | 14.0                 | 77           | 124            |
| 12.80                | 14.0                 | 77           | 124            |
| 13.00                | 14.0                 | 77           | 124            |
| 13.10                | 14.0                 | 77           | 124            |
| 13.50                | 14.0                 | 77           | 124            |
| 13.80                | 14.0                 | 77           | 124            |
| 14.00                | 14.0                 | 77           | 124            |
| 14.25                | 16.0                 | 83           | 133            |
| 14.50                | 16.0                 | 83           | 133            |
| 14.75                | 16.0                 | 83           | 133            |
| 14.80                | 16.0                 | 83           | 133            |
| 15.00                | 16.0                 | 83           | 133            |
| 15.10                | 16.0                 | 83           | 133            |
| 15.50                | 16.0                 | 83           | 133            |
| 15.80                | 16.0                 | 83           | 133            |
| 16.00                | 16.0                 | 83           | 133            |
| 16.50                | 18.0                 | 93           | 143            |
| 16.75                | 18.0                 | 93           | 143            |
| 16.80                | 18.0                 | 93           | 143            |
| 17.00                | 18.0                 | 93           | 143            |
| 17.50                | 18.0                 | 93           | 143            |
| 17.80                | 18.0                 | 93           | 143            |
| 18.00                | 18.0                 | 93           | 143            |
| 18.50                | 20.0                 | 101          | 153            |
| 18.80                | 20.0                 | 101          | 153            |
| 19.00                | 20.0                 | 101          | 153            |
| 19.50                | 20.0                 | 101          | 153            |
| 19.80                | 20.0                 | 101          | 153            |
| 20.00                | 20.0                 | 101          | 153            |

Drills are also available with TIN Coating / TiAlN Coating / TiCN Coating

**TYPE OF SHANK** : Parallel Shank as per DIN 6535 HA | **TYPE OF FLUTE** : Two Straight Flutes with Four Margins

**POINT ANGLE** : 120°

**Application:-** Machining for Cast Iron, Aluminium Silicon Alloy and Aluminium Alloy only.



**MICRO GRAIN SOLID CARBIDE  
CENTRE DRILLS TYPE 'A'.**

Specifications Conform to :  
IS 1977  
Dimensions in mm



| Pilot Dia<br>k12 | Body Dia<br>h9 | Overall Length |         | Pilot Length |         |
|------------------|----------------|----------------|---------|--------------|---------|
|                  |                | Maximum        | Minimum | Maximum      | Minimum |
| 2.00             | 5.00           | 42.00          | 38.00   | 3.30         | 2.50    |
| 2.50             | 6.30           | 47.00          | 43.00   | 4.10         | 3.10    |
| 3.15             | 8.00           | 52.00          | 48.00   | 4.90         | 3.90    |
| 4.00             | 10.00          | 59.00          | 53.00   | 6.20         | 5.00    |
| 5.00             | 12.50          | 66.00          | 60.00   | 7.50         | 6.30    |
| 6.30             | 16.00          | 74.00          | 68.00   | 9.20         | 8.00    |
| 8.00             | 20.00          | 83.00          | 77.00   | 11.50        | 10.10   |

**POINT ANGLE: 120° / COUNTER SINK ANGLE: 60°**



**MICRO GRAIN SOLID  
CARBIDE CENTRE DRILLS**

Specifications Conform to  
BS 328 - Part 2 - 1950  
Dimensions in Inches



| B.S.No. | Pilot Dia | Body Dia | Pilot Length |       | OAL   | Tolerance on<br>Overall<br>Length |
|---------|-----------|----------|--------------|-------|-------|-----------------------------------|
|         |           |          | Max          | Min   |       |                                   |
| 2       | 1/16      | 3/16     | 3/32         | 5/64  | 1.3/4 | + / - 1/32                        |
| 3       | 3/32      | 1/4      | 5/32         | 1/8   | 2     | + / - 1/16                        |
| 4       | 1/8       | 5/16     | 3/16         | 5/32  | 2.1/4 | + / - 1/16                        |
| 5       | 3/16      | 7/16     | 9/32         | 1/4   | 2.1/2 | + / - 3/32                        |
| 6       | 1/4       | 5/8      | 3/8          | 5/16  | 3     | + / - 3/32                        |
| 7       | 5/16      | 3/4      | 15/32        | 13/32 | 3.1/2 | + / - 3/32                        |

**POINT ANGLE: 120° / COUNTER SINK ANGLE: 60°**

Centre Drills are also available with TIN Coating / TIALN Coating / TiCN Coating



## MICRO GRAIN SOLID CARBIDE MACHINE CHUCKING REAMER WITH PARALLEL SHANK

Specifications Conform to :  
IS 5446 & BS 328- Part 4  
Dimensions in mm



| Reamer Dia.<br>'m6' | Shank Dia.<br>'h9' | Cutting Edge<br>Length | Overall Length | No. of Flutes |
|---------------------|--------------------|------------------------|----------------|---------------|
| 5.0                 | 5.0                | 23                     | 86             | 4             |
| 5.5                 | 5.6                | 26                     | 93             | 4             |
| 6.0                 | 5.6                | 26                     | 93             | 4             |
| 6.5                 | 6.3                | 28                     | 101            | 4             |
| 7.0                 | 7.1                | 31                     | 109            | 6             |
| 7.5                 | 7.1                | 31                     | 109            | 6             |
| 8.0                 | 8.0                | 33                     | 117            | 6             |
| 8.5                 | 8.0                | 33                     | 117            | 6             |
| 9.0                 | 9.0                | 36                     | 125            | 6             |
| 9.5                 | 9.0                | 36                     | 125            | 6             |
| 10.0                | 10.0               | 38                     | 133            | 6             |
| 10.5                | 10.0               | 38                     | 133            | 6             |
| 11.0                | 10.0               | 41                     | 142            | 6             |
| 11.5                | 10.0               | 41                     | 142            | 6             |
| 12.0                | 10.0               | 44                     | 151            | 6             |
| 12.5                | 10.0               | 44                     | 151            | 6             |
| 13.0                | 10.0               | 44                     | 151            | 6             |
| 13.5                | 12.5               | 47                     | 160            | 8             |
| 14.0                | 12.5               | 47                     | 160            | 8             |
| 14.5                | 12.5               | 50                     | 162            | 8             |
| 15.0                | 12.5               | 50                     | 162            | 8             |
| 15.5                | 12.5               | 52                     | 170            | 8             |
| 16.0                | 12.5               | 52                     | 170            | 8             |

Reamers are also available with - TIN Coating / TIALN Coating / TiCN Coating



**MICRO GRAIN SOLID CARBIDE END MILLS**  
(STANDARD SERIES) ( 2 FLUTES/ 4 FLUTES)

Specifications Conform to :  
Dimensions in mm

**SQUARE END MILLS**



**BALL NOSE END MILLS**



| End Mill Diameter<br>h10 | Shank Diameter<br>h6 | Cutting Edge Length | Overall length |
|--------------------------|----------------------|---------------------|----------------|
| 3.0                      | 3                    | 12                  | 38             |
| 3.5                      | 4                    | 12                  | 50             |
| 4.0                      | 4                    | 14                  | 50             |
| 4.5                      | 5                    | 16                  | 50             |
| 5.0                      | 5                    | 16                  | 50             |
| 6.0                      | 6                    | 19                  | 56             |
| 7.0                      | 7                    | 19                  | 63             |
| 8.0                      | 8                    | 20                  | 63             |
| 9.0                      | 9                    | 22                  | 75             |
| 10.0                     | 10                   | 22                  | 75             |
| 11.0                     | 11                   | 25                  | 75             |
| 12.0                     | 12                   | 25                  | 75             |
| 14.0                     | 14                   | 32                  | 89             |
| 16.0                     | 16                   | 32                  | 89             |
| 18.0                     | 18                   | 38                  | 100            |
| 20.0                     | 20                   | 38                  | 100            |
| 25.0                     | 25                   | 38                  | 100            |

30° RH HELIX ANGLE AND RH CUTTING WITH CENTRE CUTTING

End Mills are also available with TIN Coating / TiAlN Coating / TiCN Coating.



## MICRO GRAIN SOLID CARBIDE END MILLS

(Long Series)  
( 2 FLUTES/ 4 FLUTES)

Dimensions in mm

### SQUARE END MILLS



### BALL NOSE END MILLS



| Diameter<br>h10 | Shank<br>Diameter<br>h6 | Cutting<br>Edge<br>Length | Overall<br>length |
|-----------------|-------------------------|---------------------------|-------------------|
| 3               | 3                       | 25                        | 75                |
| 4               | 4                       | 25                        | 75                |
| 5               | 5                       | 25                        | 75                |
| 6               | 6                       | 25                        | 75                |
| 8               | 8                       | 25                        | 75                |
| 10              | 10                      | 38                        | 100               |
| 12              | 12                      | 50                        | 100               |
| 12              | 12                      | 75                        | 150               |
| 14              | 14                      | 75                        | 150               |
| 16              | 16                      | 75                        | 150               |
| 18              | 18                      | 75                        | 150               |
| 20              | 20                      | 75                        | 150               |
| 25              | 25                      | 75                        | 150               |

30° RH HELIX ANGLE , RH CUTTING WITH CENTRE CUTTING

End Mills are also available with - TIN Coating / TIALN Coating / TiCN Coating



**MICRO GRAIN SOLID CARBIDE  
END MILLS**  
( 2 FLUTES/ 4 FLUTES) (Stub Series)

Specifications Conform to:  
Dimensions in mm

**SQUARE END MILLS**



**BALL NOSE END MILLS**



| Diameter, h10 | Shank Diameter h6 | Cutting Edge Length | Overall length |
|---------------|-------------------|---------------------|----------------|
| 3             | 3                 | 6                   | 38             |
| 3.5           | 4                 | 7                   | 50             |
| 4             | 4                 | 8                   | 50             |
| 4.5           | 5                 | 9.5                 | 50             |
| 5             | 5                 | 10                  | 50             |
| 6             | 6                 | 12                  | 50             |
| 7             | 7                 | 12                  | 50             |
| 8             | 8                 | 12                  | 50             |
| 9             | 9                 | 14                  | 56             |
| 10            | 10                | 16                  | 56             |
| 11            | 11                | 19                  | 63             |
| 12            | 12                | 19                  | 63             |

30° RH HELIX ANGLE, RH CUTTING WITH CENTRE CUTTING

End Mills are also available with TIN Coating / TIALN Coating / TiCN Coating



## RECOMMENDED PARAMETERS FOR SOLID CARBIDE DRILLS

| MATERIAL                 |                            | SPEED<br>m/min | FEED (mm / rev.) |              |               |              |             |
|--------------------------|----------------------------|----------------|------------------|--------------|---------------|--------------|-------------|
|                          |                            |                | ø 1 - 3          | ø > 3 - 6    | ø > 6 - 9     | ø > 9 - 12   | ø > 12 - 20 |
| STRUCTURAL STEEL         | < 500 N / mm <sup>2</sup>  | 95             | 0.05 - 0.08      | 0.085 - 0.1  | 0.1 - 0.15    | 0.15 - 0.2   | 0.2 - 0.25  |
|                          | < 650 N / mm <sup>2</sup>  | 85             |                  |              |               |              |             |
|                          | < 850 N / mm <sup>2</sup>  | 75             |                  |              |               |              |             |
| CASE HARDENING STEEL     | < 800 N / mm <sup>2</sup>  | 80             | 0.05 - 0.08      | 0.085 - 0.1  | 0.1 - 0.15    | 0.15 - 0.2   | 0.2 - 0.25  |
|                          | < 1000 N / mm <sup>2</sup> | 75             | 0.03 - 0.05      | 0.05 - 0.085 | 0.085 - 0.12  | 0.1 - 0.18   | 0.15 - 0.2  |
| NITRIDING STEEL          | < 1000 N / mm <sup>2</sup> | 75             | 0.03 - 0.05      | 0.05 - 0.085 | 0.085 - 0.12  | 0.1 - 0.18   | 0.15 - 0.2  |
|                          | < 1300 N / mm <sup>2</sup> | 65             |                  |              |               |              |             |
| HEAT TREATABLE STEEL     | < 700 N / mm <sup>2</sup>  | 90             | 0.05 - 0.08      | 0.085 - 0.1  | 0.1 - 0.15    | 0.15 - 0.2   | 0.2 - 0.25  |
|                          | < 900 N / mm <sup>2</sup>  | 80             |                  |              |               |              |             |
|                          | < 1200 N / mm <sup>2</sup> | 65             | 0.01 - 0.02      | 0.025 - 0.06 | 0.06 - 0.09   | 0.085 - 0.13 | 0.1 - 0.15  |
|                          | < 1400 N / mm <sup>2</sup> | 50             |                  |              |               |              |             |
| TOOL STEEL               | < 800 N / mm <sup>2</sup>  | 50             | 0.01 - 0.03      | 0.02 - 0.06  | 0.05 - 0.08   | 0.075 - 0.1  | 0.08 - 0.12 |
|                          | < 1000 N / mm <sup>2</sup> | 40             |                  |              |               |              |             |
|                          | < 1200 N / mm <sup>2</sup> | 35             | 0.01 - 0.02      | 0.015 - 0.04 | 0.035 - 0.055 | 0.045 - 0.08 | 0.075 - 0.1 |
|                          | < 1400 N / mm <sup>2</sup> | 30             |                  |              |               |              |             |
|                          | > 1400 N / mm <sup>2</sup> | 25             |                  |              |               |              |             |
| STAINLESS STEEL          | < 700 N / mm <sup>2</sup>  | 50             | 0.015 - 0.03     | 0.025 - 0.06 | 0.05 - 0.1    | 0.075 - 0.13 | 0.1 - 0.17  |
|                          | < 850 N / mm <sup>2</sup>  | 30             | 0.01 - 0.02      | 0.015 - 0.04 | 0.035 - 0.055 | 0.045 - 0.08 | 0.075 - 0.1 |
|                          | < 950 N / mm <sup>2</sup>  | 25             |                  |              |               |              |             |
| CAST STEEL               | < 500 N / mm <sup>2</sup>  | 75             | 0.02 - 0.06      | 0.05 - 0.09  | 0.07 - 0.12   | 0.09 - 0.15  | 0.1 - 0.18  |
|                          | < 650 N / mm <sup>2</sup>  | 60             |                  |              |               |              |             |
|                          | > 650 N / mm <sup>2</sup>  | 40             |                  |              |               |              |             |
| CAST STEEL- HARD         |                            | 40             | 0.01 - 0.03      | 0.02 - 0.06  | 0.05 - 0.08   | 0.06 - 0.09  | 0.07 - 0.1  |
| HIGH TEMP. ALLOYS        | < 700 N / mm <sup>2</sup>  | 35             | 0.01 - 0.03      | 0.02 - 0.05  | 0.04 - 0.055  | 0.05 - 0.075 | 0.06 - 0.1  |
|                          | < 900 N / mm <sup>2</sup>  | 23             |                  |              |               |              |             |
|                          | < 1100 N / mm <sup>2</sup> | 20             |                  |              |               |              |             |
|                          | < 1250 N / mm <sup>2</sup> | 18             | 0.01 - 0.02      | 0.015 - 0.04 | 0.035 - 0.045 | 0.04 - 0.06  | 0.05 - 0.08 |
|                          | < 1400 N / mm <sup>2</sup> | 15             |                  |              |               |              |             |
|                          | > 1400 N / mm <sup>2</sup> | 10             |                  |              |               |              |             |
| TITANIUM ALLOYS          | < 550 N / mm <sup>2</sup>  | 40             | 0.01 - 0.025     | 0.015 - 0.04 | 0.035 - 0.045 | 0.04 - 0.06  | 0.05 - 0.08 |
|                          | < 950 N / mm <sup>2</sup>  | 30             |                  |              |               |              |             |
|                          | > 1200 N / mm <sup>2</sup> | 20             |                  |              |               |              |             |
| MALLEABLE CAST IRON      | < 200 HB                   | 80             | 0.03 - 0.06      | 0.04 - 0.1   | 0.08 - 0.15   | 0.09 - 0.17  | 0.12 - 0.23 |
|                          | > 200 HB                   | 60             |                  |              |               |              |             |
| GRAY CAST IRON           | < 200 HB                   | 100            | 0.03 - 0.06      | 0.04 - 0.1   | 0.08 - 0.15   | 0.09 - 0.17  | 0.12 - 0.23 |
|                          | > 200 HB                   | 80             |                  |              |               |              |             |
| COPPER                   | < 500 N / mm <sup>2</sup>  | 80             | 0.015 - 0.03     | 0.025 - 0.06 | 0.05 - 0.08   | 0.075 - 0.09 | 0.08 - 0.12 |
| COPPER ALLOYS - BRITTLE  |                            | 110            | 0.015 - 0.03     | 0.025 - 0.06 | 0.05 - 0.08   | 0.075 - 0.09 | 0.08 - 0.12 |
| ALUMINIUM - LOW SILICON  |                            | 180            | 0.03 - 0.05      | 0.05 - 0.125 | 0.1 - 0.18    | 0.15 - 0.2   | 0.17 - 0.3  |
| ALUMINIUM - HIGH SILICON |                            | 110            | 0.03 - 0.05      | 0.05 - 0.125 | 0.1 - 0.18    | 0.15 - 0.2   | 0.17 - 0.3  |
| MAGNESIUM ALLOYS         |                            | 160            | 0.03 - 0.06      | 0.04 - 0.1   | 0.08 - 0.15   | 0.09 - 0.17  | 0.12 - 0.23 |
| ZINK ALLOYS              |                            | 120            | 0.03 - 0.05      | 0.05 - 0.085 | 0.085 - 0.12  | 0.1 - 0.18   | 0.15 - 0.2  |
| PLASTIC                  |                            | 120            | 0.03 - 0.06      | 0.04 - 0.1   | 0.08 - 0.15   | 0.09 - 0.17  | 0.12 - 0.23 |
| FIBER PLASTIC            |                            | 100            | 0.01 - 0.02      | 0.015 - 0.04 | 0.035 - 0.055 | 0.045 - 0.08 | 0.075 - 0.1 |



## RECOMMENDED PARAMETERS FOR SOLID CARBIDE DRILLS

| MATERIAL                 |                            | SPEED<br>m / min | FEED (mm / TOOTH) |               |               |
|--------------------------|----------------------------|------------------|-------------------|---------------|---------------|
|                          |                            |                  | 1 - 6             | > 6 - 12      | > 12 - 25     |
| STRUCTURAL STEEL         | < 500 N / mm <sup>2</sup>  | 150              | 0.015 - 0.035     | 0.025 - 0.075 | 0.07 - 0.18   |
|                          | < 650 N / mm <sup>2</sup>  | 125              | 0.015 - 0.035     | 0.025 - 0.075 | 0.06 - 0.1    |
|                          | < 850 N / mm <sup>2</sup>  | 90               | 0.015 - 0.025     | 0.025 - 0.055 | 0.055 - 0.08  |
| CASE HARDENING STEEL     | < 800 N / mm <sup>2</sup>  | 100              | 0.025 - 0.035     | 0.035 - 0.08  | 0.08 - 0.18   |
|                          | < 1000 N / mm <sup>2</sup> | 80               | 0.015 - 0.025     | 0.025 - 0.06  | 0.06 - 0.08   |
| NITRIDING STEEL          | < 1000 N / mm <sup>2</sup> | 90               | 0.015 - 0.025     | 0.025 - 0.06  | 0.06 - 0.08   |
|                          | < 1300 N / mm <sup>2</sup> | 70               | 0.01 - 0.02       | 0.025 - 0.05  | 0.035 - 0.06  |
| HEAT TREATABLE STEEL     | < 700 N / mm <sup>2</sup>  | 80               | 0.015 - 0.04      | 0.025 - 0.085 | 0.055 - 0.17  |
|                          | < 900 N / mm <sup>2</sup>  | 60               | 0.015 - 0.035     | 0.025 - 0.065 | 0.055 - 0.12  |
|                          | < 1200 N / mm <sup>2</sup> | 50               | 0.01 - 0.025      | 0.025 - 0.035 | 0.035 - 0.1   |
|                          | < 1400 N / mm <sup>2</sup> | 35               | 0.01 - 0.015      | 0.015 - 0.03  | 0.035 - 0.06  |
| TOOL STEEL               | < 800 N / mm <sup>2</sup>  | 90               | 0.025 - 0.032     | 0.055 - 0.065 | 0.1 - 0.15    |
|                          | < 1000 N / mm <sup>2</sup> | 70               | 0.015 - 0.025     | 0.035 - 0.055 | 0.055 - 0.1   |
|                          | < 1200 N / mm <sup>2</sup> | 60               | 0.01 - 0.02       | 0.025 - 0.035 | 0.035 - 0.1   |
|                          | < 1400 N / mm <sup>2</sup> | 45               | 0.01 - 0.015      | 0.025 - 0.035 | 0.025 - 0.1   |
|                          | > 1400 N / mm <sup>2</sup> | 30               | 0.005 - 0.015     | 0.02 - 0.03   | 0.02 - 0.08   |
| STAINLESS STEEL          | < 700 N / mm <sup>2</sup>  | 80               | 0.01 - 0.015      | 0.025 - 0.04  | 0.035 - 0.08  |
|                          | < 850 N / mm <sup>2</sup>  | 60               | 0.01 - 0.015      | 0.02 - 0.03   | 0.025 - 0.065 |
|                          | < 950 N / mm <sup>2</sup>  | 40               | 0.005 - 0.015     | 0.01 - 0.025  | 0.02 - 0.05   |
| CAST STEEL               | < 500 N / mm <sup>2</sup>  | 110              | 0.015 - 0.025     | 0.03 - 0.05   | 0.08 - 0.15   |
|                          | < 650 N / mm <sup>2</sup>  | 80               | 0.010 - 0.02      | 0.015 - 0.035 | 0.08 - 0.1    |
|                          | > 650 N / mm <sup>2</sup>  | 60               | 0.005 - 0.015     | 0.015 - 0.03  | 0.05 - 0.08   |
| CAST STEEL - HARD        |                            | 40               | 0.08 - 0.015      | 0.015 - 0.035 | 0.03 - 0.15   |
| HIGH TEMP. ALLOYS        | < 700 N / mm <sup>2</sup>  | 35               | 0.015 - 0.025     | 0.025 - 0.03  | 0.04 - 0.05   |
|                          | < 900 N / mm <sup>2</sup>  | 20               | 0.01 - 0.015      | 0.02 - 0.025  | 0.035 - 0.045 |
|                          | < 1100 N / mm <sup>2</sup> | 18               | 0.01 - 0.015      | 0.02 - 0.025  | 0.035 - 0.045 |
|                          | < 1250 N / mm <sup>2</sup> | 18               | 0.01 - 0.015      | 0.015 - 0.02  | 0.03 - 0.04   |
|                          | < 1400 N / mm <sup>2</sup> | 12               | 0.01 - 0.015      | 0.015 - 0.02  | 0.02 - 0.035  |
|                          | > 1400 N / mm <sup>2</sup> | 8                | 0.005 - 0.01      | 0.01 - 0.018  | 0.01 - 0.03   |
| TITANIUM ALLOYS          | < 550 N / mm <sup>2</sup>  | 100              | 0.01 - 0.02       | 0.02 - 0.05   | 0.05 - 0.08   |
|                          | < 750 N / mm <sup>2</sup>  | 70               | 0.01 - 0.02       | 0.02 - 0.05   | 0.05 - 0.08   |
|                          | < 1000 N / mm <sup>2</sup> | 30               | 0.005 - 0.015     | 0.015 - 0.03  | 0.03 - 0.065  |
|                          | < 1500 N / mm <sup>2</sup> | 10               | 0.005 - 0.01      | 0.01 - 0.025  | 0.025 - 0.05  |
| MALLEABLE CAST IRON      | < 200 HB                   | 170              | 0.01 - 0.025      | 0.02 - 0.065  | 0.05 - 0.12   |
| GRAY CAST IRON           | > 200 HB                   | 110              | 0.005 - 0.02      | 0.02 - 0.05   | 0.05 - 0.1    |
|                          | < 200 HB                   | 120              | 0.02 - 0.032      | 0.02 - 0.065  | 0.05 - 0.18   |
|                          | > 200 HB                   | 80               | 0.01 - 0.02       | 0.02 - 0.05   | 0.05 - 0.1    |
| COPPER                   | < 500 N / mm <sup>2</sup>  | 250              | 0.01 - 0.02       | 0.02 - 0.05   | 0.05 - 0.15   |
| COPPER ALLOYS - SOFT     |                            | 180              | 0.015 - 0.04      | 0.05 - 0.1    | 0.1 - 0.15    |
| COPPER ALLOYS - BRITTLE  |                            | 150              | 0.015 - 0.04      | 0.05 - 0.1    | 0.1 - 0.15    |
| COPPER ALLOYS - TOUGH    |                            | 140              | 0.015 - 0.04      | 0.05 - 0.1    | 0.1 - 0.15    |
| ALLUMINUM - LOW SILICON  |                            | 360              | 0.03 - 0.07       | 0.1 - 0.15    | 0.13 - 0.25   |
| ALLUMINUM - HIGH SILICON |                            | 200              | 0.03 - 0.05       | 0.05 - 0.1    | 0.1 - 0.2     |
| MAGNESIUM ALLOYS         |                            | 400              | 0.03 - 0.05       | 0.05 - 0.1    | 0.15 - 0.3    |
| ZINC ALLOYS              |                            | 350              | 0.035 - 0.05      | 0.06 - 0.1    | 0.12 - 0.3    |