

# Grit Size & Surface Roughness

Grit Size( $\mu\text{m}$ )  $\doteq$  15,000/Mesh Size

Surface Roughness  $R_{\text{max}}(R_y) \doteq$  Grit Size( $\mu\text{m}$ ) / X

(X=50) : HISS (X=25) : Steel Alloy (X=15) : Cast Iron

Mesh Table

| US (JIS) MESH | FEFA ( $\mu\text{m}$ ) |
|---------------|------------------------|
| #30/40        | D602                   |
| #40/50        | D427                   |
| #50/60        | D301                   |
| #60/80        | D252                   |
| #80/100       | D181                   |
| #100/120      | D151                   |
| #120/140      | D126                   |
| #140/170      | D107                   |
| #170/200      | D91                    |
| #200/230      | D76                    |
| #230/270      | D64                    |
| #270/325      | D54                    |
| #325/400      | D46                    |
| #400/500      | 40~60                  |
| #500          | 30~40                  |
| #600          | 22~36                  |
| #800          | 20~30                  |
| #1000         | 10~20                  |
| #1200         | 8~16                   |
| #1500         | 6~12                   |
| #2000         | 5~10                   |
| #3000         | 4~8                    |
| #5000         | 3~6                    |
| #8000         | 2~4                    |
| #12000        | 1~3                    |
| #14000        | 0~2                    |
| #28000        | 0~1                    |
| #60000        | 0~0.5                  |

Conversion Table of Surface Roughness

| Ra max. ( $\mu\text{m}$ ) | Ra ( $\mu\text{m}$ ) | Rrms ( $\mu\text{m}$ ) | Rz ( $\mu\text{m}$ ) | Rrms ( $\mu\text{in}$ ) |
|---------------------------|----------------------|------------------------|----------------------|-------------------------|
| 0.1                       | 0.02                 | 0.02                   | 0.1                  | 1                       |
| 0.2                       | 0.03                 | 0.04                   | 0.2                  | 2                       |
| 0.3                       | 0.05                 | 0.06                   | 0.3                  | 3                       |
| 0.4                       | 0.07                 | 0.08                   | 0.4                  | 4                       |
| 0.5                       | 0.09                 | 0.10                   | 0.5                  | 5                       |
| 0.6                       | 0.10                 | 0.11                   | 0.5                  | 6                       |
| 0.7                       | 0.12                 | 0.13                   | 0.7                  | 7                       |
| 0.8                       | 0.14                 | 0.15                   | 0.7                  | 8                       |
| 0.9                       | 0.15                 | 0.17                   | 0.8                  | 9                       |
| 1.0                       | 0.17                 | 0.19                   | 0.9                  | 10                      |
| 1.2                       | 0.20                 | 0.23                   | 1.1                  | 12                      |
| 1.4                       | 0.24                 | 0.30                   | 1.3                  | 14                      |
| 1.6                       | 0.27                 | 0.30                   | 1.4                  | 16                      |
| 1.8                       | 0.31                 | 0.34                   | 1.6                  | 18                      |
| 2.0                       | 0.34                 | 0.38                   | 1.8                  | 20                      |
| 2.4                       | 0.41                 | 0.46                   | 2.2                  | 24                      |
| 2.8                       | 0.48                 | 0.53                   | 2.5                  | 28                      |
| 3.2                       | 0.54                 | 0.61                   | 2.8                  | 32                      |
| 3.6                       | 0.61                 | 0.69                   | 3.2                  | 36                      |
| 4.0                       | 0.68                 | 0.76                   | 3.6                  | 40                      |
| 4.5                       | 0.77                 | 0.86                   | 4.1                  | 45                      |
| 5.0                       | 0.85                 | 0.96                   | 4.5                  | 50                      |
| 5.5                       | 0.94                 | 1.05                   | 5.0                  | 55                      |
| 6.0                       | 1.02                 | 1.14                   | 5.4                  | 60                      |
| 7.0                       | 1.19                 | 1.33                   | 6.3                  | 70                      |
| 8.0                       | 1.36                 | 1.52                   | 7.2                  | 80                      |
| 9.0                       | 1.53                 | 1.71                   | 8.1                  | 90                      |
| 10.0                      | .70                  | 1.90                   | 9.0                  | 100                     |

|                      |      |      |      |     |     |     |     |     |     |     |      |       |       |
|----------------------|------|------|------|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|
| Ra( $\mu\text{m}$ )  | 50   | 25   | 12.5 | 6.3 | 3.2 | 1.6 | 0.8 | 0.4 | 0.2 | 0.1 | 0.05 | 0.025 | 0.012 |
| Ra( $\mu\text{in}$ ) | 2000 | 1000 | 500  | 250 | 125 | 63  | 32  | 16  | 8   | 4   | 2    | 1     | 0.5   |

## OPTIMAL PERIPHERAL SPEED AND RPM

| BOND          | DIAMOND  |           | CBN               |           |
|---------------|----------|-----------|-------------------|-----------|
|               | DRY      | WET       | DRY               | WET       |
| METAL         | 500~700  | 700~1100  | PARTIALLY APPLIED | 800~1500  |
| RESIN         | 700~1000 | 1000~1800 | 800~1500          | 1500~2500 |
| VITRIFIED     | 700~1200 | 1200~1800 | 800~1200          | 1200~2400 |
| ELECTROPLATED | 700~1200 | 1200~2400 | 900~1400          | 1200~2400 |

$V = \pi \times D \times N / 1000$      $V = (m/min)$      $D$ : Diameter (mm)     $N$ : (rpm)