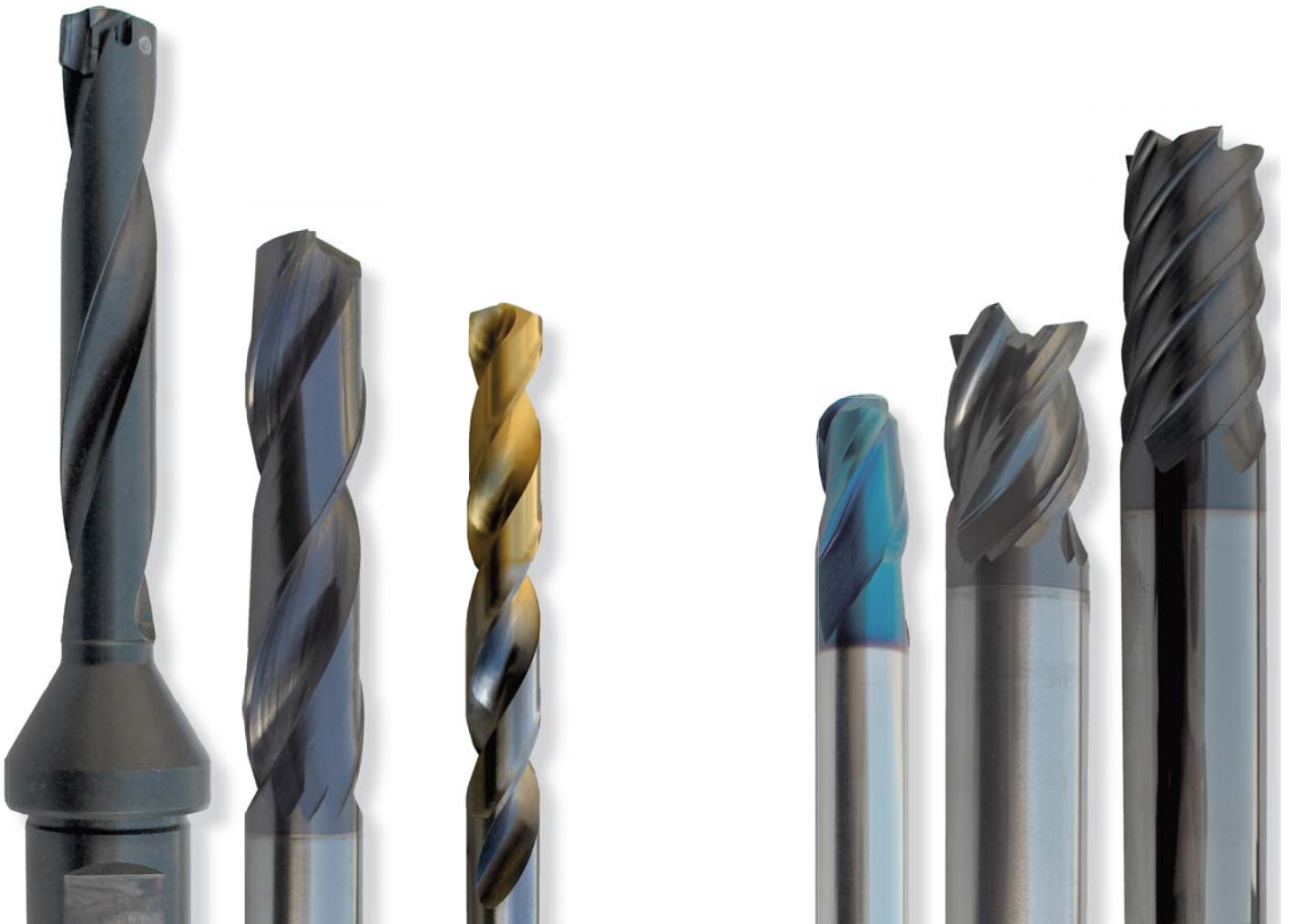


frese CM
























CATALOGO / CATALOGUE 1.0

HSS Co8%

HSS Co8%



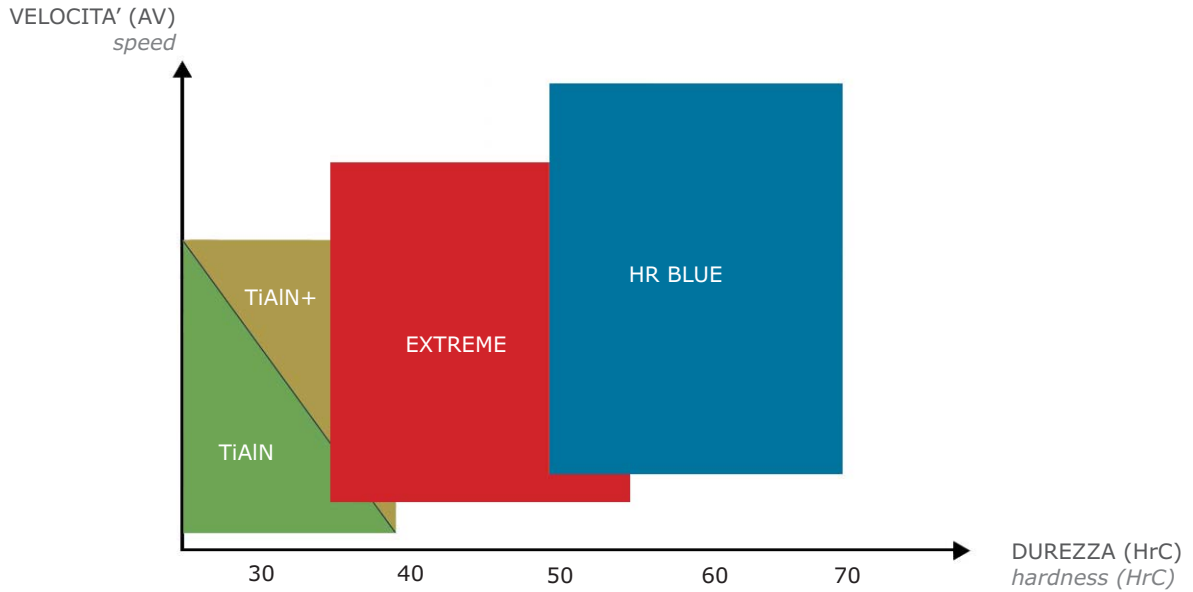
WT *ultimate*®

| MATERIALE <i>material</i> | RIVESTIMENTO <i>coating</i> | NUMERO TAGLIANTI <i>flutes number</i> | ANGOLO ELICA <i>helix angle</i> | ANGOLO D'ENTRATA <i>entry angle</i> | GAMBO <i>shank</i> |
|---|--|---|---|--|--|
|  MD Nano Grano <i>HM nano grain carbide</i> |  Blue |  2 Taglienti <i>2 flutes</i> |  30° Elica <i>30° helix</i> |  140° d'entrata <i>140° entrance</i> |  Gambo Cilindrico <i>plain shank</i> |
|  MD Micro Grano <i>HM micro grain</i> |  Extreme |  3 Taglienti <i>3 flutes</i> | | |  Gambo Weldon <i>flat shank</i> |
|  MD Sub Micro Grano <i>HM sub micro grain</i> |  TiAIN Extra |  4 Taglienti <i>4 flutes</i> | | |  Gambo Cono Morse <i>morse taper shank</i> |
|  Acciaio Sinterizzato <i>syntetic steel</i> |  TiAIN |  6 Taglienti <i>6 flutes</i> | | | |
|  Acciaio Super Rapido <i>high speed steel</i> |  TiCN |  Multitagliente <i>multi flutes</i> | | | |
| |  TiN | | | | |
| |  Diamond | | | | |
| |  Vaporizzato <i>steam homo</i> | | | | |

● **A Magazzino**
On Stock

○ **Su Richiesta**
On Request

SCelta CONSIGLIATA IN BASE ALLA DUREZZA DEL MATERIALE DA LAVORARE
tool choice based on material hardness



materiale: acciai fino 45HrC, acciai per utensili, acciai resistenti al calore, acciai al carbonio, inox, ghisa
material: steels up to 45HrC, tool steels, heat resistant steels, carbon steels, stainless steels, cast iron

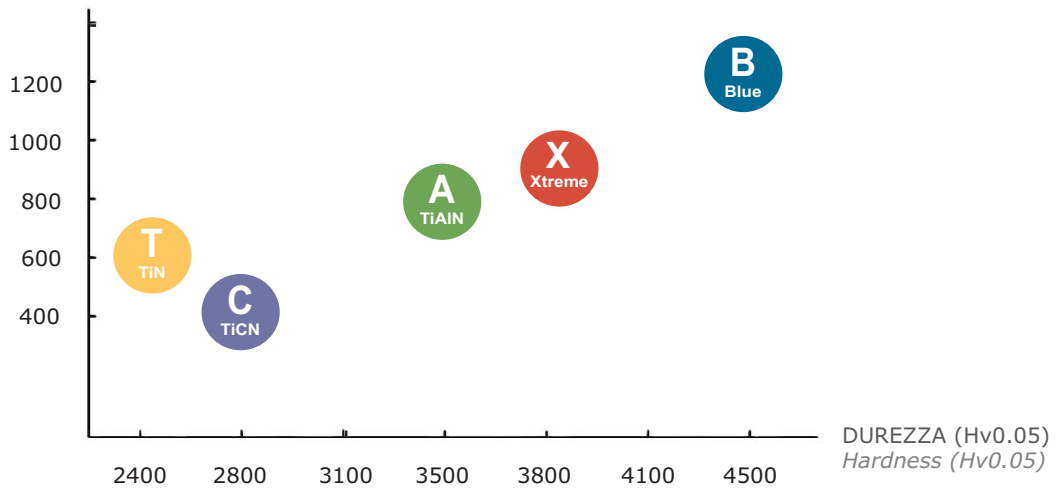


materiale: acciai fino 60HrC, acciai legati, acciai temprati, inox, ghisa, alluminio, titanio
material: steels up to 60HrC, alloy steels, hardened steels, stainless steels, cast iron, aluminium, titanium



materiale: acciai fino 70HrC, acciai legati, acciai resistenti al calore, acciai temprati, rame
material: steels up to 70HrC, alloy steels, prehardened steels, hardened steels, copper

TEMPERATURA OSSIDANTE (°C)
Oxidizing temperature (°C)



| codice code | gamma prodotti product range | pagina page |
|------------------------------|---|------------------------------|
| CM240 | FRESA 2 TAGLIENTI CORTA 2 FLUTE SHORT LENGTH END MILLS | 6 |
| CM340 | FRESA 3 TAGLIENTI CORTA 3 FLUTE SHORT LENGTH END MILLS NEW | 7 |
| CM350 | FRESA 3 TAGLIENTI LUNGA 3 FLUTE LONG LENGTH END MILLS NEW | 8 |
| CM420 | FRESA 4 TAGLIENTI CORTA 4 FLUTE SHORT LENGTH END MILLS | 9 |
| CM140 | FRESA 2 TAGLIENTI CORTA TESTA SFERICA 2 FLUTE BALL NOSE SHORT LENGTH END MILLS | 10 |
| CM840 | FRESA MULTITAGLIENTE CORTA PER SGROSSATURA PASSO GROSSO MULTI FLUTE SHORT LENGTH ROUGHING COARSE PITCH END MILLS | 11 |
| CM740 | FRESA MULTITAGLIENTE CORTA PER SGROSSATURA PASSO FINE MULTI FLUTE SHORT LENGTH ROUGHING FINE PITCH END MILLS | 12 |

FRESA 2 TAGLIENTI, CORTA 2 flute short length end mills



p. 13

| CODICE ARTICOLO <i>article no</i> | DIAMETRO | | LUNGHEZZA | | STOCK <i>stock</i> ● / ○ |
|---|--------------------------|---------------------------|---------------|----------------|--|
| | FRESA | GAMBO | UTILE | TOTALE | |
| | <i>mill</i> e8 | <i>shank</i> h6 | <i>of cut</i> | <i>overall</i> | |
| CM240.0010A | 1.0 | 6 | 2.5 | 47 | ● |
| CM240.0015A | 1.5 | 6 | 3.0 | 47 | ○ |
| CM240.0020A | 2.0 | 6 | 4.0 | 48 | ● |
| CM240.0025A | 2.5 | 6 | 5.0 | 49 | ○ |
| CM240.0030A | 3.0 | 6 | 5.0 | 49 | ● |
| CM240.0035A | 3.5 | 6 | 6.0 | 50 | ○ |
| CM240.0040A | 4.0 | 6 | 7.0 | 51 | ● |
| CM240.0045A | 4.5 | 6 | 7.0 | 51 | ○ |
| CM240.0050A | 5.0 | 6 | 8.0 | 52 | ● |
| CM240.0055A | 5.5 | 6 | 8.0 | 52 | ○ |
| CM240.0060A | 6.0 | 6 | 8.0 | 52 | ● |
| CM240.0065A | 6.5 | 10 | 10.0 | 60 | ○ |
| CM240.0070A | 7.0 | 10 | 10.0 | 60 | ● |
| CM240.0080A | 8.0 | 10 | 11.0 | 61 | ● |
| CM240.0090A | 9.0 | 10 | 11.0 | 61 | ● |
| CM240.0100A | 10.0 | 10 | 13.0 | 63 | ● |
| CM240.0120A | 12.0 | 12 | 16.0 | 73 | ● |
| CM240.0130A | 13.0 | 12 | 16.0 | 73 | ● |
| CM240.0135A | 13.5 | 12 | 16.0 | 73 | ○ |
| CM240.0140A | 14.0 | 12 | 16.0 | 73 | ● |
| CM240.0150A | 15.0 | 12 | 16.0 | 73 | ○ |
| CM240.0160A | 16.0 | 16 | 19.0 | 79 | ● |
| CM240.0170A | 17.0 | 16 | 19.0 | 79 | ○ |
| CM240.0180A | 18.0 | 16 | 19.0 | 79 | ● |
| CM240.0190A | 19.0 | 16 | 19.0 | 79 | ○ |
| CM240.0200A | 20.0 | 20 | 22.0 | 88 | ● |
| CM240.0210A | 21.0 | 20 | 22.0 | 88 | ○ |
| CM240.0220A | 22.0 | 20 | 22.0 | 88 | ○ |
| CM240.0240A | 24.0 | 25 | 26.0 | 102 | ○ |
| CM240.0250A | 25.0 | 25 | 26.0 | 102 | ○ |

Tolleranze a DIN 7160 & 7161
Tolerances according to DIN 7160 & 7161

| Raggio tolleranza in µm / Tolerance range in µm | | | | | | |
|--|-------------------------|----------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Diametro nominale in mm / Nominal-Diameter in mm | | | | | | |
| | da 1 a 3 from 1 to 3 | oltre 3 a 6 over 3 to 6 | oltre 6 a 10 over 6 to 10 | oltre 10 a 18 over 10 to 18 | oltre 18 a 30 over 18 to 30 | oltre 30 a 50 over 30 to 50 |
| e8 | - 14 - 28 | - 20 - 38 | - 25 - 47 | - 32 - 59 | - 40 - 73 | - 50 - 89 |
| h6 | 0 -6 | 0 -8 | 0 -9 | 0 -11 | 0 -13 | 0 -16 |

FRESA 3 TAGLIENTI, CORTA

3 flute short length end mills



p. 14

| CODICE ARTICOLO <i>article no</i> | DIAMETRO | | LUNGHEZZA | | STOCK <i>stock</i> ● / ○ |
|---|--------------------------|---------------------------|---------------|----------------|--|
| | FRESA | GAMBO | UTILE | TOTALE | |
| | <i>mill</i> e8 | <i>shank</i> h6 | <i>of cut</i> | <i>overall</i> | |
| CM340.0015A | 1.5 | 6 | 4 | 35 | ○ |
| CM340.0020A | 2.0 | 6 | 7 | 38 | ● |
| CM340.0025A | 2.5 | 6 | 8 | 39 | ○ |
| CM340.0030A | 3.0 | 6 | 8 | 39 | ● |
| CM340.0035A | 3.5 | 6 | 10 | 41 | ○ |
| CM340.0040A | 4.0 | 6 | 11 | 42 | ● |
| CM340.0045A | 4.5 | 6 | 11 | 42 | ○ |
| CM340.0050A | 5.0 | 6 | 13 | 44 | ● |
| CM340.0055A | 5.5 | 6 | 13 | 44 | ○ |
| CM340.0060A | 6.0 | 6 | 13 | 44 | ● |
| CM340.0065A | 6.5 | 8 | 16 | 48 | ○ |
| CM340.0070A | 7.0 | 8 | 16 | 48 | ● |
| CM340.0075A | 7.5 | 8 | 16 | 48 | ○ |
| CM340.0080A | 8.0 | 8 | 19 | 51 | ● |
| CM340.0085A | 8.5 | 10 | 19 | 56 | ○ |
| CM340.0090A | 9.0 | 10 | 19 | 56 | ● |
| CM340.0095A | 9.5 | 10 | 19 | 56 | ○ |
| CM340.0100A | 10.0 | 10 | 22 | 59 | ● |

Tolleranze a DIN 7160 & 7161

Tolerances according to DIN 7160 & 7161

| Raggio tolleranza in µm / Tolerance range in µm | | | | | | |
|--|-------------------------|----------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Diametro nominale in mm / Nominal-Diameter in mm | | | | | | |
| | da 1 a 3 from 1 to 3 | oltre 3 a 6 over 3 to 6 | oltre 6 a 10 over 6 to 10 | oltre 10 a 18 over 10 to 18 | oltre 18 a 30 over 18 to 30 | oltre 30 a 50 over 30 to 50 |
| e8 | - 14 - 28 | - 20 - 38 | - 25 - 47 | - 32 - 59 | - 40 - 73 | - 50 - 89 |
| h6 | 0 -6 | 0 -8 | 0 -9 | 0 -11 | 0 -13 | 0 -16 |

FRESA 3 TAGLIENTI, LUNGA 3 flute long length end mills



p. 14

| CODICE ARTICOLO <i>article no</i> | DIAMETRO | | LUNGHEZZA | | STOCK <i>stock</i> ● / ○ |
|---|--------------------------|---------------------------|---------------|----------------|--|
| | FRESA | GAMBO | UTILE | TOTALE | |
| | <i>diameter</i> | | <i>length</i> | | |
| | <i>mill</i> e8 | <i>shank</i> h6 | <i>of cut</i> | <i>overall</i> | |
| CM350.0010A | 1.0 | 6 | 3 | 47 | ● |
| CM350.0015A | 1.5 | 6 | 7 | 51 | ○ |
| CM350.0020A | 2.0 | 6 | 7 | 51 | ● |
| CM350.0025A | 2.5 | 6 | 8 | 52 | ○ |
| CM350.0030A | 3.0 | 6 | 8 | 52 | ● |
| CM350.0035A | 3.5 | 6 | 10 | 54 | ○ |
| CM350.0040A | 4.0 | 6 | 11 | 55 | ● |
| CM350.0045A | 4.5 | 6 | 11 | 55 | ○ |
| CM350.0050A | 5.0 | 6 | 13 | 57 | ● |
| CM350.0055A | 5.5 | 6 | 13 | 57 | ○ |
| CM350.0060A | 6.0 | 6 | 13 | 57 | ● |
| CM350.0065A | 6.5 | 10 | 16 | 66 | ○ |
| CM350.0070A | 7.0 | 10 | 16 | 66 | ● |
| CM350.0075A | 7.5 | 10 | 16 | 66 | ○ |
| CM350.0080A | 8.0 | 10 | 19 | 66 | ● |
| CM350.0085A | 8.5 | 10 | 19 | 66 | ○ |
| CM350.0090A | 9.0 | 10 | 19 | 69 | ● |
| CM350.0095A | 9.5 | 10 | 19 | 69 | ○ |
| CM350.0100A | 10.0 | 10 | 22 | 72 | ● |
| CM350.0120A | 12.0 | 12 | 26 | 83 | ● |
| CM350.0140A | 14.0 | 12 | 26 | 83 | ○ |
| CM350.0150A | 15.0 | 12 | 26 | 83 | ○ |
| CM350.0160A | 16.0 | 16 | 26 | 83 | ● |
| CM350.0180A | 18.0 | 16 | 32 | 92 | ○ |
| CM350.0200A | 20.0 | 20 | 38 | 104 | ● |
| CM350.0220A | 22.0 | 20 | 38 | 104 | ○ |
| CM350.0240A | 24.0 | 25 | 45 | 121 | ○ |
| CM350.0250A | 25.0 | 25 | 45 | 121 | ○ |

Tolleranze a DIN 7160 & 7161

Tolerances according to DIN 7160 & 7161

| Raggio tolleranza in µm / Tolerance range in µm | | | | | | |
|--|-------------------------|----------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Diametro nominale in mm / Nominal-Diameter in mm | | | | | | |
| | da 1 a 3 from 1 to 3 | oltre 3 a 6 over 3 to 6 | oltre 6 a 10 over 6 to 10 | oltre 10 a 18 over 10 to 18 | oltre 18 a 30 over 18 to 30 | oltre 30 a 50 over 30 to 50 |
| e8 | - 14 - 28 | - 20 - 38 | - 25 - 47 | - 32 - 59 | - 40 - 73 | - 50 - 89 |
| h6 | 0 -6 | 0 -8 | 0 -9 | 0 -11 | 0 -13 | 0 -16 |

FRESA 4 TAGLIENTI, CORTA
4 flute short length end mills



p. 13

| CODICE ARTICOLO | DIAMETRO | | LUNGHEZZA | | STOCK |
|--------------------|-----------------|--------------|---------------|----------------|--------------|
| | FRESA | GAMBO | UTILE | TOTALE | |
| <i>article no</i> | <i>diameter</i> | <i>shank</i> | <i>length</i> | <i>overall</i> | <i>stock</i> |
| | <i>mill</i> | <i>h6</i> | <i>of cut</i> | <i>overall</i> | ● / ○ |
| CM420.0020A | 2 | 6 | 7 | 51 | ● |
| CM420.0030A | 3 | 6 | 8 | 52 | ● |
| CM420.0040A | 4 | 6 | 11 | 55 | ● |
| CM420.0050A | 5 | 6 | 13 | 57 | ● |
| CM420.0060A | 6 | 6 | 13 | 57 | ● |
| CM420.0070A | 7 | 10 | 16 | 66 | ● |
| CM420.0080A | 8 | 10 | 19 | 69 | ● |
| CM420.0090A | 9 | 10 | 19 | 69 | ● |
| CM420.0100A | 10 | 10 | 22 | 72 | ● |
| CM420.0110A | 11 | 12 | 22 | 79 | ● |
| CM420.0120A | 12 | 12 | 26 | 83 | ● |
| CM420.0130A | 13 | 12 | 26 | 83 | ○ |
| CM420.0140A | 14 | 12 | 26 | 83 | ● |
| CM420.0150A | 15 | 12 | 26 | 83 | ○ |
| CM420.0160A | 16 | 16 | 32 | 92 | ● |
| CM420.0170A | 17 | 16 | 32 | 92 | ○ |
| CM420.0180A | 18 | 16 | 32 | 92 | ● |
| CM420.0190A | 19 | 16 | 32 | 92 | ○ |
| CM420.0200A | 20 | 20 | 38 | 104 | ● |
| CM420.0220A | 22 | 20 | 38 | 104 | ○ |
| CM420.0250A | 25 | 25 | 45 | 121 | ○ |

Tolleranza / Tolerance

Diam Fresa / Mill Diam +0.04 ~ 0

FRESA 2 TAGLIENTI, CORTA, TESTA SFERICA 2 flute ball nose short length end mills



p. 14

| CODICE ARTICOLO <i>article no</i> | RAGGIO <i>corner radius</i> R | DIAMETRO | | LUNGHEZZA | | STOCK <i>stock</i> ● / ○ |
|---|---|---|-------------------------------------|---|------------------------------|--|
| | | FRESA <i>diameter</i> <i>mill</i> | GAMBO <i>shank</i> h6 | UTILE <i>length</i> <i>of cut</i> | TOTALE <i>overall</i> | |
| CM140.0020A | R 1.00 | 2.0 | 6 | 4 | 48 | ● |
| CM140.0025A | R 1.25 | 2.5 | 6 | 5 | 49 | ○ |
| CM140.0030A | R 1.50 | 3.0 | 6 | 5 | 49 | ● |
| CM140.0035A | R 1.75 | 3.5 | 6 | 6 | 50 | ○ |
| CM140.0040A | R 2.00 | 4.0 | 6 | 7 | 51 | ● |
| CM140.0045A | R 2.25 | 4.5 | 6 | 7 | 51 | ○ |
| CM140.0050A | R 2.50 | 5.0 | 6 | 8 | 52 | ● |
| CM140.0055A | R 2.75 | 5.5 | 6 | 8 | 52 | ○ |
| CM140.0060A | R 3.00 | 6.0 | 6 | 8 | 52 | ● |
| CM140.0070A | R 3.50 | 7.0 | 10 | 10 | 60 | ○ |
| CM140.0080A | R 4.00 | 8.0 | 10 | 11 | 61 | ● |
| CM140.0090A | R 4.50 | 9.0 | 10 | 11 | 61 | ○ |
| CM140.0100A | R 5.00 | 10.0 | 10 | 13 | 63 | ● |
| CM140.0120A | R 6.00 | 12.0 | 12 | 16 | 73 | ● |
| CM140.0130A | R 6.50 | 13.0 | 12 | 16 | 73 | ○ |
| CM140.0140A | R 7.00 | 14.0 | 12 | 16 | 73 | ○ |
| CM140.0150A | R 7.50 | 15.0 | 12 | 16 | 73 | ○ |
| CM140.0160A | R 8.00 | 16.0 | 16 | 19 | 79 | ○ |
| CM140.0170A | R 8.50 | 17.0 | 16 | 19 | 79 | ○ |
| CM140.0180A | R 9.00 | 18.0 | 16 | 19 | 79 | ○ |
| CM140.0190A | R 9.50 | 19.0 | 16 | 19 | 79 | ○ |
| CM140.0200A | R 10.00 | 20.0 | 20 | 22 | 88 | ○ |
| CM140.0220A | R 11.00 | 22.0 | 20 | 22 | 88 | ○ |
| CM140.0240A | R 12.00 | 24.0 | 25 | 22 | 88 | ○ |
| CM140.0250A | R 12.50 | 25.0 | 25 | 22 | 88 | ○ |

Tolleranza / Tolerance

Diam Fresa / Mill Diam 0 ~ -0.03

FRESA MULTITAGLIENTE, CORTA, PER SGROSSATURA

multi flute short length roughing end mills

grosso / coarse 



p. 15

| CODICE ARTICOLO | DIAMETRO | | LUNGHEZZA | | NUMERO TAGLIENTI | STOCK |
|--------------------|-----------------|--------------|---------------|----------------|---------------------|--------------|
| | FRESA | GAMBO | UTILE | TOTALE | | |
| <i>article no</i> | <i>diameter</i> | <i>shank</i> | <i>length</i> | <i>overall</i> | <i>flute number</i> | <i>stock</i> |
| | <i>js12</i> | <i>h6</i> | <i>of cut</i> | <i>overall</i> | | ● / ○ |
| CM840.0060A | 6.0 | 6 | 13 | 57 | 3 | ● |
| CM840.0070A | 7.0 | 10 | 16 | 66 | 3 | ● |
| CM840.0080A | 8.0 | 10 | 19 | 69 | 3 | ● |
| CM840.0090A | 9.0 | 10 | 19 | 69 | 3 | ● |
| CM840.0100A | 10.0 | 10 | 22 | 72 | 4 | ● |
| CM840.0120A | 12.0 | 12 | 26 | 83 | 4 | ● |
| CM840.0130A | 13.0 | 12 | 26 | 83 | 4 | ○ |
| CM840.0140A | 14.0 | 12 | 26 | 83 | 4 | ● |
| CM840.0150A | 15.0 | 12 | 26 | 83 | 4 | ○ |
| CM840.0160A | 16.0 | 16 | 32 | 92 | 4 | ● |
| CM840.0170A | 17.0 | 16 | 32 | 92 | 4 | ○ |
| CM840.0180A | 18.0 | 16 | 32 | 92 | 4 | ○ |
| CM840.0190A | 19.0 | 16 | 32 | 92 | 4 | ○ |
| CM840.0200A | 20.0 | 20 | 38 | 104 | 4 | ● |
| CM840.0220A | 22.0 | 20 | 38 | 104 | 4 | ○ |
| CM840.0240A | 24.0 | 25 | 45 | 121 | 4 | ○ |
| CM840.0250A | 25.0 | 25 | 45 | 121 | 4 | ○ |

| Raggio tolleranza in μm / Tolerance range in μm | | | | | | |
|---|-------------------------|----------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Diametro nominale in mm / Nominal-Diameter in mm | | | | | | |
| | da 1 a 3 from 1 to 3 | oltre 3 a 6 over 3 to 6 | oltre 6 a 10 over 6 to 10 | oltre 10 a 18 over 10 to 18 | oltre 18 a 30 over 18 to 30 | oltre 30 a 50 over 30 to 50 |
| js12 | ± 50 | ± 60 | ± 75 | ± 90 | ± 105 | ± 125 |
| h6 | 0 -6 | 0 -8 | 0 -9 | 0 -11 | 0 -13 | 0 -16 |

FRESA MULTITAGLIANTE, CORTA, PER SGROSSATURA multi flute short length roughing end mills

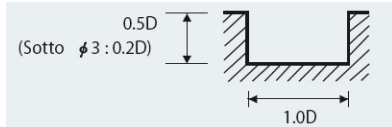


p. 15

| CODICE ARTICOLO <i>article no</i> | DIAMETRO | | LUNGHEZZA | | NUMERI TAGLIANTE <i>flute number</i> | STOCK <i>stock</i> |
|--------------------------------------|----------------------|-----------------------|------------------------|--------------------------|---|-----------------------|
| | FRESA <i>mill</i> | GAMBO <i>shank</i> | UTILE <i>of cut</i> | TOTALE <i>overall</i> | | |
| | <i>diameter</i> | | | | | ● / ○ |
| | js12 | h6 | | | | |
| CM740.0060A | 6 | 6 | 13 | 57 | 3 | ● |
| CM740.0070A | 7 | 10 | 16 | 66 | 3 | ○ |
| CM740.0080A | 8 | 10 | 19 | 69 | 3 | ● |
| CM740.0090A | 9 | 10 | 19 | 69 | 3 | ○ |
| CM740.0100A | 10 | 10 | 22 | 72 | 4 | ● |
| CM740.0120A | 12 | 12 | 26 | 83 | 4 | ● |
| CM740.0130A | 13 | 12 | 26 | 83 | 4 | ○ |
| CM740.0140A | 14 | 12 | 26 | 83 | 4 | ● |
| CM740.0150A | 15 | 12 | 26 | 83 | 4 | ○ |
| CM740.0160A | 16 | 16 | 32 | 92 | 4 | ● |
| CM740.0180A | 18 | 16 | 32 | 92 | 4 | ○ |
| CM740.0200A | 20 | 20 | 38 | 104 | 4 | ● |
| CM740.0250A | 25 | 25 | 45 | 121 | 4 | ○ |

| Raggio tolleranza in μm / Tolerance range in μm | | | | | | |
|---|-------------------------|----------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Diametro nominale in mm / Nominal-Diameter in mm | | | | | | |
| | da 1 a 3 from 1 to 3 | oltre 3 a 6 over 3 to 6 | oltre 6 a 10 over 6 to 10 | oltre 10 a 18 over 10 to 18 | oltre 18 a 30 over 18 to 30 | oltre 30 a 50 over 30 to 50 |
| js12 | ± 50 | ± 60 | ± 75 | ± 90 | ± 105 | ± 125 |
| h6 | 0 -6 | 0 -8 | 0 -9 | 0 -11 | 0 -13 | 0 -16 |

CM240



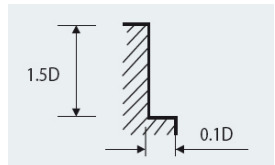
MATERIALE material

ACCIAI AL CARBONIO, ACCIAI LEGATI, ACCIAI PER UTENSILI
carbon steels, alloy steels, tool steels

ALLUMINIO
LEGHE DI ALLUMINIO
aluminium
aluminium alloys

| DUREZZA hardness | < 500N/mm2 | | < HRC 20 500 < 800N/mm2 | | HRC 20 < HRC 30 800 < 1000N/mm2 | | HRC 30 < HRC 40 1000 < 1300N/mm2 | | | |
|---------------------|------------|-------|----------------------------|-------|------------------------------------|-------|-------------------------------------|-------|-------|-------|
| | Ø | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN |
| 2 | 7850 | 65 | 6300 | 50 | 5600 | 48 | 3100 | 25 | 16800 | 255 |
| 3 | 4900 | 90 | 4500 | 70 | 3500 | 64 | 2250 | 30 | 15400 | 400 |
| 4 | 3900 | 110 | 3100 | 90 | 2500 | 72 | 1550 | 50 | 11200 | 465 |
| 5 | 3100 | 145 | 2500 | 110 | 2250 | 96 | 1250 | 55 | 8800 | 495 |
| 6 | 2500 | 145 | 2250 | 130 | 1700 | 96 | 1100 | 65 | 7850 | 495 |
| 8 | 1950 | 160 | 1550 | 145 | 1250 | 112 | 800 | 70 | 5600 | 625 |
| 10 | 1550 | 160 | 1250 | 145 | 1100 | 128 | 650 | 70 | 4350 | 640 |
| 12 | 1250 | 175 | 1100 | 160 | 900 | 128 | 550 | 80 | 3500 | 610 |
| 14 | 1100 | 175 | 1000 | 145 | 800 | 128 | 500 | 80 | 3100 | 560 |
| 16 | 1000 | 175 | 800 | 145 | 650 | 112 | 400 | 70 | 2800 | 560 |
| 18 | 900 | 160 | 700 | 145 | 550 | 112 | 350 | 70 | 2500 | 560 |
| 20 | 800 | 160 | 650 | 145 | 550 | 112 | 300 | 70 | 2250 | 510 |
| 22 | 700 | 160 | 650 | 145 | 500 | 112 | 300 | 70 | 1950 | 480 |
| 25 | 650 | 145 | 550 | 130 | 450 | 96 | 250 | 55 | 1700 | 450 |

CM420



MATERIALE material

ACCIAI AL CARBONIO, ACCIAI LEGATI, ACCIAI PER UTENSILI
carbon steels, alloy steels, tool steels

ALLUMINIO
LEGHE DI ALLUMINIO
aluminium
aluminium alloys

| DUREZZA hardness | < 500N/mm2 | | < HRC 20 500 < 800N/mm2 | | HRC 20 < HRC 30 800 < 1000N/mm2 | | HRC 30 < HRC 40 1000 < 1300N/mm2 | | | |
|---------------------|------------|-------|----------------------------|-------|------------------------------------|-------|-------------------------------------|-------|-------|-------|
| | Ø | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN |
| 2 | 7850 | 130 | 6300 | 90 | 5600 | 70 | 3100 | 30 | 16800 | 385 |
| 3 | 4900 | 175 | 4500 | 130 | 3500 | 95 | 2250 | 50 | 15400 | 610 |
| 4 | 3900 | 225 | 3100 | 160 | 2500 | 105 | 1550 | 70 | 11200 | 705 |
| 5 | 3100 | 290 | 2500 | 200 | 2250 | 145 | 1250 | 80 | 8800 | 750 |
| 6 | 2500 | 290 | 2250 | 230 | 1700 | 145 | 1100 | 95 | 7850 | 750 |
| 8 | 1950 | 320 | 1550 | 255 | 1250 | 170 | 800 | 105 | 5600 | 930 |
| 10 | 1550 | 320 | 1250 | 255 | 1100 | 190 | 650 | 105 | 4350 | 960 |
| 12 | 1250 | 350 | 1100 | 290 | 900 | 190 | 550 | 120 | 3500 | 910 |
| 14 | 1100 | 350 | 1000 | 255 | 800 | 190 | 500 | 120 | 3100 | 850 |
| 16 | 1000 | 350 | 800 | 255 | 650 | 170 | 400 | 105 | 2800 | 850 |
| 18 | 900 | 320 | 700 | 255 | 550 | 170 | 350 | 105 | 2500 | 850 |
| 20 | 800 | 320 | 650 | 255 | 550 | 170 | 300 | 105 | 2250 | 770 |
| 22 | 700 | 320 | 650 | 255 | 500 | 170 | 300 | 105 | 1950 | 720 |
| 25 | 650 | 290 | 550 | 230 | 450 | 145 | 250 | 70 | 1700 | 670 |

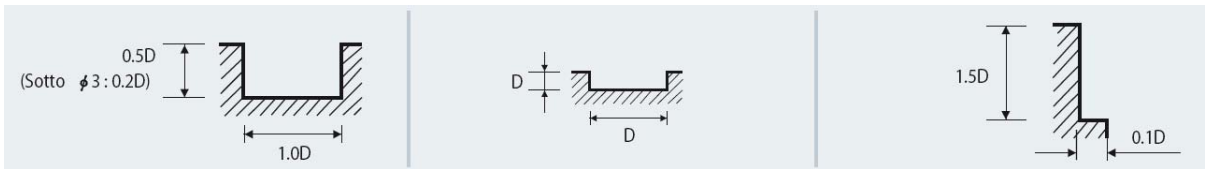
CM340, CM350

MATERIALE
material

ACCIAI AL CARBONIO, ACCIAI LEGATI, ACCIAI PER UTENSILI
carbon steels, alloy steels, tool steels

ALLUMINIO
LEGHE DI ALLUMINIO
aluminium
aluminium alloys

| DUREZZA hardness | < 500N/mm ² | | < Hrc20 500 < 800N/mm ² | | Hrc20 < Hrc30 800 < 1000N/mm ² | | Hrc30 < Hrc40 1000 < 1300N/mm ² | | | |
|---------------------|------------------------|-------|---------------------------------------|-------|--|-------|---|-------|-------|-------|
| | Ø | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN |
| 2 | 7850 | 78 | 6300 | 63 | 5600 | 60 | 3100 | 31 | 16800 | 319 |
| 3 | 4900 | 108 | 4500 | 88 | 3500 | 80 | 2250 | 38 | 15400 | 500 |
| 4 | 3900 | 132 | 3100 | 113 | 2500 | 90 | 1550 | 63 | 11200 | 581 |
| 5 | 3100 | 174 | 2500 | 138 | 2250 | 120 | 1250 | 69 | 8800 | 619 |
| 6 | 2500 | 174 | 2250 | 163 | 1700 | 120 | 1100 | 81 | 7850 | 619 |
| 8 | 1950 | 192 | 1550 | 181 | 1250 | 140 | 800 | 88 | 5600 | 781 |
| 10 | 1550 | 192 | 1250 | 181 | 1100 | 160 | 650 | 88 | 4350 | 800 |
| 12 | 1250 | 210 | 1100 | 200 | 900 | 160 | 550 | 100 | 3500 | 763 |
| 14 | 1100 | 210 | 1000 | 181 | 800 | 160 | 500 | 100 | 3100 | 700 |
| 16 | 1000 | 210 | 800 | 181 | 650 | 140 | 400 | 88 | 2800 | 700 |
| 18 | 900 | 192 | 700 | 181 | 550 | 140 | 350 | 88 | 2500 | 700 |
| 20 | 800 | 192 | 650 | 181 | 550 | 140 | 300 | 88 | 2250 | 638 |
| 22 | 700 | 192 | 650 | 181 | 500 | 140 | 300 | 88 | 1950 | 600 |
| 25 | 650 | 174 | 550 | 163 | 450 | 120 | 250 | 69 | 1700 | 563 |



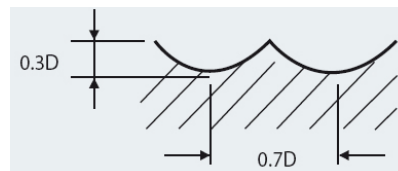
CM140

MATERIALE
material

ACCIAI AL CARBONIO, ACCIAI LEGATI, ACCIAI PER UTENSILI
carbon steels, alloy steels, tool steels

ALLUMINIO
LEGHE DI ALLUMINIO
aluminium
aluminium alloys

| DUREZZA hardness | < 500N/mm ² | | < Hrc20 500 < 800N/mm ² | | Hrc20 < Hrc30 800 < 1000N/mm ² | | Hrc30 < Hrc40 1000 < 1300N/mm ² | | | |
|---------------------|------------------------|-------|---------------------------------------|-------|--|-------|---|-------|-------|-------|
| | Ø | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN |
| 3 | 6300 | 150 | 4750 | 110 | 2800 | 50 | 1950 | 30 | 15400 | 370 |
| 4 | 4500 | 185 | 3350 | 130 | 1950 | 55 | 1400 | 40 | 11200 | 415 |
| 6 | 3100 | 215 | 2400 | 145 | 1400 | 70 | 1000 | 40 | 7850 | 450 |
| 8 | 2250 | 255 | 1700 | 170 | 1000 | 80 | 700 | 45 | 5600 | 560 |
| 10 | 1800 | 290 | 1400 | 190 | 800 | 95 | 550 | 55 | 4500 | 575 |
| 12 | 1400 | 270 | 1100 | 170 | 650 | 90 | 450 | 55 | 3500 | 545 |
| 16 | 1100 | 240 | 850 | 160 | 500 | 90 | 350 | 55 | 2800 | 480 |
| 20 | 850 | 225 | 700 | 135 | 400 | 80 | 300 | 55 | 2250 | 550 |
| 25 | 700 | 210 | 550 | 110 | 300 | 70 | 200 | 45 | 1800 | 400 |



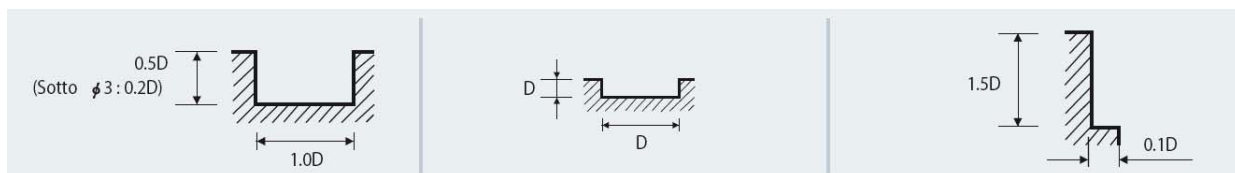
CM740, CM840

MATERIALE
material

ACCIAI AL CARBONIO, ACCIAI LEGATI, ACCIAI PER UTENSILI
carbon steels, alloy steels, tool steels

ALLUMINIO
LEGHE DI ALLUMINIO
aluminium
aluminium alloys

| DUREZZA hardness | < 500N/mm ² | | < HRC20 500 < 800N/mm ² | | HRC20 < HRC30 800 < 1000N/mm ² | | HRC30 < HRC40 1000 < 1300N/mm ² | | | | |
|---------------------|------------------------|-------|---------------------------------------|-------|--|-------|---|-------|-----|-------|-----|
| | Ø | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN | AV | G/MIN | AV |
| | 6 | 2500 | 130 | 2250 | 95 | 1700 | 90 | 1100 | 50 | 6300 | 320 |
| | 8 | 1950 | 170 | 1550 | 120 | 1250 | 105 | 800 | 55 | 4350 | 370 |
| | 10 | 1550 | 240 | 1250 | 195 | 1100 | 175 | 650 | 95 | 3500 | 560 |
| | 12 | 1260 | 290 | 1100 | 225 | 900 | 175 | 550 | 110 | 2800 | 640 |
| | 14 | 1100 | 290 | 1000 | 225 | 800 | 175 | 500 | 110 | 2500 | 670 |
| | 16 | 1000 | 290 | 800 | 225 | 650 | 175 | 400 | 110 | 2250 | 720 |
| | 18 | 900 | 290 | 700 | 225 | 550 | 175 | 350 | 110 | 1950 | 750 |
| | 20 | 800 | 290 | 650 | 225 | 550 | 175 | 300 | 110 | 1700 | 800 |
| | 22 | 700 | 350 | 650 | 270 | 500 | 225 | 300 | 135 | 1550 | 750 |
| | 25 | 650 | 350 | 550 | 270 | 450 | 225 | 250 | 135 | 1400 | 720 |



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