



***SMART*Line**

[www.helion-tools.com](http://www.helion-tools.com)

# SMART LINE

## ICONOGRAPHY



Without  
Sin Weldon



With  
Con Weldon

### SHANK DESIGN FORMA DEL MANGO



Full-slot  
Ranurado



Copy  
Copiado



Side Milling  
Fresado Lateral



Ramping  
Rampa



Interpolation  
Interpolación



Trochoidal  
Trocoidal

### APPLICATION OPERACIÓN



**HSC** High Speed Cutting  
Corte de Gran Avance



**HHC** High Hard Cutting  
Corte de Materiales  
Templados



**HPC** High Performance  
Cutting  
Corte de Alto  
Rendimiento



**MULTI  
TASK** Multi Task  
Cutter  
Corte Multi Área



**3D** 3D Side Trajectory,  
Ramp and Drilling  
Trayectoria lateral,  
rampa y taladrado



**2D** 2D Side Trajectory  
and Ramping  
Trayectoria  
lateral y rampa



**Axial**  
Trajectory  
Trayectoria  
axial



**Side** Trajectory  
Trayectoria lateral

### TRAJECTORY TRAYECTORIA



**VARIABLE  
HELIX** Frontal  
Unequal Angle  
Ángulo  
Frontal Desigual



**HELIX**  
**30°**



**HELIX**  
**35°**

**HELIX**  
**45°**  
**HELIX ANGLE**  
ÁNGULO DE LA HÉLICE  
...



**POINT ANGLE**  
ÁNGULO DE LA PUNTA



**90°**  
Cutting  
Edge  
Canto Vivo



**45°**  
Chamfer  
Chañán



**Ball Nose**  
Esférica

### EGDE SHAPE FORMA DE LA ARISTA



**MQL** Minimum Quantity  
of Lubricant  
Micro Lubricación



**AIR** Air Cooling  
Refrigeración por Aire



**Dry or With Coolant  
Machining**  
Mecanizado en seco o  
con Refrigeración



**With Coolant**  
Con Refrigeración

### COOLANT REFRIGERACIÓN



**HELION NORM**  
NORMA HELION



**COATINGS**  
RECUBRIMIENTOS



**UNI** Universal Application  
Aplicación Universal



**POLISHED** Polished  
Pulido

### OTHERS PICTOGRAMS OTROS ICONOS



**600  
1200**  
N/mm²



**55  
HRC**



**65  
HRC**



**INOX**



**GG(G)**



**ALU  
NE**



**PLASTIC**



**GFK  
CFK**



**TITAN  
INCONEL**

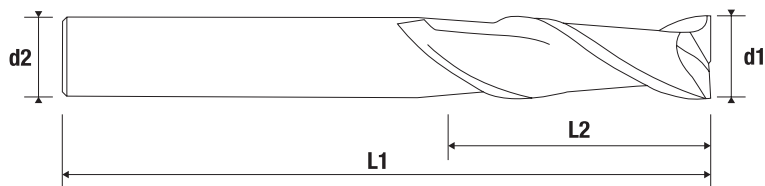


**NI  
ALLOYS**

### MATERIALS MATERIALES

## 70.6202

## Solid Carbide End Mill Z2

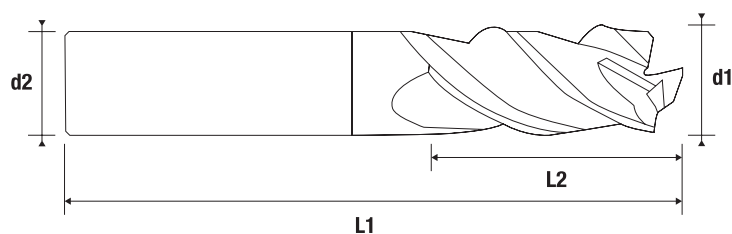


| Cod.       | d1  | d2 | L1  | L2 | Z | HELIX 30°      | RACER     |
|------------|-----|----|-----|----|---|----------------|-----------|
| 7062020100 | 1   | 3  | 38  | 3  | 2 | 600 1200 N/mm² | 55 HRC    |
| 7062020150 | 1,5 | 3  | 38  | 4  | 2 | INOX           | GG(G)     |
| 7062020200 | 2   | 3  | 38  | 6  | 2 | ALU NE         | NI ALLOYS |
| 7062020300 | 3   | 3  | 38  | 8  | 2 | UNI            | HA        |
| 7062020400 | 4   | 4  | 50  | 11 | 2 | HSC            | HHC       |
| 7062020500 | 5   | 5  | 50  | 13 | 2 | 3D             | AIR       |
| 7062020600 | 6   | 6  | 50  | 16 | 2 |                |           |
| 7062020800 | 8   | 8  | 60  | 19 | 2 |                |           |
| 7062021000 | 10  | 10 | 72  | 22 | 2 |                |           |
| 7062021200 | 12  | 12 | 75  | 26 | 2 |                |           |
| 7062021400 | 14  | 14 | 84  | 30 | 2 |                |           |
| 7062021600 | 16  | 16 | 92  | 32 | 2 |                |           |
| 7062021800 | 18  | 18 | 100 | 38 | 2 |                |           |
| 7062022000 | 20  | 20 | 100 | 38 | 2 |                |           |



## 70.6302

## Solid Carbide End Mill Z3

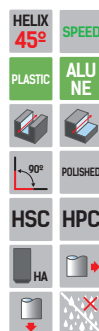
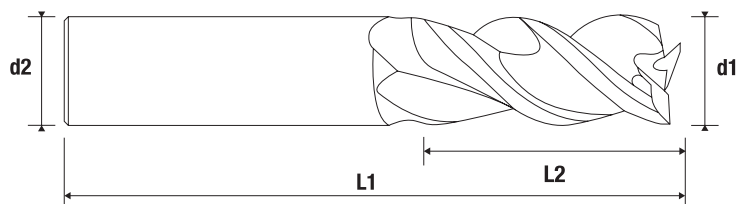


| Cod.       | d1  | d2 | L1  | L2 | Z | HELIX 45°      | RACER  |
|------------|-----|----|-----|----|---|----------------|--------|
| 7063020100 | 1   | 4  | 50  | 3  | 3 | 600 1200 N/mm² | 55 HRC |
| 7063020150 | 1,5 | 4  | 50  | 4  | 3 | INOX           | GG(G)  |
| 7063020200 | 2   | 4  | 50  | 6  | 3 | TITAN INCONEL  | UNI    |
| 7063020300 | 3   | 4  | 50  | 8  | 3 | HSC            | HPC    |
| 7063020400 | 4   | 6  | 50  | 11 | 3 |                |        |
| 7063020500 | 5   | 6  | 50  | 13 | 3 |                |        |
| 7063020600 | 6   | 6  | 50  | 16 | 3 |                |        |
| 7063020700 | 7   | 8  | 60  | 19 | 3 |                |        |
| 7063020800 | 8   | 8  | 60  | 19 | 3 |                |        |
| 7063021000 | 10  | 10 | 72  | 22 | 3 |                |        |
| 7063021200 | 12  | 12 | 75  | 26 | 3 |                |        |
| 7063021600 | 16  | 16 | 92  | 32 | 3 |                |        |
| 7063022000 | 20  | 20 | 100 | 38 | 3 |                |        |



74.6302

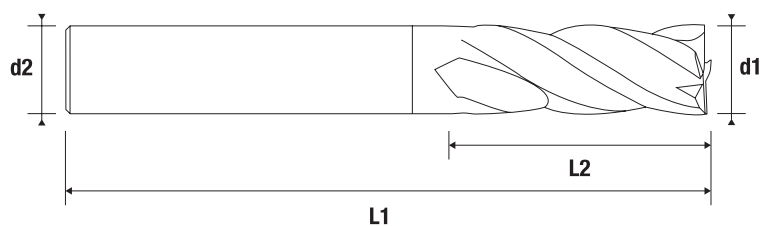
## Square End Mill Aluminium Z3 ZrN coated



| Cod.       | d1 | d2 | L1  | L2 | Z |
|------------|----|----|-----|----|---|
| 7463020300 | 3  | 6  | 50  | 8  | 3 |
| 7463020400 | 4  | 6  | 50  | 11 | 3 |
| 7463020500 | 5  | 6  | 50  | 13 | 3 |
| 7463020600 | 6  | 6  | 50  | 16 | 3 |
| 7463020800 | 8  | 8  | 60  | 19 | 3 |
| 7463021000 | 10 | 10 | 72  | 25 | 3 |
| 7463021200 | 12 | 12 | 75  | 30 | 3 |
| 7463021400 | 14 | 14 | 83  | 30 | 3 |
| 7463021600 | 16 | 16 | 92  | 40 | 3 |
| 7463022000 | 20 | 20 | 100 | 45 | 3 |

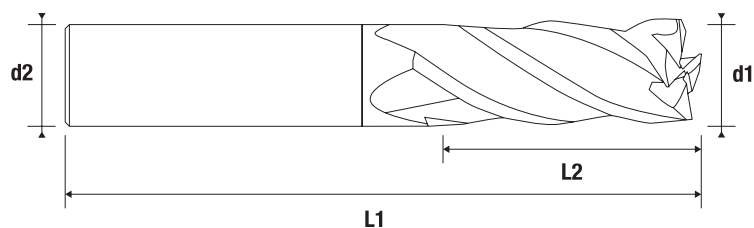
70.6402

## Solid Carbide End Mill Z4

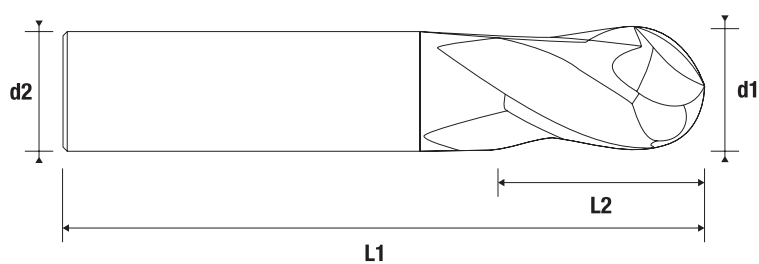


| Cod.        | d1  | d2 | L1  | L2 | Z |
|-------------|-----|----|-----|----|---|
| 7064020200  | 2   | 3  | 38  | 6  | 4 |
| 7064020250  | 2,5 | 3  | 38  | 8  | 4 |
| 7064020300  | 3   | 3  | 38  | 8  | 4 |
| 7064020400  | 4   | 4  | 50  | 11 | 4 |
| 7064020500  | 5   | 5  | 50  | 13 | 4 |
| 7064020600  | 6   | 6  | 50  | 16 | 4 |
| 7064020800  | 8   | 8  | 60  | 19 | 4 |
| 7064021000  | 10  | 10 | 72  | 22 | 4 |
| 7064021200  | 12  | 12 | 75  | 26 | 4 |
| 7064021400  | 14  | 14 | 84  | 30 | 4 |
| *7064021500 | 15  | 15 | 92  | 30 | 4 |
| 7064021600  | 16  | 16 | 92  | 32 | 4 |
| 7064021800  | 18  | 18 | 100 | 38 | 4 |
| 7064022000  | 20  | 20 | 100 | 38 | 4 |
| 7064022500  | 25  | 25 | 100 | 45 | 4 |

\*Stock Limitado

**70.6404****Solid Carbide Square End Mill Z4 Long**

| Cod.       | d1 | d2 | L1  | L2 | Z |
|------------|----|----|-----|----|---|
| 7064040300 | 3  | 3  | 60  | 15 | 4 |
| 7064040400 | 4  | 4  | 76  | 20 | 4 |
| 7064040600 | 6  | 6  | 80  | 25 | 4 |
| 7064040800 | 8  | 8  | 100 | 35 | 4 |
| 7064041000 | 10 | 10 | 100 | 45 | 4 |
| 7064041200 | 12 | 12 | 100 | 50 | 4 |
| 7064041600 | 16 | 16 | 150 | 90 | 4 |
| 7064042000 | 20 | 20 | 150 | 90 | 4 |

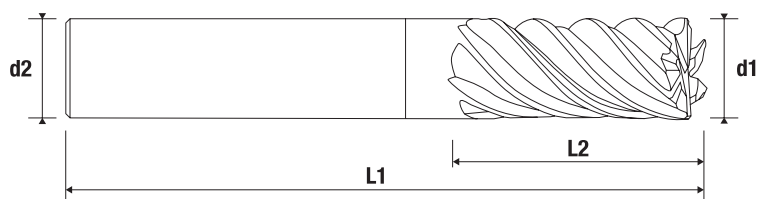
**70.6221****Ball Nose Solid Carbide End Mill up to 62 HRC**

| Cod.       | d1  | d2 | L1  | L2 | Z |
|------------|-----|----|-----|----|---|
| 7062210100 | 1   | 3  | 38  | 2  | 2 |
| 7062210150 | 1,5 | 3  | 38  | 3  | 2 |
| 7062210200 | 2   | 3  | 38  | 4  | 2 |
| 7062210250 | 2,5 | 3  | 38  | 5  | 2 |
| 7062210300 | 3   | 3  | 38  | 6  | 2 |
| 7062210400 | 4   | 4  | 50  | 8  | 2 |
| 7062210500 | 5   | 5  | 50  | 10 | 2 |
| 7062210600 | 6   | 6  | 50  | 12 | 2 |
| 7062210800 | 8   | 8  | 60  | 15 | 2 |
| 7062211000 | 10  | 10 | 75  | 20 | 2 |
| 7062211200 | 12  | 12 | 75  | 20 | 2 |
| 7062211600 | 16  | 16 | 100 | 25 | 2 |



70.6502

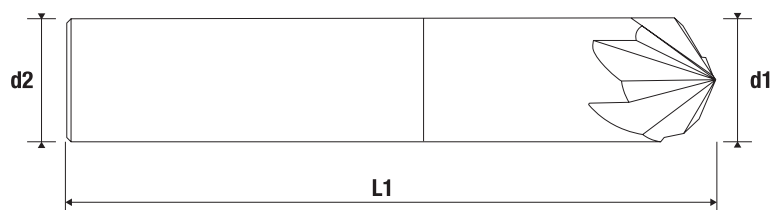
## Solid Carbide Finishing End Mill Z6 up to 65 HRC



| Cod.       | d1 | d2 | L1  | L2 | Z |
|------------|----|----|-----|----|---|
| 7065020600 | 6  | 6  | 50  | 16 | 6 |
| 7065020800 | 8  | 8  | 60  | 19 | 6 |
| 7065021000 | 10 | 10 | 75  | 22 | 6 |
| 7065021200 | 12 | 12 | 75  | 26 | 6 |
| 7065021600 | 16 | 16 | 100 | 50 | 6 |
| 7065022000 | 20 | 20 | 100 | 50 | 6 |

70.6490

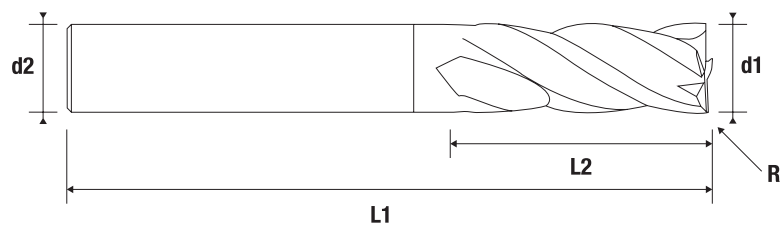
## Solid Carbide Deburring Tool 90°



| Cod.       | d1 | d2 | L1 | Z |
|------------|----|----|----|---|
| 7064900400 | 4  | 4  | 50 | 4 |
| 7064900600 | 6  | 6  | 50 | 4 |
| 7064900800 | 8  | 8  | 60 | 4 |
| 7064901000 | 10 | 10 | 72 | 6 |
| 7064901200 | 12 | 12 | 75 | 6 |
| 7064901600 | 16 | 16 | 80 | 6 |

70.6415

## Solid Carbide Toric End Mill Z4



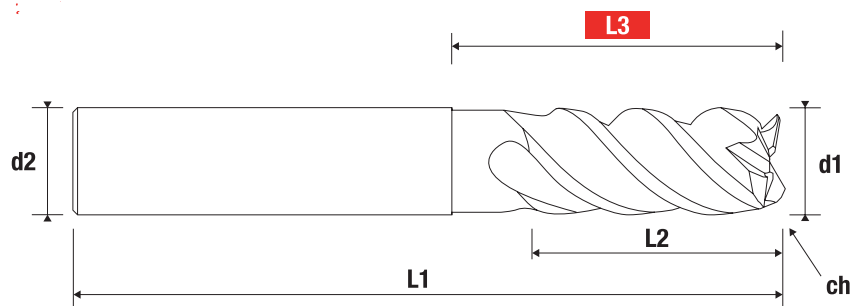
| Cod.       | d1 | d2 | L1 | L2 | R | Z | HELIX 30°            | RACER     |
|------------|----|----|----|----|---|---|----------------------|-----------|
| 7064150310 | 3  | 3  | 50 | 8  | 1 | 4 | 600<br>1200<br>N/mm² | 55<br>HRC |
| 7064150410 | 4  | 4  | 50 | 11 | 1 | 4 | INOX                 | GG(G)     |
| 7064150610 | 6  | 6  | 50 | 16 | 1 | 4 | UNI                  |           |
| 7064150810 | 8  | 8  | 60 | 19 | 1 | 4 |                      |           |
| 7064151010 | 10 | 10 | 72 | 22 | 1 | 4 |                      |           |
| 7064151210 | 12 | 12 | 74 | 26 | 1 | 4 |                      |           |



Helion

91.1480

## Solid Carbide End Mill Z4 UNEQUAL HELIX- GLADIATOR



| Cod.        | d1 | d2 | L1  | L2 | L3 | Ch   | Z |
|-------------|----|----|-----|----|----|------|---|
| 9114800300  | 3  | 6  | 57  | 8  | 20 | 0,07 | 4 |
| 9114800400  | 4  | 6  | 57  | 11 | 20 | 0,09 | 4 |
| 9114800500  | 5  | 6  | 57  | 13 | 20 | 0,12 | 4 |
| 9114800600  | 6  | 6  | 57  | 13 | 21 | 0,2  | 4 |
| *9114800602 | 6  | 6  | 57  | 13 | 21 | 0,2  | 4 |
| 9114800800  | 8  | 8  | 63  | 19 | 27 | 0,25 | 4 |
| *9114800802 | 8  | 8  | 63  | 19 | 27 | 0,25 | 4 |
| 9114801000  | 10 | 10 | 73  | 22 | 32 | 0,35 | 4 |
| *9114801002 | 10 | 10 | 73  | 22 | 32 | 0,35 | 4 |
| 9114801200  | 12 | 12 | 83  | 26 | 38 | 0,35 | 4 |
| *9114801202 | 12 | 12 | 83  | 26 | 38 | 0,35 | 4 |
| 9114801600  | 16 | 16 | 92  | 32 | 44 | 0,4  | 4 |
| *9114801602 | 16 | 16 | 92  | 32 | 44 | 0,4  | 4 |
| 9114802000  | 20 | 20 | 104 | 38 | 55 | 0,4  | 4 |
| *9114802002 | 20 | 20 | 104 | 38 | 55 | 0,4  | 4 |

\*Weldon

## CUTTING CONDITIONS FOR 91.1480 | CONDICIONES DE CORTE PARA 91.1480

| Roughing<br>ap: 1,00 x d1   ae: 1,00 x d1 |                                                     | d1   | d1     | d1     | d1     | d1     | d1     | d1     | d1     | d1     |        |
|-------------------------------------------|-----------------------------------------------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                                           |                                                     | 3,00 | 4,00   | 5,00   | 6,00   | 8,00   | 10,00  | 12,00  | 16,00  | 20,00  |        |
|                                           |                                                     | Vc   | fz     | fz     | fz     | fz     | fz     | fz     | fz     | fz     | fz     |
| Steel                                     | General steels <500 N/mm² (<150 HB)                 | 156  | 0,0101 | 0,0168 | 0,0294 | 0,0294 | 0,0378 | 0,0631 | 0,0631 | 0,0841 | 0,1009 |
|                                           | General steels <700 N/mm² (<205 HB)                 | 141  | 0,0101 | 0,0168 | 0,0294 | 0,0294 | 0,0378 | 0,0631 | 0,0631 | 0,0841 | 0,1009 |
|                                           | Tempering steel <850 N/mm² (<25 HRC)                | 106  | 0,0101 | 0,0168 | 0,0210 | 0,0210 | 0,0378 | 0,0631 | 0,0631 | 0,0841 | 0,1009 |
|                                           | Tempering steel <1000 N/mm² (<32 HRC)               | 92   | 0,0076 | 0,0126 | 0,0210 | 0,0210 | 0,0269 | 0,0437 | 0,0437 | 0,0589 | 0,0706 |
|                                           | Tempering steel <1200 N/mm² (<44 HRC)               | 57   | 0,0076 | 0,0126 | 0,0210 | 0,0210 | 0,0269 | 0,0437 | 0,0437 | 0,0589 | 0,0706 |
| Cast Iron                                 | Grey Cast Iron <180HB GG                            | 127  | 0,0101 | 0,0168 | 0,0294 | 0,0294 | 0,0378 | 0,0631 | 0,0631 | 0,0841 | 0,1009 |
|                                           | Grey Cast Iron <300HB GG                            | 92   | 0,0101 | 0,0168 | 0,0294 | 0,0294 | 0,0378 | 0,0631 | 0,0631 | 0,0841 | 0,1009 |
|                                           | Nodular Cast iron <350HB GGG                        | 92   | 0,0101 | 0,0168 | 0,0294 | 0,0294 | 0,0378 | 0,0631 | 0,0631 | 0,0841 | 0,1009 |
| Inox                                      | Rust and acid resistant steels < 700N/mm² (<205 HB) | 67   | 0,0076 | 0,0126 | 0,0210 | 0,0210 | 0,0269 | 0,0437 | 0,0437 | 0,0589 | 0,0706 |
|                                           | Rust and acid resistant steels > 700N/mm² (<205 HB) | 37   | 0,0076 | 0,0126 | 0,0210 | 0,0210 | 0,0269 | 0,0437 | 0,0437 | 0,0589 | 0,0706 |
| Exotic materials                          | Titanium                                            | 35   | 0,0059 | 0,0076 | 0,0126 | 0,0126 | 0,0210 | 0,0269 | 0,0269 | 0,0437 | 0,0589 |
|                                           | Inconel, Hastelloy, Nimonic, Monel                  | 25   | 0,0059 | 0,0076 | 0,0126 | 0,0126 | 0,0210 | 0,0269 | 0,0269 | 0,0437 | 0,0589 |

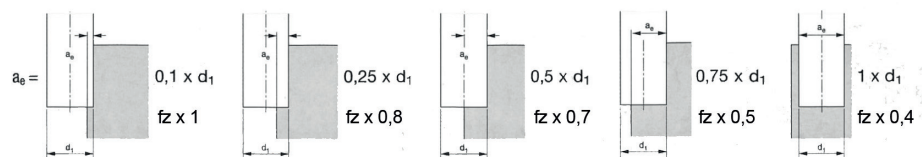
| Finishing<br>ap: 1,00 x d1   ae: 0,10 x d1 |                                                     |      |        |        |        |        |        |        |        |        |        |
|--------------------------------------------|-----------------------------------------------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                                            |                                                     | d1   | d1     | d1     | d1     | d1     | d1     | d1     | d1     | d1     |        |
|                                            |                                                     | 3,00 | 4,00   | 5,00   | 6,00   | 8,00   | 10,00  | 12,00  | 16,00  | 20,00  |        |
|                                            |                                                     | Vc   | fz     | fz     | fz     | fz     | fz     | fz     | fz     | fz     | fz     |
| Steel                                      | General steels <500 N/mm² (<150 HB)                 | 220  | 0,015  | 0,030  | 0,052  | 0,052  | 0,070  | 0,110  | 0,110  | 0,150  | 0,180  |
|                                            | General steels <700 N/mm² (<205 HB)                 | 200  | 0,0120 | 0,030  | 0,052  | 0,052  | 0,070  | 0,110  | 0,110  | 0,150  | 0,180  |
|                                            | Tempering steel <850 N/mm² (<25 HRC)                | 150  | 0,015  | 0,030  | 0,052  | 0,052  | 0,070  | 0,110  | 0,110  | 0,150  | 0,180  |
|                                            | Tempering steel <1000 N/mm² (<32 HRC)               | 130  | 0,015  | 0,030  | 0,052  | 0,052  | 0,070  | 0,110  | 0,110  | 0,150  | 0,180  |
|                                            | Tempering steel <1200 N/mm² (<44 HRC)               | 80   | 0,009  | 0,015  | 0,025  | 0,025  | 0,032  | 0,052  | 0,052  | 0,070  | 0,084  |
| Cast Iron                                  | Grey Cast Iron <180HB GG                            | 180  | 0,015  | 0,030  | 0,052  | 0,052  | 0,070  | 0,110  | 0,110  | 0,150  | 0,180  |
|                                            | Grey Cast Iron <300HB GG                            | 130  | 0,015  | 0,030  | 0,052  | 0,052  | 0,070  | 0,110  | 0,110  | 0,150  | 0,180  |
|                                            | Nodular Cast iron <350HB GGG                        | 130  | 0,015  | 0,030  | 0,052  | 0,052  | 0,070  | 0,110  | 0,110  | 0,150  | 0,180  |
| Inox                                       | Rust and acid resistant steels < 700N/mm² (<205 HB) | 95   | 0,0090 | 0,0150 | 0,0250 | 0,0250 | 0,0320 | 0,0520 | 0,0520 | 0,0700 | 0,0840 |
|                                            | Rust and acid resistant steels > 700N/mm² (<205 HB) | 53   | 0,0090 | 0,0150 | 0,0250 | 0,0250 | 0,0320 | 0,0520 | 0,0520 | 0,0700 | 0,0840 |
| Exotic materials                           | Titanium                                            | 50   | 0,0070 | 0,0090 | 0,0150 | 0,0150 | 0,0250 | 0,0320 | 0,0320 | 0,0520 | 0,0700 |
|                                            | Inconel, Hastelloy, Nimonic, Monel                  | 35   | 0,0070 | 0,0090 | 0,0150 | 0,0150 | 0,0250 | 0,0320 | 0,0320 | 0,0520 | 0,0700 |

ORIENTATIVE WORK CONDITIONS. THEY COULD CHANGE DEPENDING ON EACH SPECIFIC CASE  
CONDICIONES ORIENTATIVAS DE TRABAJO. PODRÍAN CAMBIAR SEGÚN CADA CASO ESPECÍFICO

# GENERAL CUTTING CONDITIONS | CONDICIONES DE CORTE GENERALES

| General cutting conditions  <br>Condiciones de corte generales |                                                                                    | Hardness  <br>Dureza | DIN-Nr                                    | Material<br>nº             | Vc m/min | d1    | d1    | d1    | d1    | d1    |
|----------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------|-------------------------------------------|----------------------------|----------|-------|-------|-------|-------|-------|
|                                                                |                                                                                    |                      |                                           |                            |          | 2-3   | 4-5   | 6-10  | 12-16 | 20    |
|                                                                |                                                                                    |                      |                                           |                            |          | fz mm | fz mm | fz mm | fz mm | fz mm |
| Steel  <br>Acero                                               | Steel for automatic lathes  <br>Acero para tornos automáticos                      | <700 N/mm²           | 9SMn 28                                   | 1.0715                     | 150      | 0,02  | 0,04  | 0,05  | 0,08  | 0,12  |
|                                                                | Steel for construction   Acero de construcción                                     | <520 N/mm²           | St 52                                     | 1.0052                     | 150      | 0,02  | 0,03  | 0,04  | 0,07  | 0,08  |
|                                                                | Steel for construction   Acero de construcción                                     | <750 N/mm²           | CK 45<br>26 CrMo4                         | 1.1191<br>1.2241           | 120      | 0,02  | 0,03  | 0,04  | 0,07  | 0,08  |
|                                                                | Tempered steel medium resistance  <br>Acero de temple y revenido resistencia media | <950 N/mm²           | 42 CrMo 4<br>50 CrV 4                     | 1.7225<br>1.2241           | 100      | 0,02  | 0,03  | 0,04  | 0,07  | 0,08  |
|                                                                | Cemented steel   Acero cementado                                                   | <950 N/mm²           | 16 MnCr 5                                 | 1 7131                     | 100      | 0,02  | 0,03  | 0,04  | 0,07  | 0,08  |
|                                                                | Tempered steel high resistance  <br>Acero de temple y revenido muy resistente      | >1200 N/mm²          | 30 CrNiMo 8                               | 1 7225<br>1 6580           | 90       | 0,01  | 0,01  | 0,02  | 0,03  | 0,05  |
|                                                                | Acero para nitrurar bonificado                                                     | >1400 N/mm²          | 34 CrAl 6                                 | 1 8504                     | 90       | 0,01  | 0,01  | 0,02  | 0,04  | 0,06  |
|                                                                | Steel for tools   Acero para herramientas                                          | >1400 N/mm²          | x 38CrMoV 5 1<br>x 155 CrV Mo 1 2         | 1 2343<br>1 2379           | 90       | 0,01  | 0,01  | 0,02  | 0,03  | 0,05  |
|                                                                | Steels   Aceros - 55 HRC                                                           | - 1800 N/mm²         | Tempered steel<br>Acero templado          | -                          | 65       | 0,02  | 0,04  | 0,05  | 0,07  | 0,15  |
|                                                                | Steels   Aceros - 65 HRC                                                           | - 2000 N/mm²         | Tempered steel<br>Acero templado          | -                          | 45       | 0,02  | 0,04  | 0,05  | 0,07  | 0,15  |
| Inox                                                           | Stainless Steel Acid Resistant  <br>Acero inoxidable y resistente a los ácidos     | <900 N/mm²           | X 10 Cr 13<br>X12 CrMoS 17<br>X 35CrMo 17 | 1 4006<br>1 4104<br>1 4122 | 70       | 0,01  | 0,01  | 0,02  | 0,04  | 0,05  |
|                                                                | Stainless Steel Acid Resistant  <br>Acero inoxidable y resistente a los ácidos     | >900 N/mm²           | X 5 CrNi 18 10<br>x 10 CrNiMo 18 10       | 1 4301<br>1 4571           | 50       | 0,01  | 0,01  | 0,02  | 0,04  | 0,05  |
| Cast Iron  <br>Fundición                                       | Cast Iron GG   Fundición gris GG                                                   | 100-400              | GG 25                                     | 0 6025                     | 120      | 0,02  | 0,03  | 0,05  | 0,08  | 0,12  |
|                                                                | Alloyd Cast iron GG   Fundición gris aleada GG                                     | 150-250              | GGL- NiCr 35 2                            | 0 6678                     | 100      | 0,01  | 0,02  | 0,04  | 0,07  | 0,08  |
|                                                                | Spheroidal Cast iron GGG  <br>Fundición esferoidal GGG                             | 400-800              | GGG 60                                    | 0 7060                     | 100      | 0,01  | 0,02  | 0,04  | 0,07  | 0,10  |
|                                                                | Malleable cast iron   Fundición maleable                                           | 350-700              | GTS 55                                    | 0 8155                     | 60       | 0,02  | 0,03  | 0,05  | 0,08  | 0,12  |
| Non<br>ferrous  <br>No<br>férico                               | Copper   Aleación de cobre                                                         | > 550 N/mm²          | MS 63<br>CuAl 10 Ni                       | 2 0320<br>2 0975           | 280      | 0,01  | 0,02  | 0,04  | 0,07  | 0,10  |
|                                                                | Copper   Aleación de cobre                                                         | < 700 N/mm²          | Ms 68                                     | 2 0402                     | 250      | 0,01  | 0,02  | 0,04  | 0,07  | 0,10  |
|                                                                | Aluminium alloy   Aleación de<br>aluminio < 10% Si                                 | > 500 N/mm²          | AlMg 3                                    | 3 3535<br>3 4365           | 800      | 0,02  | 0,03  | 0,05  | 0,08  | 0,12  |
|                                                                | Aluminium alloy   Aleación de<br>aluminio > 10% Si                                 | < 600 N/mm²          | AlZnMgCu 1 5                              | 3 4365                     | 600      | 0,01  | 0,02  | 0,04  | 0,06  | 0,10  |
| Exotic<br>Materials  <br>Materiales<br>exóticos                | NiAlloys medium resistance  <br>Aleación níquel resistencia media                  | < 950 N/mm²          | NiCr 12Al 6 MoNo                          | 2 4670                     | 30       | 0,01  | 0,01  | 0,02  | 0,04  | 0,05  |
|                                                                | NiAlloys high resistance  <br>Aleación níquel resistencia alta                     | < 1400 N/mm²         | NiCr 19 Fe<br>19NbMo                      | Inconel                    | 30       | 0,01  | 0,01  | 0,02  | 0,03  | 0,04  |
|                                                                | Hard cast iron   Fundición dura                                                    | < 600 N/mm²          | Ni-Hard, Ampco                            | -                          | 30       | 0,01  | 0,01  | 0,02  | 0,04  | 0,05  |

## Feed correction factors • Factores de corrección de avance



ORIENTATIVE WORK CONDITIONS. THEY COULD CHANGE DEPENDING ON EACH SPECIFIC CASE  
CONDICIONES ORIENTATIVAS DE TRABAJO. PODRÍAN CAMBIAR SEGÚN CADA CASO ESPECÍFICO

# SALES TERM I CONDICIONES DE VENTA

## PAYMENT · PAGO

Payment shall be made in accordance with terms and conditions notified to the buyer. In case of not payment on the agreed date, we will apply the delay interest. El pago se efectuará de conformidad con los términos y condiciones notificadas al comprador. En caso de impago en la fecha acordada, se devengará el interés legal de demora.

## PASSING OF PROPERTY · RESERVA DE DOMINIO

The property of the goods does not pass to the buyer until it becomes entirely his payment. The Company reserves the right to repossess any goods in respect on which payment is overdue and the buyer shall co-operate in the event of the Company notifying its intentions of repossess. La propiedad de los bienes no se transmitirá al comprador hasta que se haga efectivo por completo su pago. La Empresa se reserva el derecho de tomar posesión de los bienes respecto de los cuales exista mora en el pago.

## TRANSPORT · TRANSPORTE

Will be paid by the buyer. Será a cargo del comprador.

## RETURN POLICY · POLÍTICA DE DEVOLUCIÓN

The customer will get 30 days from the reception of the goods to inform to HELION TOOLS about any claim of the goods supplied. Passed that period the goods will be considered as accepted by the customer. El cliente dispondrá de un plazo de 30 días a partir de la recepción del producto para enviar a HELION TOOLS cualquier reclamación en relación con el producto suministrado. Después de ese plazo los productos serán considerados como conformes por el cliente.

## THE CLAIM WILL MUST DO IT THROUGH · LA RECLAMACIÓN DEBERÁ REALIZARSE A TRAVÉS DE:

**Logistics Division · Departamento de logística** [logistics@helion-tools.com](mailto:logistics@helion-tools.com) **+34 93 877 08 69**  
**Comercial Division · Departamento comercial** [export@helion-tools.com](mailto:export@helion-tools.com) **+34 93 877 08 69**

HELION TOOLS is not responsible and reserves the rights to refuse returns if the goods are in bad conditions due to improper use or transport damages. HT no se hace responsable y se reserva el derecho de rechazar posibles devoluciones en caso de mercancía en mal estado por uso indebido o daños de transporte.

## \* WILL BE ACCEPTED MATERIAL JUST IN FOLLOWING CASE · SOLO SE ACEPTARÁ DEVOLUCIÓN DE MATERIAL EN LOS SIGUIENTES CASOS:

a) The return of the good non-defective, as a rule, will be not accepted. Anyway, in special situations and as an exception will be accepted the return with previous conformity of HELION TOOLS and once the material will be in HELION TOOLS have been controlled that all the requirements of the goods be correct. Then in the return will be apply an surcharge of 15% of the value of the goods as expenses of management and administration. The transportation cost will be at the customer's expense. La devolución de mercancía no defectuosa como norma no se acepta. Aun así, en casos especiales y como excepción se acepta la devolución, pero siempre con la previa aprobación de HT, y la posterior confirmación una vez recibida la mercancía de que reúne los requisitos exigidos. En estos casos de devolución se aplicará un recargo por gastos de gestión y administración del 15% del valor de la mercancía. Los gastos de transporte irán a cargo del comprador.

b) Material defective at the moment of the reception of it: If the material is defective in the origin, must be informed to HELION TOOLS and once assigned the return number the goods will be dispatched to HELION TOOLS with her original packaging. Will be not accepted the return of goods that are not according with the following specifications: original packaging and materials without using. Material defectuoso al momento de la recepción de este: Si el material está defectuoso de origen, se deberá realizar la comunicación a HT, y una vez asignado el nº de devolución, el producto será enviado a HT con su embalaje original. No se aceptarán devoluciones que no cumplan estos requisitos: embalaje original y sin usar.

All the returns must be together with the invoice or delivery note. Toda devolución debe ir acompañada de la factura o albarán de compra.

## DELIVERY · ENTREGA

Once received the purchase order, we proceed with the production process to supply the order in a short time as possible. Then we will not accept cancellations or modifications in purchase orders of special tools manufactured according with the specifications of the customer. Una vez recibido un pedido, procedemos a la ejecución de este en el plazo más breve posible y a partir de ese momento no se aceptarán cancelaciones ni modificaciones de un pedido que contenga herramientas especiales o fabricadas por petición del cliente.

## GARANTÍA · WARRANTY

The guarantee of all our products will be established by HELION TOOLS. There is no guarantee for products manipulated or modified. The responsibility of HELION TOOLS is limited just to the cost amount of the product and is not liable of damages and their consequences, nor of losses due lost profit of the buyer. La garantía de todos nuestros productos será la establecida por HT. No existe garantía de los productos que hayan sido manipulados o modificados. La responsabilidad de HT queda en todo caso limitada al importe del producto y no se hace responsable de daños y sus consecuencias, ni de pérdidas por lucro cesante del comprador.

## JURISDICTION · JURISDICCIÓN

In case of dispute the Customer Will be subject to the jurisdiction of the courts of Manresa – Barcelona – Spain. En caso de litigio, el cliente estará sujeto a la jurisdicción de los tribunales de Manresa – Barcelona – España.



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