



Your technology partner for cost-effective machining

OptiMill[®] - Composite-Speed-Plus

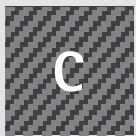


OptiMill®-Composite-Speed-Plus

A new dimension of process reliability

The OptiMill-Composite-Speed-Plus features a new diamond coating developed by MAPAL with even distribution and higher coating thickness. The bigger core diameter increases fracture strength by 50 percent. The improved groove profile ensures efficient, reliable removal of dust and process heat even when machining large volumes. The cutting wedge has been specially optimised to meet the requirements of brittle workpiece material. The special cutting-edge serration causes double compression so that fibre fraying on the workpiece edges of the upper and lower sides are reliably separated.

This allows the OptiMill-Composite-Speed-Plus to attain a new dimension in process reliability. Compared to the OptiMill-Composite-Speed, 20 percent longer tool life is achieved.



Composite materials



Graphites, thermosets

PROCESS RELIABILITY

Increased fracture strength

NEW



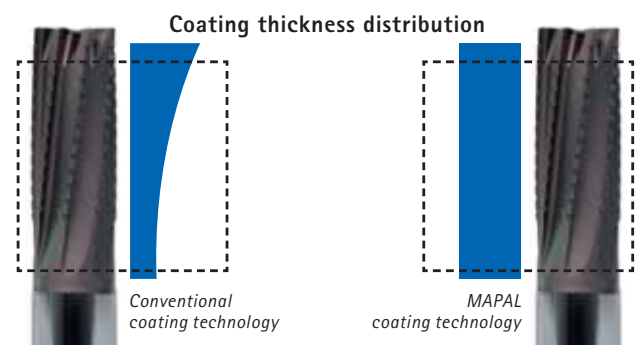
OptiMill®-Composite-Speed-Plus



OptiMill®-Composite-Speed

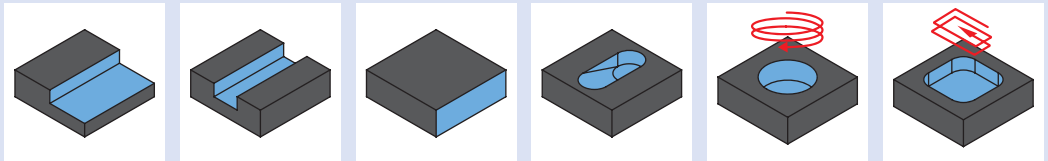
- Bigger core diameter
- New dimensions with adjusted cutting length in accordance with DIN6527

MAPAL coating



- Optimized distribution of coating thickness
- Increased diamond coating for maximum tool life

WIDE RANGE OF APPLICATIONS



QUALITY

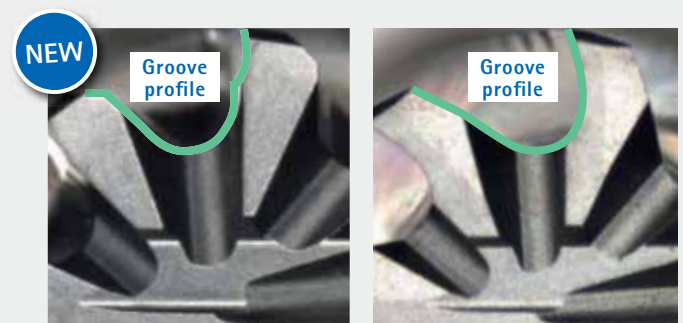
Excellent cutting quality



- Special cutting-edge serration causes double compression
- Reliable separation of fibre fraying on workpiece edges
- Extremely sharp cutting edges

WEAR AND TEAR

Maximum tool life



OptiMill®-Composite-Speed-Plus

OptiMill®-Composite-Speed

- High cutting stability due to reinforced cutting wedge
- Optimised groove profile and double point thinning for better dust removal
- Improved coating adhesion properties

OptiMill®-Composite-Speed-Plus

Uncoated



Performance Line:
High-performance tools, broad field of application, greater productivity in series manufacturing



NEW TOOL DESIGN FOR MORE PRODUCTIVITY

Compared to previous router tools, the OptiMill-Composite-Speed-Plus markedly improves quiet running and increases tool life.

NEW



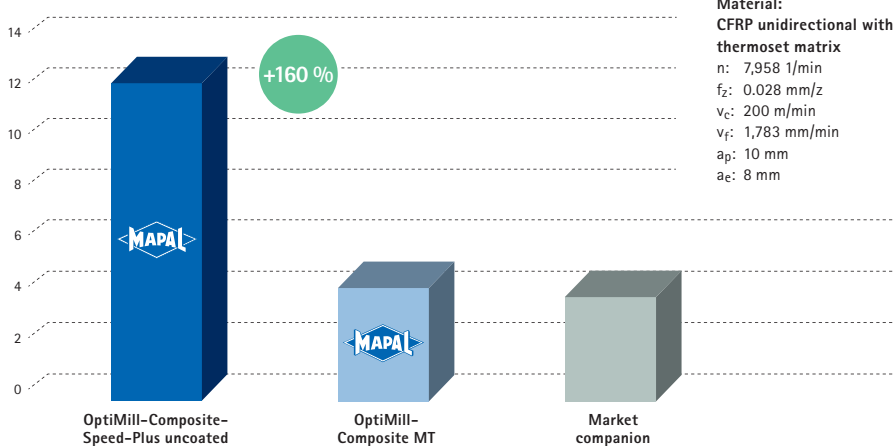
OptiMill-Composite MT | Router tools

Increased productivity



OptiMill-Composite-Speed-Plus, uncoated

COMPARISON TOOL LIFE [m]



AT A GLANCE

- First choice in unfavourable process conditions
- Extremely sharp cutting edge for optimum cutting quality
- Ideal for workpiece material with low abrasiveness

OptiMill®-Composite-Speed-Plus

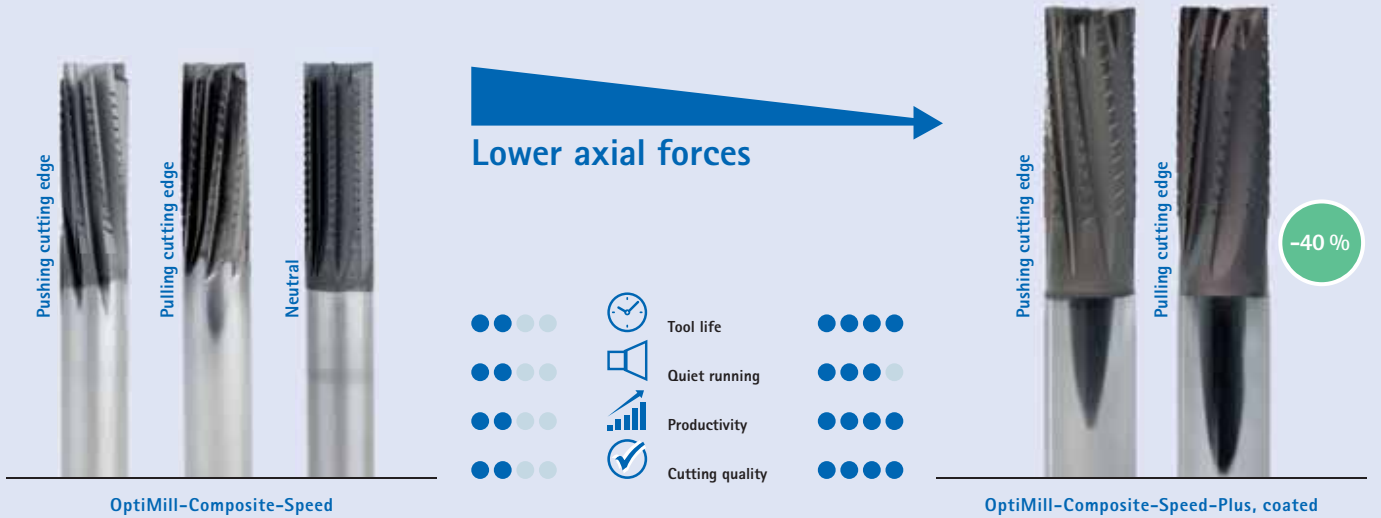
Coated



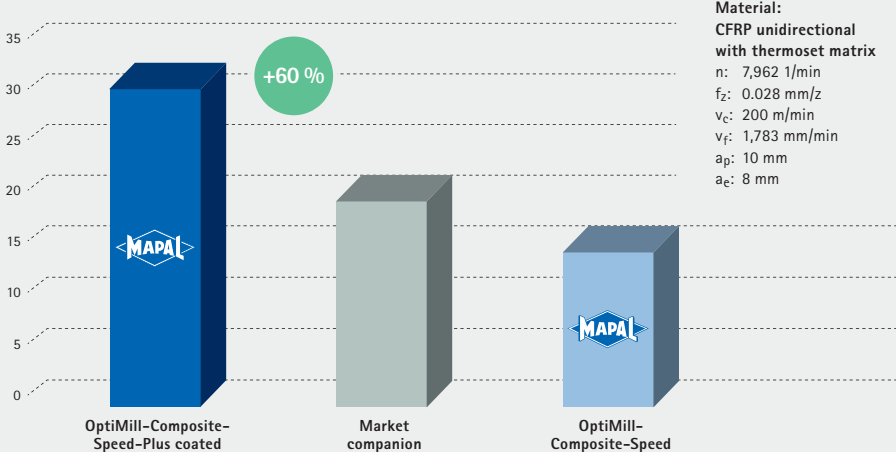
Expert Line:
Specialist tools for selected applications,
maximum precision and productivity

FURTHER DEVELOPMENT REDUCES AXIAL FORCES

Axial forces for the OptiMill-Composite-Speed-Plus are reduced by 40 percent compared to the OptiMill-Composite-Speed. A neutral series is not required for this reason.



COMPARISON TOOL LIFE [m]



Material:
CFRP unidirectional
with thermoset matrix
n: 7,962 1/min
f_z: 0.028 mm/z
v_c: 200 m/min
v_f: 1,783 mm/min
a_p: 10 mm
a_e: 8 mm

AT A GLANCE

- First choice in good process conditions
- Even MAPAL uniform diamond coating thickness distribution for increased process reliability
- Increased coating thickness for maximum tool life
- Highest productivity

OptiMill®-Composite-Speed-Plus

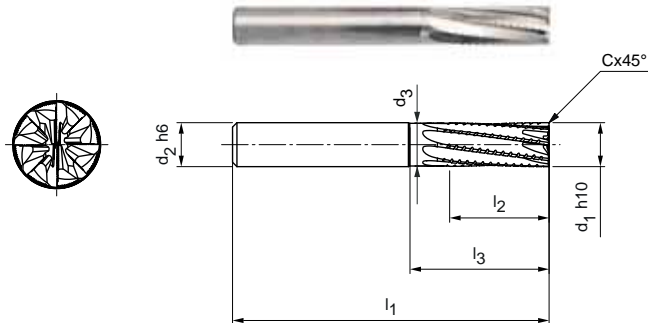
Shoulder milling cutter, uncoated, design with pulling cutting edge
SCM982

Design:

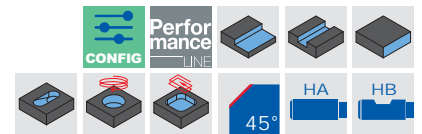
Diameter of milling cutter: 4.00 - 20.00 mm
Cutting material: HU610
Number of cutting edges: 8
Helix angle: 8°
Special features: Without coating, extremely sharp cutting edge

Application:

Roughing and finishing of CFRP in one machining step. Pulling cutting edge for better removal of the chips/dust (e.g. on milling pockets and slots). Particularly suitable for difficult to machine surface layers (e.g. UD or copper mesh) to prevent delamination on the lower edge of the part.



| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| N | 1.1 | 1.2 | 1.3 | 1.4 | 2.1 | 2.2 | 2.3 | 3.1 | 3.2 | 4.1 | 4.2 | 4.3 | C | 1.1 | 1.2 | 1.3 | 2.1 | 3.1 | 4.1 | 4.2 | 5.1 | 5.2 | 5.3 | |
| | | | | | | | | | | | | | | | | | | | | | | | | |



Preferred series available from stock

| Dimensions | | | | | | | z | Specification | Order no. |
|--------------------|-------------------|----------------|----------------|----------------|----------------|-------|---|-------------------------------|-----------|
| d ₁ h10 | d ₂ h6 | d ₃ | l ₁ | l ₂ | l ₃ | Cx45° | | | |
| 4,00 | 6 | 3,90 | 57 | 11 | - | 0,08 | 8 | SCM982-0400Z08R-F0008HA-HU610 | 31237353 |
| 5,00 | 6 | 4,90 | 57 | 13 | - | 0,10 | 8 | SCM982-0500Z08R-F0010HA-HU610 | 31237354 |
| 6,00 | 6 | 5,80 | 57 | 13 | 19 | 0,12 | 8 | SCM982-0600Z08R-F0012HA-HU610 | 31237355 |
| 6,00 | 6 | 5,80 | 65 | 21 | 27 | 0,12 | 8 | SCM982-0600Z08R-F0012HA-HU610 | 31237356 |
| 8,00 | 8 | 7,80 | 63 | 19 | 25 | 0,16 | 8 | SCM982-0800Z08R-F0016HA-HU610 | 31237357 |
| 8,00 | 8 | 7,80 | 70 | 22 | 32 | 0,16 | 8 | SCM982-0800Z08R-F0016HA-HU610 | 31237358 |
| 10,00 | 10 | 9,70 | 72 | 22 | 30 | 0,20 | 8 | SCM982-1000Z08R-F0020HA-HU610 | 31237359 |
| 12,00 | 12 | 11,60 | 83 | 26 | 36 | 0,24 | 8 | SCM982-1200Z08R-F0024HA-HU610 | 31237380 |
| 16,00 | 16 | 15,50 | 92 | 32 | 42 | 0,32 | 8 | SCM982-1600Z08R-F0032HA-HU610 | 31237381 |

Available on request

| | | | | | | | | | |
|-------|----|-------|-----|----|----|------|---|-------------------------------|----------|
| 20,00 | 20 | 19,40 | 104 | 38 | 52 | 0,40 | 8 | SCM982-2000Z08R-F0040HA-HU610 | 31237382 |
|-------|----|-------|-----|----|----|------|---|-------------------------------|----------|

Configurable features



Shank form:
Shank form: HB



Specification:

SCM982-0400Z08R-F0008[shank form]-HU610

Example:

SCM982-0400Z08R-F0008HB-HU610

Shank form HB

Dimensions in mm.

For cutting data recommendation, see pages 10/11.

Special designs and other coatings available upon request.

OptiMill®-Composite-Speed-Plus

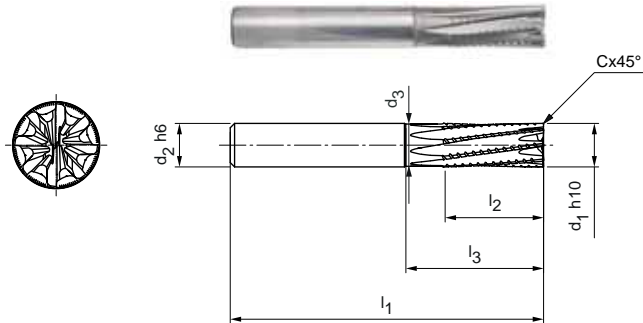
Shoulder milling cutter, uncoated, design with pushing cutting edge
SCM992

Design:

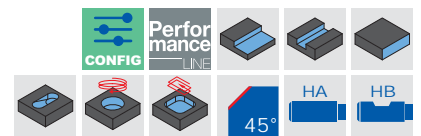
Diameter of milling cutter: 4.00 - 20.00 mm
Cutting material: HU610
Number of cutting edges: 8
Helix angle: -8°
Special features: Without coating, extremely sharp cutting edge

Application:

Roughing and finishing of CFRP in one machining step. Pushing cutting edge, where the material is pressed onto the base (e.g. very suitable for vacuum clamping). Particularly suitable for difficult to machine surface layers (e.g. UD or copper mesh) to prevent delamination on the upper edge of the part.



| | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| N | 1.1 | 1.2 | 1.3 | 1.4 | 2.1 | 2.2 | 2.3 | 3.1 | 3.2 | 4.1 | 4.2 | 4.3 | C | 1.1 | 1.2 | 1.3 | 2.1 | 3.1 | 4.1 | 4.2 | 5.1 | 5.2 | 5.3 |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|




Preferred series available from stock

| Dimensions | | | | | | | z | Specification | Order no. |
|------------|-------|-------|----|----|----|-------|---|-------------------------------|-----------|
| d1 h10 | d2 h6 | d3 | l1 | l2 | l3 | Cx45° | | | |
| 4,00 | 6 | 3,90 | 57 | 11 | - | 0,08 | 8 | SCM992-0400Z08R-F0008HA-HU610 | 31242585 |
| 5,00 | 6 | 4,90 | 57 | 13 | - | 0,10 | 8 | SCM992-0500Z08R-F0010HA-HU610 | 31242586 |
| 6,00 | 6 | 5,80 | 57 | 13 | 19 | 0,12 | 8 | SCM992-0600Z08R-F0012HA-HU610 | 31242587 |
| 6,00 | 6 | 5,80 | 65 | 21 | 27 | 0,12 | 8 | SCM992-0600Z08R-F0012HA-HU610 | 31242588 |
| 8,00 | 8 | 7,80 | 63 | 19 | 25 | 0,16 | 8 | SCM992-0800Z08R-F0016HA-HU610 | 31242589 |
| 8,00 | 8 | 7,80 | 70 | 22 | 32 | 0,16 | 8 | SCM992-0800Z08R-F0016HA-HU610 | 31242590 |
| 10,00 | 10 | 9,70 | 72 | 22 | 30 | 0,20 | 8 | SCM992-1000Z08R-F0020HA-HU610 | 31242591 |
| 12,00 | 12 | 11,60 | 83 | 26 | 36 | 0,24 | 8 | SCM992-1200Z08R-F0024HA-HU610 | 31242592 |
| 16,00 | 16 | 15,50 | 92 | 32 | 42 | 0,32 | 8 | SCM992-1600Z08R-F0032HA-HU610 | 31242593 |


Available on request

| | | | | | | | | | |
|-------|----|-------|-----|----|----|------|---|-------------------------------|----------|
| 20,00 | 20 | 19,40 | 104 | 38 | 52 | 0,40 | 8 | SCM992-2000Z08R-F0040HA-HU610 | 31242594 |
|-------|----|-------|-----|----|----|------|---|-------------------------------|----------|

Configurable features



Shank form:
Shank form: HB



Specification:
SCM992-0400Z08R-F0008[shank form]-HU610

Example:

SCM992-0400Z08R-F0008HB-HU610

Shank form HB

Dimensions in mm.

For cutting data recommendation, see pages 10/11.

Special designs and other coatings available upon request.

OptiMill®-Composite-Speed-Plus

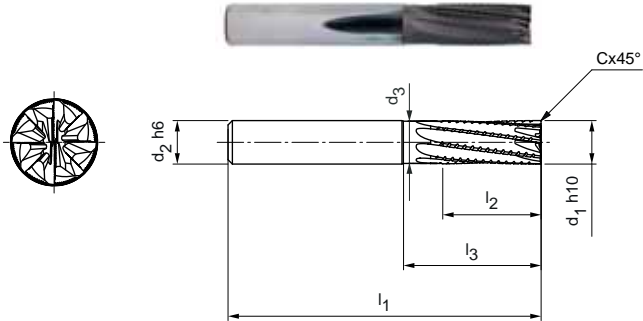
Shoulder milling cutter, coated, design with pulling cutting edge
SCM980, follow-up product of SCM460

Design:

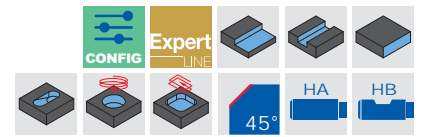
Diameter of milling cutter: 4.00 - 20.00 mm
Cutting material: HC633
Number of cutting edges: 8
Helix angle: 8°
Special features: Diamond coating

Application:

Roughing and finishing of CFRP in one machining step. Pulling cutting edge for better removal of the chips/dust (e.g. on milling pockets and slots). Particularly suitable for difficult to machine surface layers (e.g. UD or copper mesh) to prevent delamination on the lower edge of the part.



| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| N | 1.1 | 1.2 | 1.3 | 1.4 | 2.1 | 2.2 | 2.3 | 3.1 | 3.2 | 4.1 | 4.2 | 4.3 | C | 1.1 | 1.2 | 1.3 | 2.1 | 3.1 | 4.1 | 4.2 | 5.1 | 5.2 | 5.3 | |
| | | | | | | | | | | | | | | | | | | | | | | | | |




Preferred series available from stock

| Dimensions | | | | | | | z | Specification | Order no. |
|------------|-------|-------|----|----|----|-------|---|-------------------------------|-----------|
| d1 h10 | d2 h6 | d3 | l1 | l2 | l3 | Cx45° | | | |
| 4,00 | 6 | 3,90 | 57 | 11 | - | 0,08 | 8 | SCM980-0400Z08R-F0008HA-HC633 | 31223245 |
| 5,00 | 6 | 4,90 | 57 | 13 | - | 0,10 | 8 | SCM980-0500Z08R-F0010HA-HC633 | 31223246 |
| 6,00 | 6 | 5,80 | 57 | 13 | 19 | 0,12 | 8 | SCM980-0600Z08R-F0012HA-HC633 | 31223247 |
| 6,00 | 6 | 5,80 | 65 | 21 | 27 | 0,12 | 8 | SCM980-0600Z08R-F0012HA-HC633 | 31223248 |
| 8,00 | 8 | 7,80 | 63 | 19 | 25 | 0,16 | 8 | SCM980-0800Z08R-F0016HA-HC633 | 31223249 |
| 8,00 | 8 | 7,80 | 70 | 22 | 32 | 0,16 | 8 | SCM980-0800Z08R-F0016HA-HC633 | 31223260 |
| 10,00 | 10 | 9,70 | 72 | 22 | 30 | 0,20 | 8 | SCM980-1000Z08R-F0020HA-HC633 | 31223261 |
| 12,00 | 12 | 11,60 | 83 | 26 | 36 | 0,24 | 8 | SCM980-1200Z08R-F0024HA-HC633 | 31223262 |
| 16,00 | 16 | 15,50 | 92 | 32 | 42 | 0,32 | 8 | SCM980-1600Z08R-F0032HA-HC633 | 31223263 |


Available on request

| | | | | | | | | | |
|-------|----|-------|-----|----|----|------|---|-------------------------------|----------|
| 20,00 | 20 | 19,40 | 104 | 38 | 52 | 0,40 | 8 | SCM980-2000Z08R-F0040HA-HC633 | 31223264 |
|-------|----|-------|-----|----|----|------|---|-------------------------------|----------|

Configurable features



Shank form:
Shank form: HB



Specification:
SCM980-0400Z08R-F0008[shank form]-HC633

Example:

SCM980-0400Z08R-F0008**HB**-HC633

Shank form HB

Dimensions in mm.

For cutting data recommendation, see pages 10/11.

Special designs and other coatings available upon request.

OptiMill®-Composite-Speed-Plus

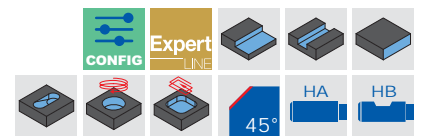
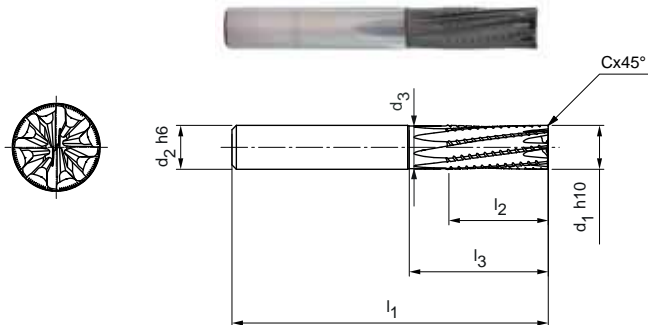
Shoulder milling cutter, coated, design with pushing cutting edge
SCM990, follow-up product of SCM470

Design:

Diameter of milling cutter: 4.00 - 20.00 mm
Cutting material: HC633
Number of cutting edges: 8
Helix angle: -8°
Special features: Diamond coating

Application:

Roughing and finishing of CFRP in one machining step. Pushing cutting edge, where the material is pressed onto the base (e.g. very suitable for vacuum clamping). Particularly suitable for difficult to machine surface layers (e.g. UD or copper mesh) to prevent delamination on the upper edge of the part.



Preferred series available from stock

| Dimensions | | | | | | | z | Specification | Order no. |
|------------|-------|-------|----|----|----|-------|---|-------------------------------|-----------|
| d1 h10 | d2 h6 | d3 | l1 | l2 | l3 | Cx45° | | | |
| 4,00 | 6 | 3,90 | 57 | 11 | - | 0,08 | 8 | SCM990-0400Z08R-F0008HA-HC633 | 31223265 |
| 5,00 | 6 | 4,90 | 57 | 13 | - | 0,10 | 8 | SCM990-0500Z08R-F0010HA-HC633 | 31223266 |
| 6,00 | 6 | 5,80 | 57 | 13 | 19 | 0,12 | 8 | SCM990-0600Z08R-F0012HA-HC633 | 31223267 |
| 6,00 | 6 | 5,80 | 65 | 21 | 27 | 0,12 | 8 | SCM990-0600Z08R-F0012HA-HC633 | 31223268 |
| 8,00 | 8 | 7,80 | 63 | 19 | 25 | 0,16 | 8 | SCM990-0800Z08R-F0016HA-HC633 | 31223269 |
| 8,00 | 8 | 7,80 | 70 | 22 | 32 | 0,16 | 8 | SCM990-0800Z08R-F0016HA-HC633 | 31223270 |
| 10,00 | 10 | 9,70 | 72 | 22 | 30 | 0,20 | 8 | SCM990-1000Z08R-F0020HA-HC633 | 31223271 |
| 12,00 | 12 | 11,60 | 83 | 26 | 36 | 0,24 | 8 | SCM990-1200Z08R-F0024HA-HC633 | 31223272 |
| 16,00 | 16 | 15,50 | 92 | 32 | 42 | 0,32 | 8 | SCM990-1600Z08R-F0032HA-HC633 | 31223273 |

Available on request

| | | | | | | | | | |
|-------|----|-------|-----|----|----|------|---|-------------------------------|----------|
| 20,00 | 20 | 19,40 | 104 | 38 | 52 | 0,40 | 8 | SCM990-2000Z08R-F0040HA-HC633 | 31223274 |
|-------|----|-------|-----|----|----|------|---|-------------------------------|----------|

Configurable features

Shank form:
Shank form: HB

Specification:
SCM990-0400Z08R-F0008[shank form]-HC633

Example:

SCM990-0400Z08R-F0008**HB**-HC633

Shank form HB

Dimensions in mm.

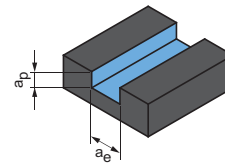
For cutting data recommendation, see pages 10/11.

Special designs and other coatings available upon request.

Cutting data recommendations for shoulder milling cutters

Feed and cutting speed

Groove milling



$$a_p = 1 \times D$$

$$a_e = 1 \times D$$

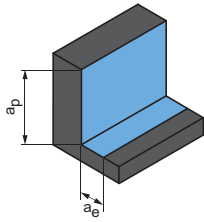
OptiMill-Composite-Speed-Plus, uncoated | SCM982, 992

| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cooling | | | v_c [m/min] | f_z [mm] | | | | | | | |
|---------------------|--------------------|--|---------|-----|-----|------------------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|
| | | | MQL/Air | Dry | KSS | | Diameter of milling cutter [mm] | | | | | | | |
| | | | | | | | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 16.00 | 20.00 | |
| N N4 | N4.1 | Plastic, thermoplastics | ✓ | ✓ | ✓ | 125 | | | | | | | | |
| | N4.2 | Plastic, duroplastics | ✓ | ✓ | ✓ | | 0.020 | 0.029 | 0.038 | 0.045 | 0.052 | 0.063 | 0.072 | |
| | N4.3 | Plastic, foam materials | ✓ | ✓ | | | | | | | | | | |
| C C1 C2 C4 | C1.1 | Plastic range, reinforced with aramid fibre (AFK) | ✓ | ✓ | ✓ | 120 | | | | | | | | |
| | C1.2 | Plastic range (duroplastic), CFK/GFK | ✓ | ✓ | ✓ | | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 | |
| | C1.3 | Plastic range (thermoplastic), CFK/GFK | ✓ | ✓ | ✓ | | 80 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 |
| | C2.1 | Carbon range, reinforced with carbon fibre (CFC) | ✓ | ✓ | ✓ | 120 | 0.018 | 0.023 | 0.027 | 0.031 | 0.033 | 0.037 | 0.038 | |
| | C4.1 | Sandwich construction, honeycomb core (Honeycomb) | ✓ | ✓ | | 165 | 0.012 | 0.015 | 0.017 | 0.019 | 0.021 | 0.023 | 0.024 | |
| | C4.2 | Sandwich construction, foam core | ✓ | ✓ | | 125 | 0.019 | 0.024 | 0.028 | 0.032 | 0.035 | 0.039 | 0.041 | |

OptiMill-Composite-Speed-Plus, coated | SCM980, 990

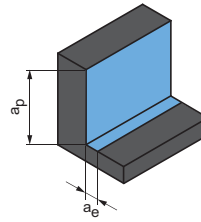
| MMG* | Workpiece material | Strength/hardness [N/mm ²] [HRC] | Cooling | | | v_c [m/min] | f_z [mm] | | | | | | | |
|---------------------|--------------------|--|---------|-----|-----|------------------|---------------------------------|-------|-------|-------|-------|-------|-------|-------|
| | | | MQL/Air | Dry | KSS | | Diameter of milling cutter [mm] | | | | | | | |
| | | | | | | | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 16.00 | 20.00 | |
| C C1 C2 C4 | C1.1 | Plastic range, reinforced with aramid fibre (AFK) | ✓ | ✓ | ✓ | 145 | | | | | | | | |
| | C1.2 | Plastic range (duroplastic), CFK/GFK | ✓ | ✓ | ✓ | | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 | |
| | C1.3 | Plastic range (thermoplastic), CFK/GFK | ✓ | ✓ | ✓ | | 100 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 |
| | C2.1 | Carbon range, reinforced with carbon fibre (CFC) | ✓ | ✓ | ✓ | 145 | 0.018 | 0.023 | 0.027 | 0.031 | 0.033 | 0.037 | 0.038 | |
| | C4.1 | Sandwich construction, honeycomb core (Honeycomb) | ✓ | ✓ | | 195 | 0.012 | 0.015 | 0.017 | 0.019 | 0.021 | 0.023 | 0.024 | |
| | C4.2 | Sandwich construction, foam core | ✓ | ✓ | | 150 | 0.019 | 0.024 | 0.028 | 0.032 | 0.035 | 0.039 | 0.041 | |

Roughing



$a_p = 1.5 \times D$
 $a_e = 0.25 \times D$

Finishing



$a_p = 1.5 \times D$
 $a_e = 0.1 \times D$

| | v_c [m/min] | f_z [mm] | | | | | | | v_c [m/min] | f_z [mm] | | | | | | |
|--|------------------|---------------------------------|-------|-------|-------|-------|-------|-------|------------------|---------------------------------|-------|-------|-------|-------|-------|-------|
| | | Diameter of milling cutter [mm] | | | | | | | | Diameter of milling cutter [mm] | | | | | | |
| | | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 16.00 | 20.00 | | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 16.00 | 20.00 |
| | 190 | 0.029 | 0.041 | 0.053 | 0.063 | 0.072 | 0.089 | 0.101 | 230 | 0.040 | 0.057 | 0.073 | 0.088 | 0.101 | 0.123 | 0.141 |
| | 200 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 | 295 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 |
| | 135 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 | 195 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 |
| | 200 | 0.018 | 0.023 | 0.027 | 0.031 | 0.033 | 0.037 | 0.038 | 295 | 0.018 | 0.023 | 0.027 | 0.031 | 0.033 | 0.037 | 0.038 |
| | 270 | 0.012 | 0.015 | 0.017 | 0.019 | 0.021 | 0.023 | 0.024 | 395 | 0.012 | 0.015 | 0.017 | 0.019 | 0.021 | 0.023 | 0.024 |
| | 200 | 0.019 | 0.024 | 0.028 | 0.032 | 0.035 | 0.039 | 0.041 | 300 | 0.019 | 0.024 | 0.028 | 0.032 | 0.035 | 0.039 | 0.041 |

| | v_c [m/min] | f_z [mm] | | | | | | | v_c [m/min] | f_z [mm] | | | | | | |
|--|------------------|---------------------------------|-------|-------|-------|-------|-------|-------|------------------|---------------------------------|-------|-------|-------|-------|-------|-------|
| | | Diameter of milling cutter [mm] | | | | | | | | Diameter of milling cutter [mm] | | | | | | |
| | | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 16.00 | 20.00 | | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 16.00 | 20.00 |
| | 240 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 | 355 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 |
| | 160 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 | 235 | 0.021 | 0.026 | 0.031 | 0.035 | 0.038 | 0.042 | 0.043 |
| | 240 | 0.018 | 0.023 | 0.027 | 0.031 | 0.033 | 0.037 | 0.038 | 355 | 0.018 | 0.023 | 0.027 | 0.031 | 0.033 | 0.037 | 0.038 |
| | 325 | 0.012 | 0.015 | 0.017 | 0.019 | 0.021 | 0.023 | 0.024 | 480 | 0.012 | 0.015 | 0.017 | 0.019 | 0.021 | 0.023 | 0.024 |
| | 245 | 0.019 | 0.024 | 0.028 | 0.032 | 0.035 | 0.039 | 0.041 | 360 | 0.019 | 0.024 | 0.028 | 0.032 | 0.035 | 0.039 | 0.041 |

The specified machining values are guide values.
 The optimum data for the respective machining task should be determined during the test or machining.



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