

Ceramic end mills: EC2008 for HRSA

SiAlON end mills with four and six flutes and five-flute ball end mills; complete item codes, dimensions, designs and application images.



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Tools for demanding turbine and engine components

Helical ceramic tools for heat-resistant superalloys

Heat-resistant superalloys (HRSA) combine high temperature resistance with requirements for functionality, low component weight, durability and efficiency. They are used in aerospace and automotive applications, among others. Nickel alloys such as Inconel are typical materials for turbines and jet engines; their heat resistance also makes them demanding to machine. EHWA has developed helical ceramic end mills for these applications.

The complete range comprises square end mills with a corner radius and four or six flutes, together with five-flute ball end mills. Grade EC2008 uses SiAlON ceramic. Tool geometry, mounting interface and cutting conditions are selected for the particular HRSA component.



EHWA ceramic end mills: three tool designs.



Ceramic end mills with different head shapes.



Aircraft as an aerospace application illustration.



Turbine rotor as an application image.



Aircraft-engine assembly as an application image.



Aircraft-engine component with tooling fixtures as an application image.



Aircraft engine as an application image.

EC2008: SiAlON ceramic and thermal properties

Feature	EHWA specification
Grade	EC2008
Material	SiAlON
Colour	Dark Olive Green
Workpiece material	HRSA (Heat-Resistant Super Alloy)

SiAlON ceramics are based on silicon (Si), aluminium (Al), oxygen (O) and nitrogen (N). The EHWA material description highlights high heat resistance and low thermal conductivity. These thermal

properties support tool selection for demanding machining conditions involving high temperatures and pressure loads, such as turbine and automotive-engine components.

EC2008 is designed for HRSA machining. The large helix angle is intended to reduce cutting load and provide strong cutting performance. The thermal design is matched to the tool and process.



Ceramic end mill machining a component.



Tool engagement during machining.

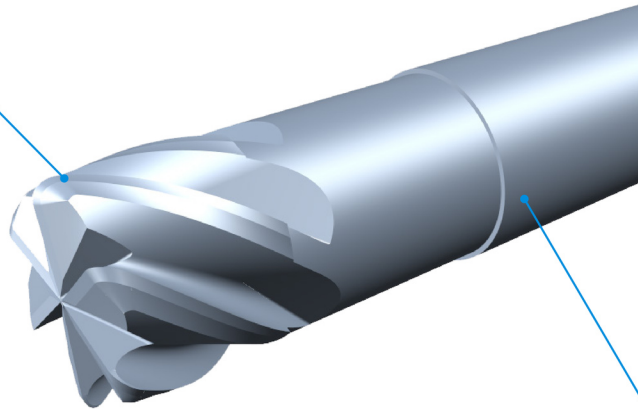


Ceramic end mills with four, five and six flutes.

Helix angle and ceramic SiAlON grade

Large helix angle

Reduced cutting load
Strong cutting performance



Ceramic SiAlON grade
Designed for HRSA

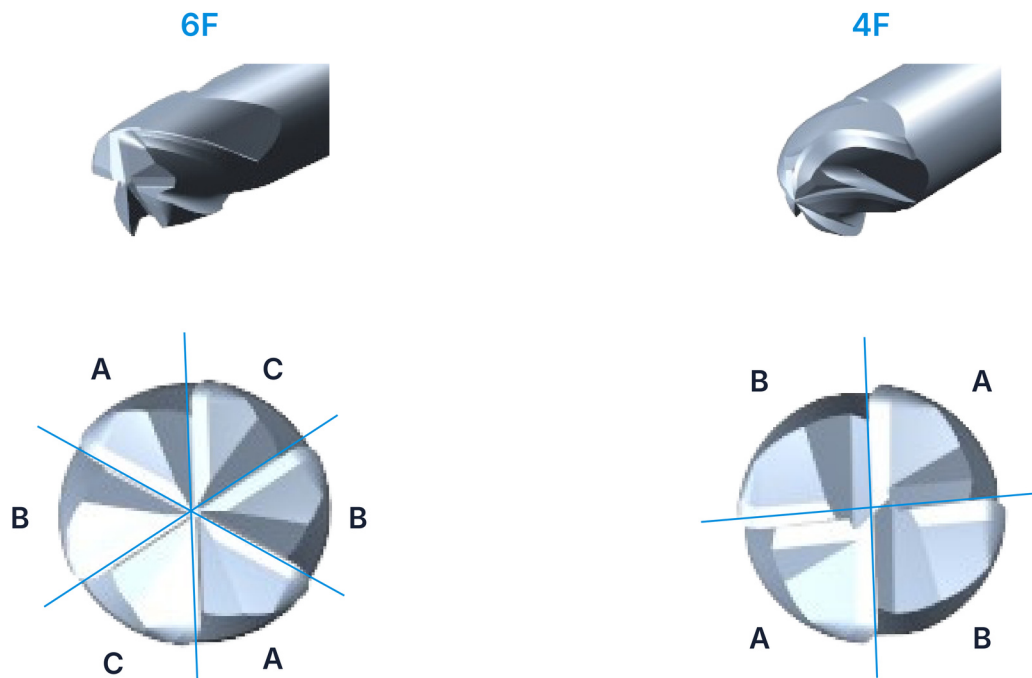
EC2008: SiAlON ceramic for HRSA machining.

Large helix angle and ceramic SiAlON grade for HRSA.

Asymmetric cutting-edge design

The asymmetric cutting-edge design is illustrated for six and four flutes. Perspective and end views show the respective arrangement: A/B/C for 6F and A/B for 4F.

Asymmetric cutting-edge design



6F: A/B/C arrangement · 4F: A/B arrangement

6F and 4F: perspective and end views with asymmetric A/B/C or A/B arrangement.

Item code and dimensional designations

The item code combines material, design and tool dimensions. Example EC ER 100 100 - 080 650 - 10 6F explains its designation blocks.

Ceramic end mills: item-code structure

E: EHWA

T: Tungsten carbide

C: Ceramic



- E** End mill
- B** Ball end mill
- R** Square end mill with corner radius

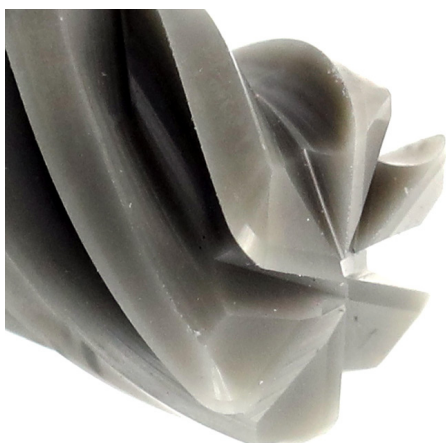
Item code with material, design, tool dimensions and flute count.

Item code: material, design, diameters, cutting and overall length, radius and flute count.

In the manufacturer/material block, E denotes EHWA, T tungsten carbide and C ceramic. In the design block, E denotes an end mill, B a ball end mill and R a square end mill with a corner radius. The remaining blocks identify diameter 1, diameter 2, cutting length, overall length, radius size and number of flutes.

Designation	Meaning
D	Cutting diameter
d	Shank diameter
L	Overall length
L1	Cutting length
L2	Length to the shank transition
DN	Neck diameter
R	Corner radius or ball radius of the relevant design

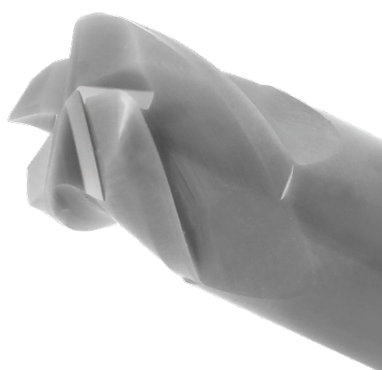
The manufacturer dimension tables do not specify a general unit. Dimensional definitions, units and binding tool dimensions are confirmed against the drawing.



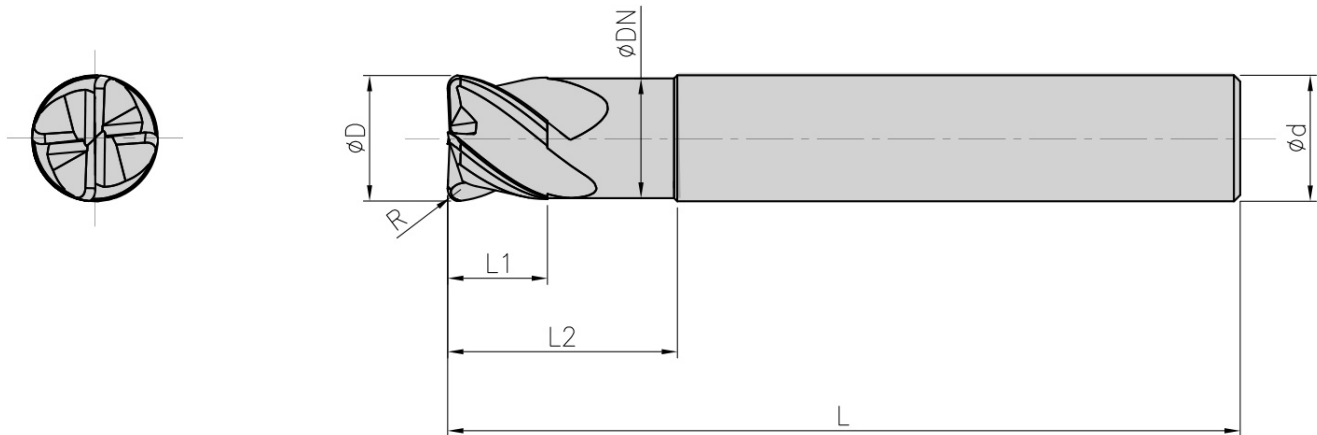
Cutting-edge area of a ceramic end mill.

Four flutes: square end mills with corner radius

Six standard versions are available with the following tool dimensions.



Tool tip of the 4F design.



4F: end and side views with dimensional designations.

Item code	D	d	L	L1	L2	DN	R
ECER 060060 060600 05 4F	6	6	60	6	12	5.8	0.5
ECER 080080 060600 10 4F	8	8	60	6	15	7.7	1.0
ECER 100100 080650 10 4F	10	10	65	8	20	9.7	1.0
ECER 120120 100700 15 4F	12	12	70	10	25	11.5	1.5
ECER 160160 120830 20 4F	16	16	83	12	30	15.5	2.0
ECER 200200 150930 20 4F	20	20	93	15	35	19.5	2.0

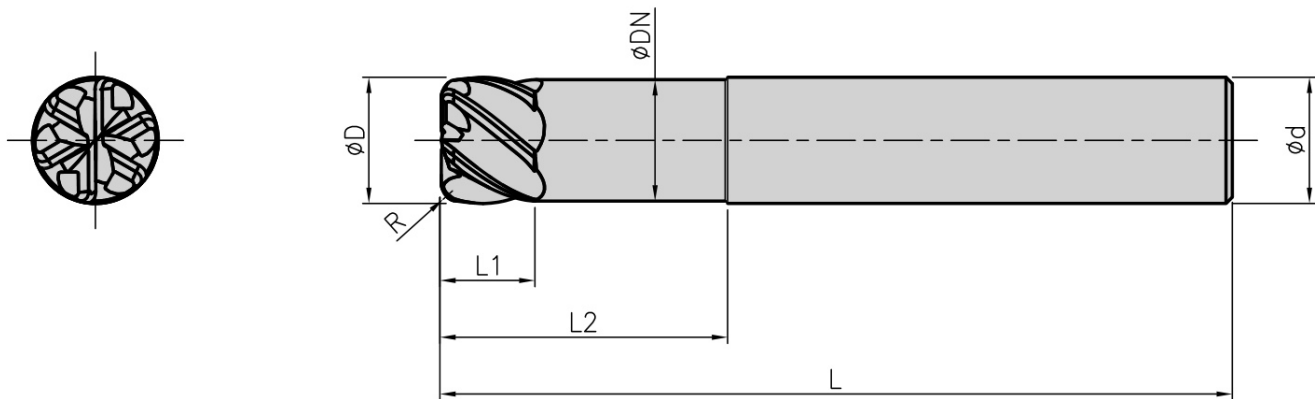
EHWA Standard Square Endmills: R denotes the corner radius of the respective version.

Six flutes: square end mills with corner radius

Six standard versions are available with the following tool dimensions.



Tool tip of the 6F design.



6F: end and side views with dimensional designations.

Item code	D	d	L	L1	L2	DN	R
ECER 060060 060600 05 6F	6	6	60	6	12	5.8	0.5
ECER 080080 060600 10 6F	8	8	60	6	15	7.7	1.0
ECER 100100 080650 10 6F	10	10	65	8	20	9.7	1.0
ECER 120120 100700 15 6F	12	12	70	10	25	11.5	1.5
ECER 160160 120830 20 6F	16	16	83	12	30	15.5	2.0
ECER 200200 150930 20 6F	20	20	93	15	35	19.5	2.0

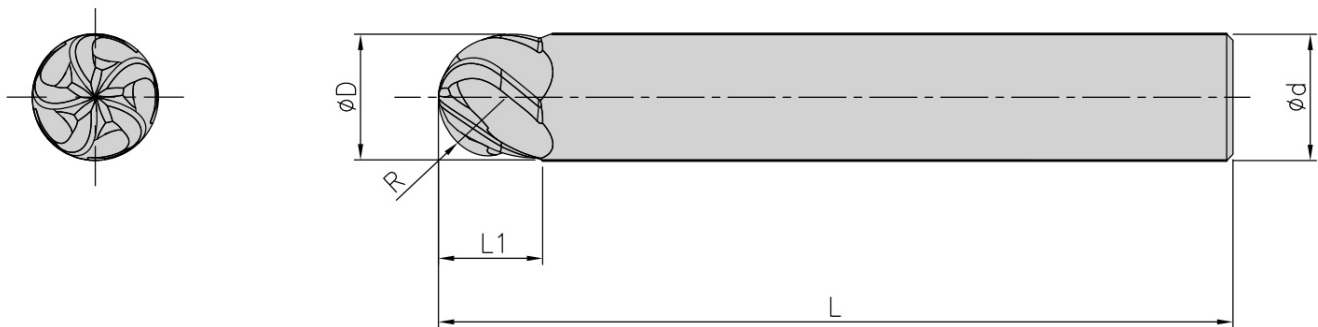
EHWA Standard Square Endmills: R denotes the corner radius of the respective version.

BALL: five-flute ball end mills

Six standard versions are available with the following tool dimensions.



Tool tip of the 5F design.



5F: end and side views with dimensional designations.

Item code	D	d	L	L1	R
ECEB 060060 060600 30 5F	6	6	60	6	3.0
ECEB 080080 060600 40 5F	8	8	60	6	4.0
ECEB 100100 080650 50 5F	10	10	65	8	5.0
ECEB 120120 100700 60 5F	12	12	70	10	6.0
ECEB 160160 120830 80 5F	16	16	83	12	8.0
ECEB 200200 150930 100 5F	20	20	93	15	10.0

EHWA Standard Ball Endmills: the ball end mills have five flutes (5F); R denotes the ball radius.

Adapt flute count and head shape

Flute count and head shape can be adapted. The standard range provides a starting point for the appropriate design. Discuss component geometry, HRSA material, engagement conditions, machine and mounting interface with EHWA Europe to coordinate tool selection.

Select the ceramic tool for your machining process

Specify the component material and condition, machining operation, required geometry and surface, and existing cutting data. Add tool diameter, corner or ball radius, required reach, flute count, machine and mounting interface. EHWA Europe supports selection from the standard range and application-specific modifications.

Technical enquiry to EHWA Europe · Telephone +49 6173 99778-0

Technical basis

EHWA, CERAMIC ENDMILLS, Q250, pages 1-4; manufacturer print date 06/2024. Editorial date of the new German and English editions: 13 October 2026.

General context for SiAlON thermal properties is supported by the [NIST Structural Ceramics Database](#) and the [primary study on SiAlON composites](#). Their material values are not presented as EC2008 specifications.