

TEXTILE INDUSTRY

The Decisive Advantage in
Yarn Production

**Extend your Lead
with Advanced
Ceramics**

Advanced Ceramics for the Textile Industry

CeramTec is a world-leading manufacturer of technical ceramics and is specialised in the development, manufacturing, and sale of parts, components, and products made from ceramic materials. With over a century of developmental and production experience, the company is a global leader in the manufacture of advanced ceramics and engineers these materials for use in a wide variety of applications. The current portfolio comprises well over 10,000 products, components, and parts made from technical ceramics, along with a wide variety of ceramic materials.

At CeramTec we design, develop and manufacture advanced ceramics and assemblies that are used worldwide in a wide range of technology applications. Our technology grants more precision, reliability and efficiency.

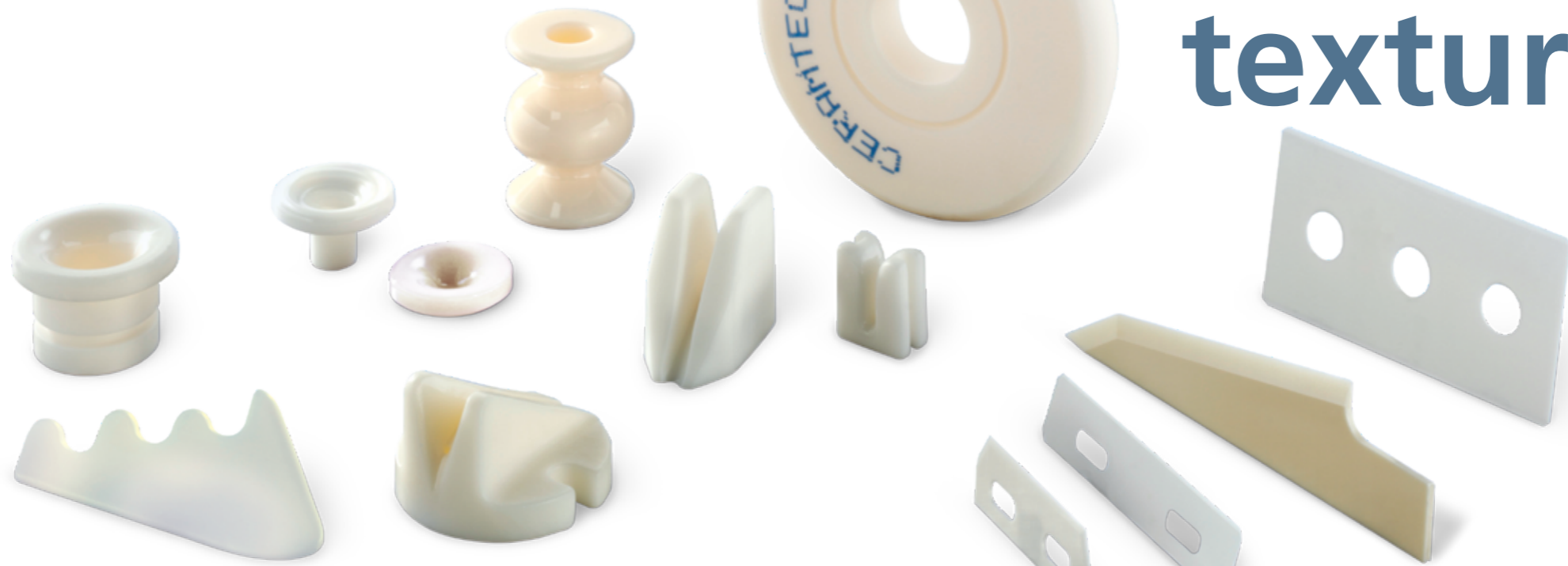
As an established engineering partner, CeramTec provides individual complete solutions and assemblies that are precisely

tailored to meet customer requirements. With its extensive material range and continuously growing production expertise in the field of ceramic components for textile processing, CeramTec offers a comprehensive line of products for textile producers and textile machinery manufacturers.

Innovative, advanced ceramic products from CeramTec open up new dimensions in yarn production and finishing and set the bar when it comes to process reliability, efficiency and speed, not to mention yarn quality, surface finish quality, fiber protection and lifetime. The economical way to bring every thread together.

With production sites and subsidiaries in Europe, America, and Asia, CeramTec is present around the globe as a manufacturer and supplier. The company is headquartered in Plochingen, near Stuttgart.

www.ceramtec-group.com



Intermingling jet plates
Leading disc Navels
 Traverse guides

Eyelets **Knife disc**
Thread guides Oil applicator guides
 Rollers

Working disc

Pig Tails Ceramic cutters

Discs for texturing



Advanced Ceramics for the Texturing Process

Ever since the 1970s, when friction texturing using three spindle texturing units made its breakthrough, solid ceramic friction discs made by CeramTec have demonstrated their superiority in this process. They are extremely effective in the continuous operation of friction texturing. CeramTec solid ceramic friction discs have many decisive advantages when compared with other disc materials.

Guiding discs and knife discs from CeramTec are the benchmark worldwide and will raise the value of your equipment and the quality of your yarn considerably.

Depending on your application we offer four different surface types for working discs: CeramTec-Standard, CeramTec-Standard S, Cerasoft®G and Cerasoft®GX.



Advantages

- Long service life, due to the material's high wear & tear and corrosion resistance
- Even and constant yarn quality from position to position, due to the consistent disc finish
- No detrimental effect from spinning preparations, i.e. free choice of finishing agents
- No damage to friction disc in the event of running yarn at spindle-stop
- Considerable flexibility in speed and titre ranges, also successfully used in microfilament production
- Easy start-up of disc units, particularly at high yarn speeds
- Universal cleaning possibilities: with acids, alkaline solutions, burning at high temperatures or in an ultrasonic bath
- Extremely low build-up of rubbing powder, especially when using Cerasoft®G
- Ceragol – innovative special grooved structure, ideal for texturing spun-dyed filament yarns made of polyester, polyamide and other types of raw materials



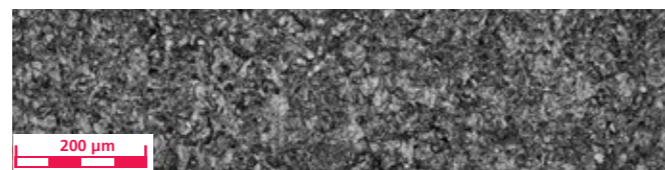
Cerasoft®G – the Worldwide Benchmark

Outstanding results with Cerasoft®G

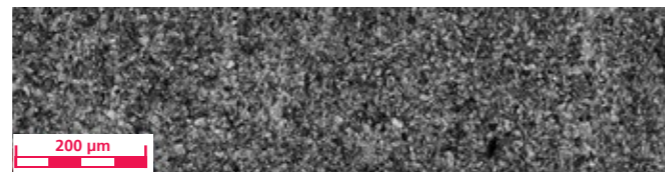
The Cerasoft®G disc with a thickness of 9 mm allows extremely high speeds. At such yarn speeds, the disc and the yarn are running with speed differences on a level at which conventional disc materials (polyurethane, plasma coatings, nickel/diamond) will fail completely, or fail to give a good texture to the yarn.

The development of Cerasoft®G and its outstanding progress is the result of very close cooperation between texturing and preparation agent suppliers, and also between equipment and machine builders.

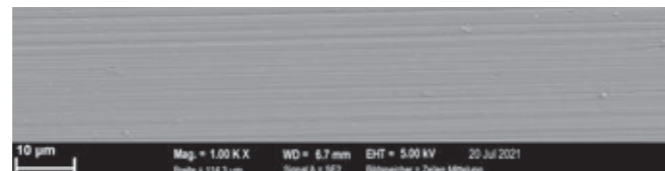
CeramTec high-performance discs are outstandingly well proven, and can be adapted easily for all manufacturers of texturing machines and texturing units.



Surface: Cerasoft®G



Surface: CeramTec-Standard



Surface: Guide disc-polished

Advantages

- Defined yarn path
- Increased efficiency
- Low D/Y ratio possible
- Higher productivity
- Improved twisting
- Yarn count: dtex variable
- Excellent physical yarn properties
- S- and Z-twist with full efficiency
- Plenty of bulk
- Constant yarn tension and low CV

Cerasoft®G vs. PU disc in texturing process Polyester 167f32; 900 m/min		
Unit type	PU	Cerasoft®G
Unit stack	1 / 6 / 1	1 / 7 / 1
D/Y	1.8	1.8
T2 [cN]	52	55
Elongation [%]	21.3	21.5
Tenacity [cN/dtex]	4.98	5.01
Shrinkage [%]	13.1	13.4
Rubbing powder [g/to]	11.7	11.5
Costs per unit [EUR] Working discs (45x12x6 mm)	24	58
Life time	10 - 12 months	7 years or more
Unit costs per year [EUR]	26	8.3
Savings per machine [EUR] (240 positions, for the life time of Cerasoft®G)		42,480 €

Ceragol - Advanced Ceramic Discs for the Texturing Process

New dimensions with a special grooved structure

Ceragol friction discs are universal. The yarn count range includes all standard counts as well as microfilament yarns.

CeramTec is continuing the success of its globally popular and well-proven Cerasoft®G working discs for texturing with the innovative Ceragol discs made from advanced ceramics.

With Ceragol, the latest generation of friction discs, CeramTec opens new dimensions of texturing.

Ceragol friction discs are available in both models, "Cerasoft®G" and "Standard". They can be used for texturing dull and semi-dull yarns as well as for spun dyed yarns.



Dtex 50f34 spun-dyed black PA.6, operated on Guidici TG30, 96 spindles		
	Ceragol	DIA coated disc
Yarn count (dtex)		
Elongation (%)	25.5	22.9
Tenacity (cN/tex)	45.2	42.7
Tension T1	22	21
Tension T2	29	25

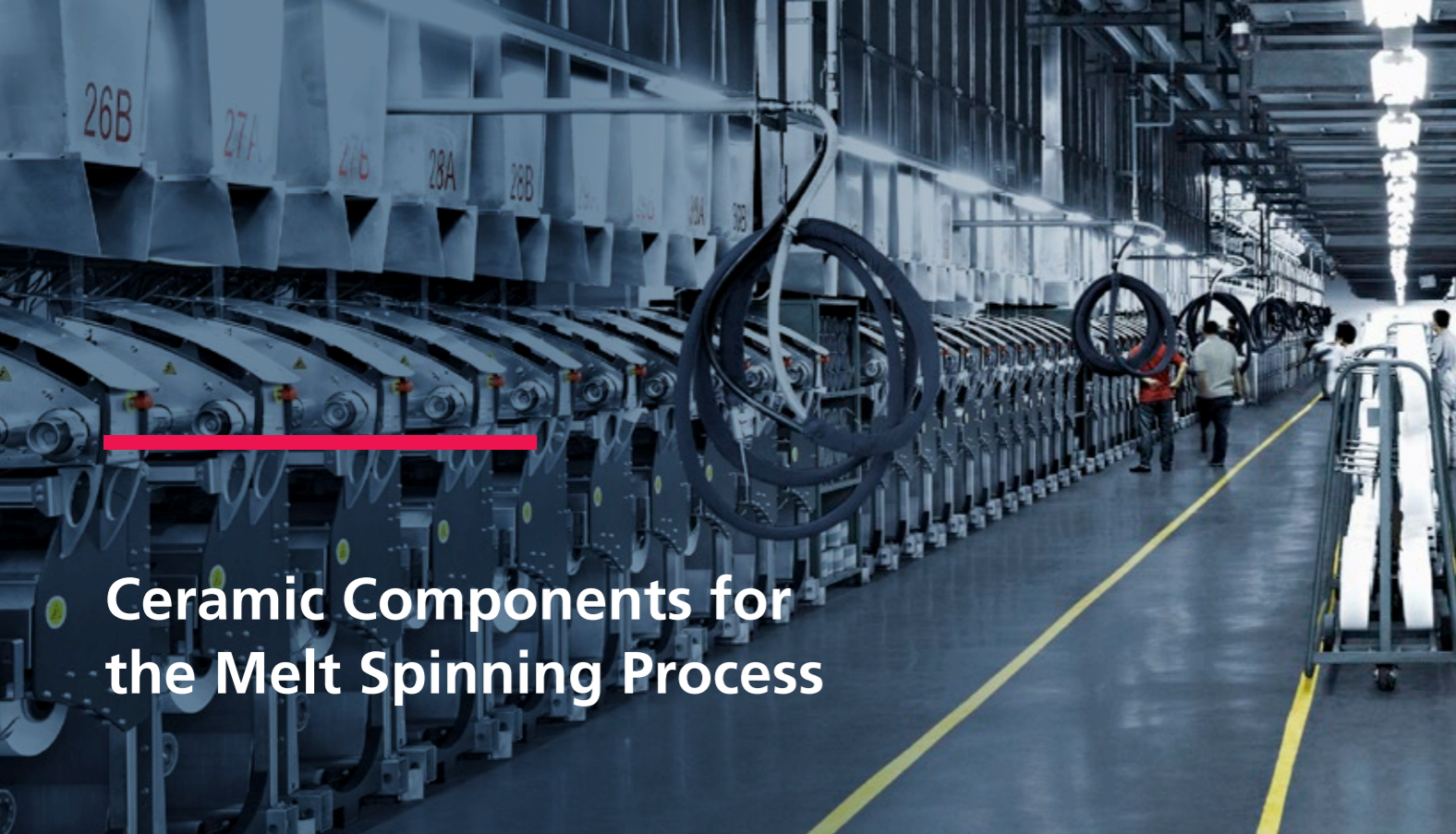
Dtex 22f7 semi-dull PA.6, operated on Guidici TG30, 168 spindles		
	Ceragol	DIA coated disc
Yarn count (dtex)		
Elongation (%)	28.5	28.4
Tenacity (cN/tex)	48.6	48.3
Tension T1	10	10
Tension T2	12	12

Dtex 78f18 PET spun-dyed, operated on Guidici TG30, 168 spindles		
	Ceragol	DIA coated disc
Yarn count (dtex)		
Elongation (%)	30	30
Tenacity (cN/tex)	43	40
Tension T1	32	30
Tension T2	30	22



Advantages

- Reduction of the contact surface from 9 to 6 mm while maintaining the full contact angle
- Low and uniform yarn tension along the thread and from spindle to spindle even after multiple workdays
- Extremely low abrasion especially for spun-dyed yarns
- Significant reduction or complete elimination of the glazing effect
- The yarn remains permanently stable in the unit, what helps to prevent process interruption and yarn breakage
- Ceragol produces uniform and better spun dyed yarn values than diamond-coated friction discs. The achieved results are at the levels of the values of PU-discs, by offering significantly longer lifetime of 8 to 10 years
- Ceragol is ideally appropriated for texturing spun dyed filament yarns made of polyester, polyamide and all other types of raw material, for all pigments and for all types of spin finish even at high application rates



Ceramic Components for the Melt Spinning Process

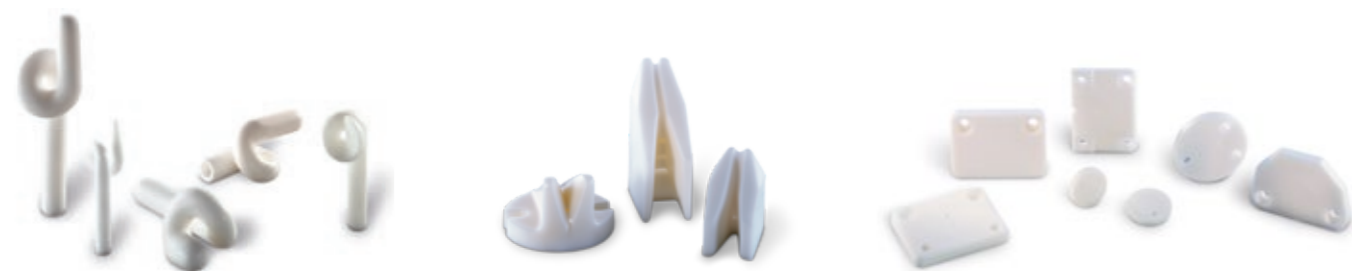
New dimensions featuring Tribofil® and Tribosoft® and superclean material with very high hardness

Tribofil® is our surface finish for yarn guide elements for low-tension applications and for the processing of commonly produced synthetic yarns without any yarn damage. This material has been proven worldwide and is highly rated by the circle of expertise in the industry.

Tribosoft® is an established advanced surface treatment used for processes at low yarn tensions without any yarn damage, having long life cycles on both special yarns and raw materials containing aggressive additives such as spun-dyed yarns (spun-dyed black), CS and bioactive yarns. Tribofil® and Tribosoft® are only available from CeramTec.

Advantages

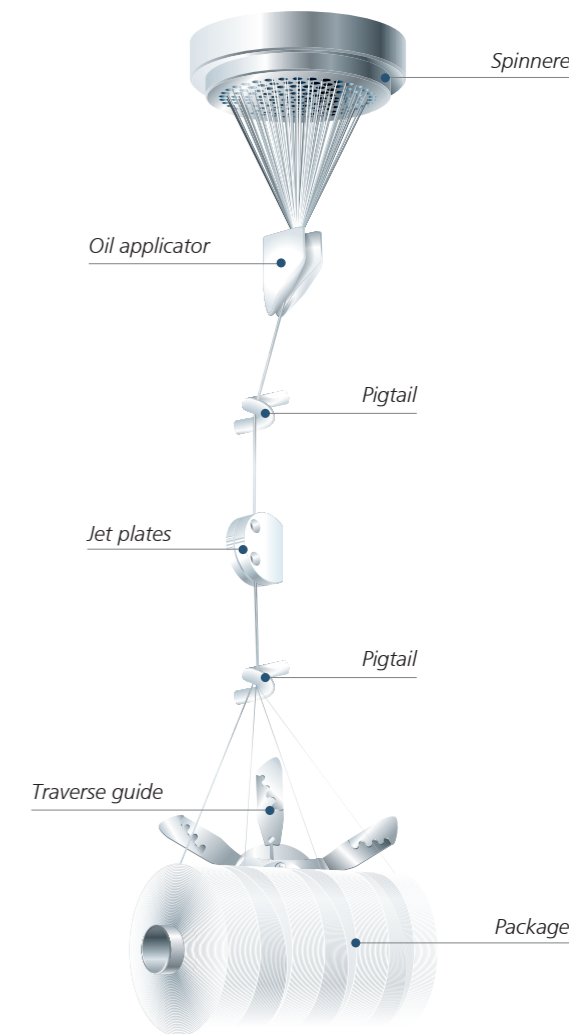
- Lowest possible yarn break rates
- Highest yarn cleanliness
- Low yarn tension
- Excellent package build-up
- High quality and cost efficiency



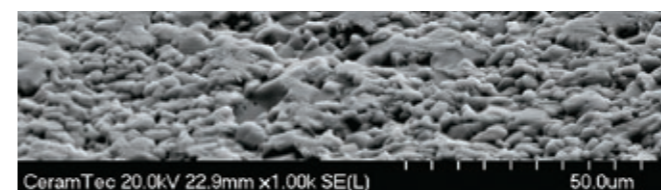
New Dimensions with Tribofil® and Tribosoft®

Different surfaces for customers' applications:

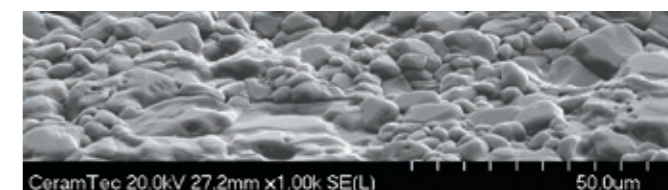
The REM pictures show the different types of ceramic surfaces as used for different kinds of technical processes. New dimensions with Tribofil® and Tribosoft® surface on a material with high purity and very high hardness.



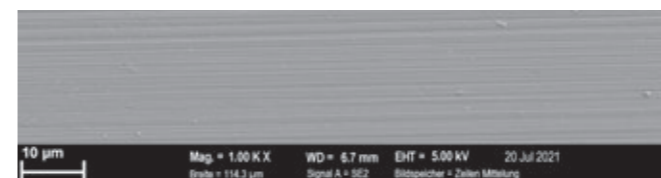
Surface	Ra value [µ] POY 100D/200f	Coefficient of friction
Tribofil®	1.1	0.3
Tribosoft®	< 0.3	0.4
Polished	< 0.3	0.8
As fired	0.75	0.4



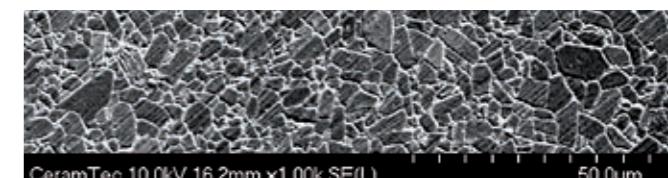
Surface: As fired for POY semidull and bright, e.g. dtex 300 (167) f 32



Surface: Tribofil® for FOY semidull, bright and micro-filaments, e.g. dtex 67 f 128, POY micro-filaments, e.g. dtex 130 (76) f 144



Surface: Polished for wire and glass fiber



Surface: Tribosoft® for spun-dyed (spun-dyed black) and special raw materials, e.g. CS, full dull

Cutters Made from Yttrium Toughened Zirconia

Long lasting cutting with advanced ceramics

Long lifetime, consistently defined cuts, no fiber-squeezing or backlashing of fiber within the cutting angle zone of the shears – some of the many benefits of using advanced ceramics cutting blades in the production process.

For cutting purposes CeramTec has developed special yttrium toughened zirconia ceramics (3Y-TZP). They stand out from other materials with extremely high cutting edge strength and very good bending strength and toughness. The use of 3Y-TZP cutting blades improves efficiency in cutting textile threads, and thus increases profitability.

The number of applications in the textile industry ranges from splicer, suction tube and residual tread shears for winding machines to final thread and side shears for looms. In many machines and applications, cutting blades made of 3Y-TZP are the material of choice and have set a standard.

When cutting PVC-coated polyester fabrics with a weight of 600–700 g/m², the service life is 20 times that of a hard metal knife.

A wide range of technical advantages

The effect of using 3Y-TZP cutting blades is an improvement in the efficiency of cutting textile threads, and thus increases profitability.

The range of applications for ceramic cutters is expanding rapidly. They are now used for textile applications as well as for medical purposes, and also in the food and automotive industry.

Advantages

- Faster cutting rates
- Consistently good cutting quality, e.g. improved strength of spliced connections
- No corrosion
- Smooth running
- Extended maintenance intervals
- Increased life time
- Universal cleaning possibilities using acids, alkaline solutions and organic solvents



Navels for (OE) Open-End Spinning

Worldwide approved navels in various designs

Tried and tested millions of times, navels from CeramTec perform key functions in the spinning boxes of all wellknown rotor spinning machines. CeramTec Navels have a substantial influence on spinning stability, hairiness and twist as well as on the essential nominal specifications of open-end spinning.

Advanced ceramics improve processing stability

The characteristics of technical ceramics made by CeramTec, especially hardness, give high processing stability to the spinning operation. CeramTec's advanced ceramics have repeatedly replaced metals in such applications. The chart demonstrates the hardness of various ceramics compared with various grades of steel.

Advantages

- Good wear and corrosion resistance
- Different variations of material:
 - Ultrapure 99.7% Al₂O₃ ceramics
- Special navels designs:
 - straight notched versions
 - spiral versions
 - crescent
 - shaped notch versions
 - with built-in cross-shaped exit hole
 - various geometries for customer requirements

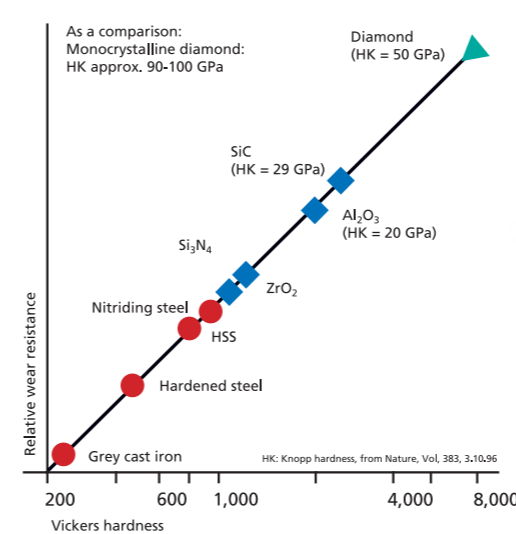
Surface finish:

- high-gloss polish
- various grades for different applications

Precision manufacturing

CeramTec also leads the world in supplying rotor spinning machines with:

- Shoe-type and slotted traverse guides
- Bent navels
- Exit inserts with cross-shaped webs

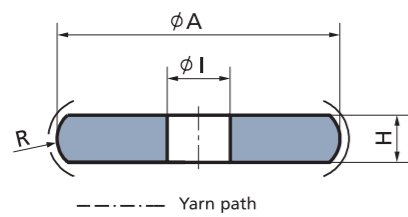


Comparison of hardness of hardened metals and advanced ceramics



Exemplary products & technical details

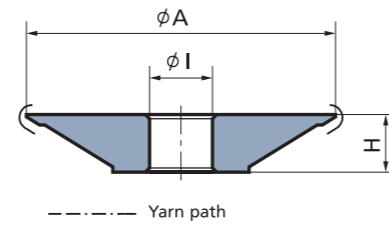
Guiding discs



Shape A

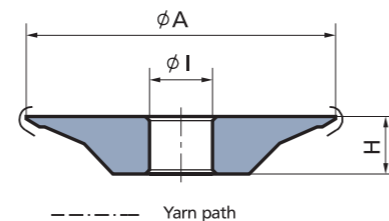
CeramTec ref.no.	Dimensions (mm)				Surface	
	ϕA	ϕI	H	R	Ra (μm)	
38 30 6945 025 01	58	14,45	9	6,2	0,3	polished
38 30 6956 025 00	58	14,45	9	5,5	0,3	polished
38 30 6942 025 05	52	14,45	9	5,5	0,3	polished
38 30 6909 025 00	47,5	14,45	6	3,5	0,3	polished
38 30 6906 025 00	50	14,45	6	3,5	0,3	polished
38 30 6944 025 06	58	12	9	6,2	0,3	polished
38 30 6941 025 00	52	12	9	5,5	0,3	polished
38 30 6901 025 04	49,62	12	6	3,5	0,3	polished
38 30 6939 025 00	46,5	12	6	3,5	0,3	polished
38 30 6920 025 01	45,5	12	6	3,5	0,3	polished
38 30 6920 045 00	45,5	12	6	3	0,3	polished
38 30 6904 025 00	45	12	6	3,5	0,3	polished

Knife discs



Shape A

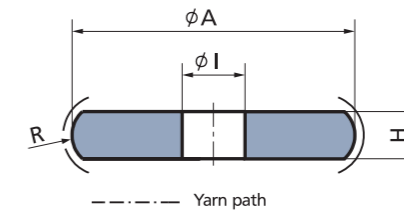
CeramTec ref.no.	Dimensions (mm)				Surface	
	ϕA	ϕI	H	R	Ra (μm)	
38 30 6946 045 04	49	14,45	9	-	0,3	polished
38 30 6941 035 00	49	12	9	-	0,3	polished
38 30 6901 065 09	47,2	12	6	-	0,3	polished
38 30 6901 055 05	43	12	6	-	0,3	polished



Shape B

CeramTec ref.no.	Dimensions (mm)				Surface	
	ϕA	ϕI	H	R	Ra (μm)	
38 30 6946 125 00	54,5	14,45	9	-	0,3	polished
38 30 6946 065 01	48,6	14,45	9	-	0,3	polished
38 30 6946 095 00	46	14,45	9	-	0,3	polished
38 30 6946 105 00	54,5	12	9	-	0,3	polished
38 30 6946 055 08	48,6	12	9	-	0,3	polished
38 30 6946 115 00	46	12	9	-	0,3	polished

Friction discs



CeramTec ref.no.	Dimensions (mm)				Surface	
	ϕA	ϕI	H	R	Ra (μm)	
38 30 6945 006 07	58	14,45	9	6,2	1,1	Cerasoft G
38 30 6954 006 08	53,5	14,45	9	5	0,6	Cerasoft GX
38 30 6942 006 00	52	14,45	9	5,5	1,1	Cerasoft G
38 30 6953 006 02	52	14,45	9	5,5	0,6	Cerasoft GX
38 30 6942 011 00	52	14,45	9	5,5	0,85	ground
38 30 6942 021 00	52	14,45	9	5,5	1,3	ground
38 30 6942 056 00	51,5	14,45	9	5,5	1,1	Cerasoft G
38 30 6942 046 00	51	14,45	9	5,5	1,1	Cerasoft G
38 30 6955 011 00	51	14,45	9	5,5	0,85	ground
38 30 6907 006 00	52	14,45	6	3,5	1,1	Cerasoft G
38 30 6906 011 00	50	14,45	6	3,5	0,85	ground
38 30 6908 011 00	49,62	14,45	6	3,5	0,85	ground
38 30 6909 011 00	47,5	14,45	6	3,5	0,85	ground
38 30 6944 006 01	58	12	9	6,2	1,1	Cerasoft G
38 30 6944 016 05	58	12	9	6,2	0,6	Cerasoft GX
38 30 6951 006 01	53,5	12	9	5	0,6	Cerasoft GX
38 30 6941 006 05	52	12	9	5,5	1,1	Cerasoft G
38 30 6952 006 07	52	12	9	5,5	0,6	Cerasoft GX
38 30 6941 001 00	52	12	9	5,5	0,85	ground
38 30 6937 006 01	51	12	6	3,5	1,1	Cerasoft G
38 30 6936 016 00	50	12	6	3,5	0,6	Cerasoft GX
38 30 6936 006 06	50	12	6	3,5	1,1	Cerasoft G

CeramTec ref.no.	Dimensions (mm)				Surface	
	ϕA	ϕI	H	R	Ra (μm)	
38 30 6935 016 04	49,62	12	6	3,5	0,6	Cerasoft GX
38 30 6935 006 00	49,62	12	6	3,5	1,1	Cerasoft G
38 30 6901 011 00	49,6	12	6	3,5	0,85	ground
38 30 6939 016 00	46,5	12	6	3,5	0,6	Cerasoft GX
38 30 6920 006 07	45,5	12	6	3,5	1,1	Cerasoft G
38 30 6920 011 07	45,5	12	6	3,5	0,85	ground
38 30 6920 031 00	45,5	12	6	5,5	0,85	ground
38 30 6931 016 02	45	12	6	3,5	0,6	Cerasoft GX
38 30 6931 006 09	45	12	6	3,5	1,1	Cerasoft G
38 30 6917 006 00	45	12	6	5,5	1,1	Cerasoft G
38 30 6904 011 06	45	12	6	3,5	0,85	ground
38 30 6904 001 02	45	12	6	3,5	0,6	ground
38 30 6917 011 00	45	12	6	5,5	0,85	ground
38 30 6904 031 03	45	12	6	5,75	0,85	ground

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