

 **SWISS MADE**

Jota

jota
Specialist for zirconia preparation



- › Special products for processing zirconia
- › Many years of experience in the field of rotary instruments
- › A one-stop supplier - complete assortment including special kits



 **swiss dentistry**

 **swiss laboratory**

jota product line

Technical principles

Zirconia provides an ideal combination of high strength, fracture toughness, aesthetics and biocompatibility. These special properties are due to the mineralogical structure and three different crystal lattices which zirconia can adopt depending on the temperature. If a certain temperature is exceeded, the crystal lattice undergoes transformation. These transformation processes are reversible by slight changes in temperature. Special mention must be given to the three to five percent increase in volume during transformation from the tetragonal to the monocline phase which takes place spontaneously in the form of martensitic transformation. Zirconium silicate ($ZrSiO_4$) is the raw material from which technically employable structured zirconia ceramic is manufactured. Minute amounts of the stabilising element yttrium oxide (Y_2O_3) are then added, similar to when alloying steels. This so-called stabilisation prevents transformation from the tetragonal phase to the monocline phase, with the corresponding increase in volume, during cooling. The result is a high performance material.

The manufacturing process for this high-strength ceramic involves three stages. First, a so-called green compact is pressed and then heated to approx. $1000^{\circ}C$ via a defined temperature curve. This thermal treatment creates a so-called pre-sintered coping. The strength properties of these pre-stages are optimised to allow for optimal fabrication and reworking of restorations via CAD/CAM. Once the design has been shaped mechanically, final compaction is carried out during a second sintering stage in a special high-temperature furnace at approx. $1500^{\circ}C$.

During this stage the material shrinks approx. 20 percent in all dimensions from the original size. Sintering not only changes the volume in comparison to the original material, but also the shade and translucency.

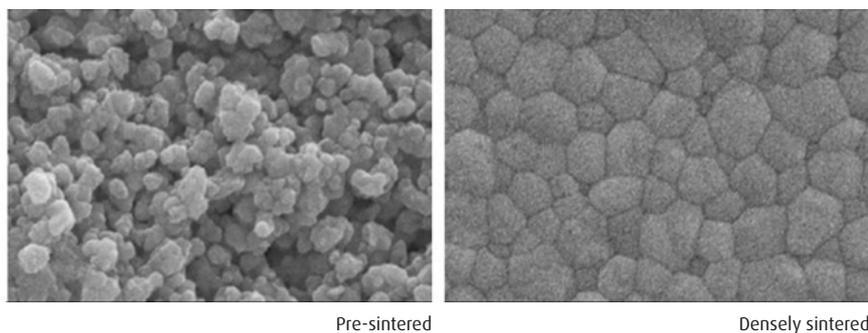
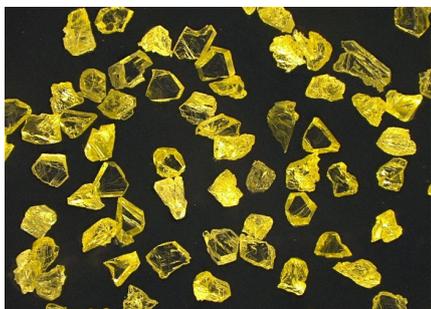


Figure 1: SEM images showing the structures of pre-sintered and densely sintered zirconia

The most important properties of pre-sintered and densely sintered ceramic.

Materiological properties zirconia	Pre-sintered	Densely sintered
Density g/cm ³	3.1 – 3.2	> 6.0
Porosity %	47 – 49	<0.5
Dry green strength MPa	50 – 90	
Flexural strength MPa		>900
Crystal size	0.25 – 0.35	0.5 – 0.65

Natural Diamond Grit



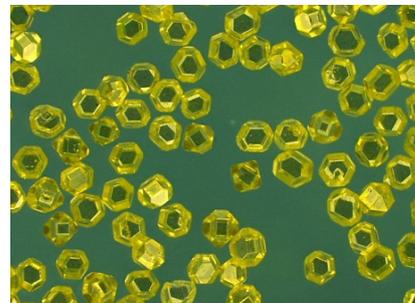
Natural grit consists of very irregular particles which provide for very efficiently cutting instruments. In addition, natural grit is very strong and insensitive to warmth. **Used for JOTA standard instruments.**

Synthetic Grit class



Synthetic grit is available in vastly differing classes. High grade grit has geometry resembling that of natural grit and cuts efficiently but is less strong and more sensitive to warmth.

Synthetic Grit for ZirPrep diamonds



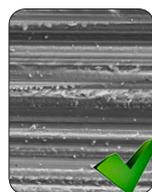
JOTA uses custom manufactured synthetic grit with very uniform grit sizes and shapes for ZirPrep diamonds. This ensures prepared surfaces with very low, uniform roughness. The risk of microcracking and grit particles breaking out is greatly reduced.

Zirconia provides the ideal combination of high strength, fracture toughness, aesthetics and biocompatibility for applications in dentistry. These special properties are based on the mineralogical structure of the material. It is precisely this structure, however, that is also responsible for the extreme sensitivity during preparation of zirconia.

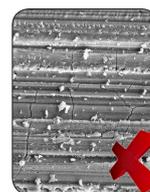
From the point of view of the dental technician preparation should be as efficient and simple as possible, though there should be virtually no heat build-up and the surface should remain smooth and free from microcracks.

JOTA Zirconflex provides the optimal solution, as it was specially developed for the preparation of zirconia. No water cooling is required and yet there is only minimal heat build-up, thus avoiding phase transition which is damaging to the material. Material is removed rapidly using minimal grinding pressure while at the same time protecting the material properties, so that the risk of microcracks is reduced to a minimum. JOTA Zirconflex is the ideal partner for the preparation of sintered zirconia.

Below is an electron microscope image of zirconia after preparation with JOTA Zirkonflex and a competitors product, magnified 1000 times. The JOTA example presents a very clean, smooth surface profile without microcracks. This surface has been ideally prepared for facing with build-up material.



10µm
JOTA Zirconflex



10µm
competitor's product

Your benefits at a glance

- › Minimal heat build-up - minimal grinding pressure
- › Non-sparking at the recommended speed
- › Minimal risk of microcracks during dry preparation
- › No water cooling required for Zirconflex instruments
- › High wear resistance - rapid material reduction
- › Concentric, vibration-free radial runout

jota kit 1322 Zirconflex Laboratory



SZ601.HP.035		 20000
SZ602.HP.040		 20000
SZ623.HP.060		 20000
SZ638.HP.025 *KIT*		 20000
SZ652R.HP.035 *KIT*		 20000

SZ660.HP.040 *KIT*		 20000
SZ667.HP.035		 20000
SZ732.HP.050 *KIT*		 20000
SZ736.HP.065		 20000
SZ722.HP.180 *KIT*		 20000

JOTA Zirconflex Kit

The most popular / essential shapes have been assembled in a practical set. Ivoclar Vivadent also recommends JOTA Zirconflex for the preparation of its IPS e.max ZirCAD (zirconia).

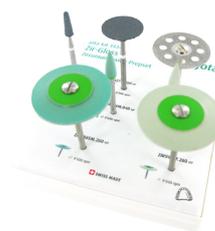
jota kit 1358 Zirconprofi Laboratory



SZ722.HP.180		 7000-10000
SZ652R.HP.035		 20000
SZ601.HP.035		 20000

SZ660.HP.040		 20000
SD660F.HP.040		 25000
9804M.HP.110		 7000

jota kit 1434 ZIR Gloss Laboratory



SZ652R.HP.035		20000
SZ715.HP.160		7000
932D.HP.220		12000
ZIR9866M.HP.040		7000-10000

ZIR9866F.HP.040		7000-10000
ZIR9865M.HP.260		7000-10000
ZIR9865F.HP.260		7000-10000

A perfect zirconia restoration using just one set!

- › A diamond disc for separating the retention bars or sinter bars
- › Zirconflex for reworking surfaces and margins as well as fitting in the sintered state
- › Specially developed and coordinated diamond polishers for zirconia (ZIR Gloss)
- › An excellent high-lustre produced in only two polishing stages

jota kit 1460 ZIR-Prep Laboratory



Z850.FG.018		250000
Z850F.FG.018		250000
Z863.FG.012		300000
Z863F.FG.012		300000

Z833.FG.023		190000
Z833F.FG.023		190000
Z801L.FG.014		300000

JOTA Zir-Prep diamonds with new and unique diamond grit and optimized bonding were specifically developed for trimming sensitive zirconia surfaces.

Symmetrical alignment of diamond grit promotes less aggressive zirconia reduction at moderate surface temperatures; no risk of microcracking. Durability is outstanding, specifically selected diamond grit guarantees extended service-life. Not only for use by dental technicians in a laboratory turbine for trimming zirconia restorations or abutments, but also by dentists for reworking or fitting restorations. JOTA Zir-Prep diamonds must be used with water cooling.

jota kit 1436 ZIR Gloss Dentistry



ZIR9861M.RA.040		9000
ZIR9862M.RA.060		9000

ZIR9861F.RA.040		9000
ZIR9862F.RA.060		9000

The new way of high-lustre polishing high-performance ceramics!

- › Specialised systems for zirconia
- › Verified, exact bonding of diamond grit
- › High-lustre in just two polishing steps
- › Achieves a better high-lustre in less time

jota instruments ZIR CUT

Z838L		Zir Cut	
Crown cutter for separating zirconia crowns and bridges			
Fig	Shank	ISO	Ø
Straight Handpiece			
Z838L	FG	806 314 140 526 -	014
		L mm	6,0
			5

Z801		Zir Cut	
Creating access through zirconia crowns and bridges			
Fig	Shank	ISO	Ø
Straight Handpiece			
Z801	FG	806 314 001 324 -	010
			5

jota practical examples



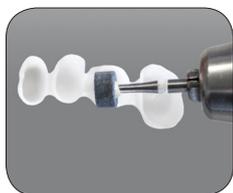
SZ667

The bud shape was specially designed for the preparation of palatal and lingual surfaces of anterior teeth.



SZ652R

This conical abrasive is a genuine all-round instrument and perfect for preparing margins as well as labial surfaces.



SZ623 The wheel is ideal for removing a large amount of material from bridge units and pontics.



Pre-polishing the occlusion:

The flame-shaped ZIR9866M is optimal for pre-polishing the occlusal surface. Excessive pressure should not be applied when using the diamond polisher!



Interdental preparation:

The extra flat Zirconflex SZ715 is for grinding the interdental spaces of sintered multi-unit restorations.



Trimming the connection points:

The connection point of the support bar or sprue can be trimmed down using the Zirconflex SZ652R. The connection points of stabilisation bars after sintering can also be trimmed down using this rotary instrument. Water cooling is not required during trimming!



Smoothing the surface:

The Zirconflex SZ652R is for smoothing surfaces and eliminating defects caused, for example, during trimming. This rotary instrument can also be used for thinning margins precisely after sintering and adjusting contact points.



Separating the restoration:

The restoration is separated from the block or press sprue using the 932D diamond disc. The diamond disc can also be used for separating stabilisation bars after sintering. The SZ652R can be used if the restoration has to be separated from a blank.



Pre-polishing the surface:

The ZIR9865M is used for pre-polishing the surface in preparation for high-lustre polishing. Minor adjustments can also be made and margins reworked using this specially adapted diamond polisher.



High-lustre polish of the surface:

The ZIR9865F is for final polishing of surfaces to create a high-lustre. High-lustre polishing gives the zirconia added stability.

Jota is the right partner for you!

- Over 100 years experience in the rotary instrument area
- Swiss precision and quality due to development and production at Rüthi, Switzerland
- Full and competent advice about all questions involving instruments and their applications
- Save time and effort thanks to the top quality and longer durability of the instruments

A worthwhile investment!

Rotary instruments link you and your patient. Jota quality ensures that your competence is transmitted directly and precisely to the patient via the instruments.

And you benefit from instruments that last longer due to the high production precision, thus decreasing working time and reducing or preventing later financial investments.

JOTA Distributor

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