

ZYTTRIA®

USER MANUAL

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concept

ZYTTRIA®

- Z401 WHITE Traslucent
- Z402 EXTRA-TRASLUCENT
- Z402 EXTRA-TRASLUCENT PLUS
- Z403 ANTERIOR
- Z404 SUPER-TRASLUCENT
- Z COLOR
- Z COLOR EXTRA-PLUS
- Z COLOR ANTERIOR
- Z COLOR SUPER-TRASLUCENT
- Z MULTICOLOR EXTRA-PLUS
- Z MULTICOLOR ANTERIOR
- Z MULTICOLOR SUPER-TRASLUCENT



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1.1 NAME AND GENERAL DESCRIPTION

Pre-sintered Yttria-stabilised Zirconia components for construction of dental prosthetics, classified in class II a of directive 93/42/EC (adapted to Dir. 2007/47/EC) referred to medical devices.

The general product codes are:

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ZYTTRIA® - Z401 WHITE Traslucent
- Z402 EXTRA-TRASLUCENT*
- Z402 EXTRA-TRASLUCENT PLUS*
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- Z404 SUPER-TRASLUCENT
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- Z COLOR ANTERIOR
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- Z COLOR SUPER-TRASLUCENT
- Z MULTICOLOR ANTERIOR
- Z MULTICOLOR EXTRA-PLUS
- Z MULTICOLOR SUPER-TRASLUCENT

* Both of them have a very high translucency, but they differ from each other in terms of sintering temperature and of technical characteristics

1.2 MATERIAL TYPES

The dental technician chooses the material on the basis of the work to be done.

ZYTTRIA® products have excellent chemical inertia, mechanical resistance and biocompatibility characteristics.

The ZYTTRIA® Z401 WHITE, Z402 EXTRA-TRANSLUCENT and Z402 EXTRA-TRANSLUCENT PLUS families of materials differ from each other in terms of quantity of alumina in the raw material and for dimensions of grains after sintering. From these characteristics comes the level of translucency, a slightly difference in values of mechanical resistance (see Technical Data Sheet) and hydrothermal resistance.

ZYTTRIA® Z403 ANTERIOR, ZYTTRIA® Z COLOR ANTERIOR, ZYTTRIA® Z MULTICOLOR ANTERIOR differ from other materials for the presence of a higher percentage of Yttria that, beyond giving a superior translucency, determines lower values of flexural strength (approx. 600+100 Mpa). This material must be used in a proper way, in order to realize anterior teeth and bridges up to 3 elements.

In **ZYTTRIA® Z COLOR, ZYTTRIA® Z COLOR EXTRA-PLUS, ZYTTRIA® Z COLOR SUPER-TRASLUCENT, ZYTTRIA® Z MULTICOLOR EXTRA-PLUS, ZYTTRIA® Z MULTICOLOR SUPER-TRASLUCENT** ceramic pigments are mixed to Zirconia powder with a technology able to ensure a constant and uniform colouring

1.3 REGULATORY REFERENCES

ZYTTRIA® products are manufactured in compliance with the following standards:

UNI EN ISO 6872:2009 - Dentistry, Ceramic materials

ISO 13356:2008 - Implants for surgery, Ceramic materials based on Yttria-stabilized tetragonal zirconia (Y-TZP).

UNI EN ISO 10993-1:2004 - Biological evaluation of medical devices.

1.4 AREA OF USE

Dental technology and dental laboratories (or authorized environments which comply with legal requirements).

1.5 INTENDED USE

Pre-sintered ZYTTRIA® products made of Zirconia are used to manufacture dental prosthetics to be inserted in the oral cavity after appropriate milling and only after being sintered using the firing cycle written on the user manual.

1.6 OPERATOR TYPE

Professionals qualified to manufacture and create dental prosthetics (e.g. dental technicians) or qualified professionals that perform milling in an environment complying with regulations.

Notice. The structures obtained must be inserted in the oral cavity exclusively by qualified healthcare personnel (e.g. dentist) in accordance with current regulations of each country.

1.7 CLINICAL PURPOSE OF THE DEVICE

Material for construction of dental prosthetics.

ZYTTRIA® components must be placed in the oral cavity and not inserted into the gums or bone.

ZYTTRIA® products should not be used for the construction of screws and other components which, in terms of type of use and classification, are different from dental prosthetics.

1.8 WARNINGS AND POSSIBLE UNDESIRE EFFECTS

No undesired effects were known when this manual was printed. Even though no serious allergic reactions have been found in the state of current know how, the dentist must check compatibility of ZYTTRIA® products with a potentially allergic patient before inserting the prosthetic in his oral cavity.

*** Mechanical and chemical characteristics of the final device, obtained after sintering, may be altered by mechanical processing and sintering cycles different from those indicated.**

* In case of milling with a jet of water, the operator must dry the products completely before the sintering cycle.

* **Healthcare operators must validate both the sintering and the processing systems.**

* Contact a doctor if any allergic symptom or other undesired effect appears.

* Do not swallow the product.

1.9 CONTRAINDICATIONS

Use of Zirconia prosthetics is not recommended in case of inadequate hardness of the bone, narrow space, bruxism or poor oral hygiene.

2.0 MEANING OF SYMBOLS (standard UNI EN 980:2004)



European conformity (CE) mark with notified body identification number for Class IIA.



Manufacturer



Catalog number



Batch code



Use-by date



Avoid humidity. Keep dry



Keep away from sunlight



Consult instructions for use



Fragile. Handle with care

3. METHODS OF USE

In order to achieve the best result, following the correct operating sequence is very important because **manufacturing processes performed in the laboratory may alter the final aesthetic and technic result.**

Pre-sintered ZYTTRIA® products are extremely fragile and brittle. Handle them with care.

3.1 DESCRIPTION OF THE DEVICE

Dental prosthetics manufactured using pre-sintered ZYTTRIA® products are obtained by milling and then sintering the products.

3.2 RECOMMENDED OPERATING SEQUENCE

Pre-sintered ZYTTRIA® components must be processed using the following procedure:

1. Insert the component on the milling machine support.
2. Program milling machine taking the final dimensions of the structure into account (see section 3.3).
3. Machine the blanks with diamond or tungsten carbide milling tools according to the manufacturer's instructions of the system used.
4. Keep the product and tool clean during milling with jets of air or water.
5. If required, the framework may be matched to the desired teeth colour with the standard coloring solutions which are licensed for Zirconium Oxide.
The framework must be completely clean and dry before coloring. The instructions of the manufacturer of the coloring solutions should be followed for the further work procedures.
6. Dry the structure with drying ovens (T=80°C for 15-20 mins) or infrared lamps.
7. Before sintering, check the ceramic structure is undamaged.
8. Sinter the ceramic structure with a suitable kiln. For the sintering cycle see section 4.
9. Remove the sintered structure from the kiln only after it has reached a temperature of less than 80°C to avoid thermal shocks.
10. Check with Concept **MICROCHECK SYSTEM** that the sintered structures are free from microcracks.
11. Test the ceramic structure on the reference model and, if necessary, make the appropriate changes using water cooling during grinding operations. Use only diamond wheels.
12. If necessary, sandblast the sintered structure with 50 micron aluminium bioxide at a pressure of 1-2 bar.
13. Clean the sintered structure with water. Do not use steam-jet millstones or autoclaves.

RECOMMENDATIONS FOR CONSTRUCTION OF SINGLE TEETH OR LONG BRIDGES

In order to avoid deformation of a longer prosthetic device or a full arch bridge during sintering, all the original material must be conserved, keeping it attached to the milled structure through small connectors which are cut after sintering.

If several prosthetics have to be obtained from a block of material, the cavities created each time should be filled with materials which avoid propagation of vibrations during milling (e.g. wax, plaster, silicone, etc.). These vibrations may damage the remaining ceramic material which has not been sintered.

3.3 SHRINKAGE CALCULATION

Sintering alters product volume and it is therefore necessary to know the dimensions the milled product to be sintered must have in order to obtain the final dimensions of the prosthetic.

In addition to the lot number, each ZYTTRIA® box label also indicates both the multiplication coefficient (enlargement) and the percentage shrinkage, to be used on the basis of the cad-cam system used.

If the **ENLARGEMENT COEFFICIENT** method is used, each final measurement must be multiplied by this coefficient, specified for each lot.

If **SHRINKAGE RATE** is used, the formula is:

$$[(\text{presint-sint})/(\text{pre-sint})]*100 \text{ (shrinkage of the pre-sintered product during sintering)}$$

The results obtained following one of the two methods indicate the dimensions which the pre-sintered prosthetic must have before being fired in the kiln.

These values are based on the experience of Co.n.c e.p.t. following various tests conducted considering machinability, density of the presintered product and final density.

3.4 DESIGN REFERENCES

The following values are references for the technician in preparation of the prosthetic elements. However, designing of the prosthetic element is responsibility of the dentist and the dental technician, who must check the sizing of the prosthetic structure case by case.

3.4.1 THE WALL STRENGTH SHOULD BE AT LEAST

ANTERIOR TEETH

- incisal/occlusal thickness \geq mm 0,7
- circular thickness \geq mm 0,5

POSTERIOR TEETH

- occlusal thickness \geq mm 1,5
- circular thickness \geq mm 0,5

ABUTMENT CROWNS FOR BRIDGE FRAMEWORK WITH 2 PONTICS

- incisal/occlusal thickness \geq mm 1
- circular thickness \geq mm 0,7

3.4.2 THE CONNECTOR SURFACE SHOULD BE AT LEAST

ANTERIOR BRIDGE

- with 1 missing pontic \geq mm² 7
- with 2 missing pontic \geq mm² 9

POSTERIOR BRIDGE

- with 1 missing pontic \geq mm² 9
- with 2 missing pontic \geq mm² 12

3.5 MILLING

Pre-sintered ZYTTRIA® may be milled using the most common Cad/Cam systems or manual pantograph. Follow the manufacturer's operating instructions to select the most suitable milling and the revolution speed.

3.5.1 WARNINGS

Follow these precautions during milling:

- use an appropriate aspiration system to avoid inhalation of powder;
- do not use a jet of air for cleaning constantly, to avoid dispersion of powders into the environment;
- protect the respiratory system using a mask suitable for protection against fine powders

3.6 PREPARE SURFACE TO BE SINTERED

In order to achieve the best translucency is very important to prepare the framework carefully before sintering.

3.6.1 Remove the device from the block, cutting connections

3.6.2 Remove connections from the surface of the prosthetic structure

3.6.3 Polishing. Pay attention not to cause chipping or cracks.

3.6.4 Clean effectively.

It's important that the framework is completely dust free, oil free and dry, even inside, in the occlusal areas and asperities.

Remove waste powder of the milling

The waste powder of the milling, if not eliminated, may prevent the **correct absorption of the colour**, affecting the final aesthetic result.

Clean with a brush and pay attention: the powder produced by the separation is very thin and the brush could push it into porosities instead of removing it.

Washing with distilled water

The most effective method is the washing of the piece with distilled water, possibly in ultrasound tank at low energy.

After washing, before go on with colouring, dry the piece in a proper way.

3.7 COLOURING

If required the device, well clean and dry, can be coloured, before sintering, with suitable **AQUA** colour liquids, following instructions for use.

NOTICE

A clean framework prevents the dust, that gets stuck at the brush, from depositing in the colour liquid with negative effects on the final outcome.

3.8 DRYING

Pre-sintered Zirconia is porous (approx.48%) and absorbs the processing water or colouring liquids, depending on the milling time and dipping time.

Zirconia products **must be properly dried before being placed in the sintering kiln.**

A extreme drying must be avoided (e.g. 700°C for 5 minutes); this procedure produces a sudden increase of volume of water in pores causing the **breakages of the piece** sometimes.

As for sintering, use a sintering cycle suitable for the thickness and shape of the piece.

The product may be dried in the **sintering kiln** in the one-step drying cycle at 80°C for at least 30 minutes

Drying in a fan assisted oven with **warm air for 30 minutes at a temperature of 80°C** (max. 100°C) is recommended. According to the thickness of the prosthesis drying time may increase up to 1 hour for big frameworks.

If a **kiln for ceramic** is used, it's important to keep the door of the kiln open in order to avoid piece is hit by the heat of mechanical resistances and in order to have a movement of air to allow a softer drying.

Drying with **infrared lamp** is possible but it is less reliable: it produces a quick drying of the superficial surface of the framework that may create a kind of waterproof film preventing a proper deep drying.

Pay attention to time (20-40 minutes according to the size of the piece) and to adjust the distance (25-30 cm) not to burn surface of Zirconia. Place the occlusal surface down.

WARNINGS IN CASE OF WATER MILLING

Pre-sintered pieces shouldn't come into contact with liquids(water, oil) or creams during milling and during other processing phases.

In case of water milling, before going on to the following phases, it's important to remove any oleic residue that could affect the colouring and the final aesthetic result.

Wash the piece with distilled water, better with light ultrasounds in order not to cause the breakages of the piece.

Dry it well as suggested previously.

Before going on to the following phase make a cleaning cycle of the framework in the kiln at almost 800/850°C for 15 minutes to burn possible oleic residue in the piece

3.9 STORAGE

Pre-sintered ZYTTRIA® products are damaged by humidity and frost.

Store in a cool and dry place.

Don't expose to sunlight.

Expiry date: 10 years provided that the product is kept in the original package,
in a cool (temperature 5°C ÷ 35°C) and dry place (humidity 30÷65%).

If only a part of the ZYTTRIA® block is used, it is important to dry the remaining part before storage.

4. SINTERING

Sintering temperature of Zirconium Dioxide depends on the type of powder used.

Except for ZYTTRIA® Z402 EXTRA-TRASLUCENT (1530°), all the other ZYTTRIA® materials sinter at a temperature of 1450°C.

Due to the **low thermal conductivity of Zirconia, the thermal gradient (or temperature increase and decrease speed) depends on the mass of the structure to be sintered.**

Besides mass, **sintering speed** also depends upon the shape of the bridge or crown to be sintered. The tooth with the highest mass determines the speed of the firing cycle.

The heating speed must be such that the temperature of the framework is always as uniform as possible **to avoid distortions or breakages** caused by the different rates of expansion due to not uniform temperatures.

4.1 PREPARE SINTERING

Sintering is a very delicate phase that, beyond influencing final technical characteristics of the framework, has an influence on the translucency and whole aesthetic result.

Correct procedures and process control, simple to be done, help avoiding problems connected with sintering kiln.

RECOMMENDATIONS FOR A GOOD SINTERING

4.1.1. Protect frameworks from electrical resistors

The environment of the kiln may contaminate Zirconia with negative effects on the aesthetic result. Protect frameworks from electrical resistors, placing them in a sagger of refractory material. Saggars with lids used for sintering are excellent.

4.1.2. Decontaminate the firing room

During the firing cycle everything is put in the firing room may react with the atmosphere leaving on resistors residue that could lay on Zirconia during sintering.

The decontamination procedure consists of a firing cycle with empty kiln, using remaining pieces of white, not coloured Zirconia to place in the kiln.

It's better to do the cleaning when changing material.

4.1.3. Temperature control

Temperature is essential in order to have a prosthetic structure with high technical and translucency qualities, to avoid effects of under firing or over firing.

Check every two weeks that the temperature of the sintering kiln is well set.

The ceramic rings **THERMOCHECK RING (P 300)** are recommended for this aim.

4.1.4. Placing of the pieces

During sintering the framework has a shrinkage of about 20% and **it's important that during this phase aren't produced tensions that may cause deformations and/or breakages of the piece.**

Place the crowns or the frameworks on a "bed" of microspheres made of Alumina or Zirconia. It's important to check microspheres every two weeks and ensure their cleaning or replacement.

In order to avoid breakages or deformations, the frameworks must be placed not to be in touch neither among them nor with other refractory materials.

Place crowns and bridges up to 3 elements, anterior or posterior, with the occlusal area downward.

Crowns and larger bridges: it's recommended to sinter them in a vertical position with sintering support.

4.2 SINTERING TEMPERATURE

In order to enhance the overall translucency is possible to increase the sintering temperature from 1450°C to 1500°C or 1550°C, changing hold time in order to avoid deterioration of technical characteristics.

Zyttria® Z401 WHITE TRASLUCENT

Sintering 1450°C (=2642°F) → Sintering Cycles pag.14

Zyttria® Z402 EXTRA-TRASLUCENT PLUS

Zyttria® Z404 SUPER-TRASLUCENT

Zyttria® Z COLOR EXTRA-PLUS

Zyttria® Z COLOR SUPER-TRASLUCENT

Zyttria® Z MULTICOLOR EXTRA-PLUS

Zyttria® Z MULTICOLOR SUPER-TRASLUCENT

Sintering 1450°C

As an alternative 1500°C o 1550°C (=2822°F) → For hold time see Sintering Cycles pag.16

Zyttria® Z402 EXTRA-TRASLUCENT

Sintering 1530°C (=2786°F)

As an alternative 1580°(2876 °F) → For hold time see Sintering Cycles pag.20

Zyttria® Z403 ANTERIOR

Zyttria® ZCOLOR ANTERIOR

Zyttria® ZMULTICOLOR ANTERIOR

Sintering 1450°C

As an alternative 1500°C (= 2732 °F) → see Sintering Cycles pag.24

4.3 SINTERING CYCLES (pag. 13)

Sintering cycles on this User Manual provide useful information in order to sinter in a safe way and without defects, especially in case of complex shapes and diversified masses in the framework to be sintered.

Hold time at the maximum temperature may be decreased to 1 hour, according to the thickness of the framework.

Some sintering cycles may be completed even in 6/8 hours, but the size of the framework to be sintered must be considered.

Dental technician may, at his/her own choice, uses different sintering cycles, according to thickness and shape of framework.

CO.N.CE.P.T may change data and values without giving notice.

For updates please visit the website www.zirconiaconcept.it

WARNING

The milled framework must be placed in the kiln at a temperature not higher than **70°C**.

Open the kiln gradually in order to avoid breakages for thermal shock during the cooling phase.

Don't open the kiln completely at temperatures higher than **100°C** in order to avoid micro-cracks in the structure (Long Bridges and full arch bridges).

Single crowns and bridges up to 3 elements may be removed from the kiln at a **temperature of 200°C** together with the sagger where they will be left to cool completely.

The hot piece must not be exposed to **airflows**.

Don't sinter together frameworks realised with **materials of different colour** in order to avoid contamination of colours.

Do a cleaning cycle of the kiln every month, having a cycle with empty kiln at high temperature (not lower than 1450°C), in order to remove possible colour traces remained on the walls and on the resistors of the kiln.

5. FINISHING AFTER FINAL SINTERING

The sintered Zirconia frameworks may be finished using diamond wheels.

Warning!. This processing may alter the biological, chemical, physical and mechanical properties of the product.

In case of small corrections on the sintered product, the temperature during grinding must be lower than 70°C. Cool the ceramic structure with a water jet during the grinding operation, if necessary.

6. CERAMIC COATING OF THE FRAMEWORKS

Ceramic coating of bridges or crowns manufactured with ZYTTRIA® products may be performed using the standard ceramic available on the market with coefficient of expansion (CET) suitable for Zirconia.

Please consult the technical manual of the manufacturer of the ceramic material for information regarding the coefficient of expansion and thermal or chemical treatments of the sintered frameworks.

7. STERILISATION

ZYTTRIA® products are not sterile on delivery.

Sintered prosthetic structures can be sterilised with EO gas (at a gas concentration of 900mg/L for 3 hours at 55°C) with use of EO gas sterilizer (of the kind of HS-700 EO, HANSHIN-Korea).

Healthcare professional is responsible for the sterility of dental prostheses, ensuring use and control of equipment and products suitable for cleaning, disinfection and sterilisation, in addition to correct procedures, following legal regulations.

Validation of method of sterilisation is charged to certified healthcare professionals.

Notice! Do not sterilise in an autoclave or with steam to avoid deterioration in quality. Do not use gamma rays to avoid changes of colour in the product.

8. CEMENTATION

The insertion of restorations Zirconium Oxide-based may happen either in a traditional way with Zinc phosphate cements or glass-ionomer cement, or in adhesive way with suitable composite of fixing.

A rough surface gives greater adhesion both with traditional and adhesive cementation. It is useful to sandblast the surfaces with aluminium oxide, 110nm, 3-4 bar.

8.1 Traditional cementation

No particular conditioning is necessary.

Use Zinc-phosphate cement or glass-ionomer cement (e.g. Dyract cem plus, Dentsply, Costanza, Vivaglass Cem).

8.2 Adhesive cementation

This does not mordant.

In order to clean the internal part before cementation sandblast the surface with 110nm aluminium oxide at 1 bar.

Use Panavia21, PanaviaF-type cements.

9. ALARM SIGNALS AND WARNINGS

Alarm devices are not available.

10. MAINTENANCE AND REPAIRS

The product cannot be repaired.

In case of damage (micro-cracks, breakages, etc.), it cannot be processed any further or inserted in the oral cavity.

11. REUSE OF THE DEVICE AND OF APPLIED PARTS

ZYTTRIA® products are not reusable.

Prosthetics used on one patient may not be transferred to another patient.

It is possible to obtain several prosthetics from the same ZYTTRIA® component if the dimensions allow this.

11. DISPOSAL

Remaining parts of Zirconia semi-finished products, sintered or just milled, are classified as inert material not subject to special regulations.

Dispose of the device in accordance with local regulations.

SINTERING CYCLES

ZYTTRIA®

- Z401 WHITE Traslucent
 - Z402 EXTRA-TRASLUCENT
 - Z402 EXTRA-TRASLUCENT PLUS
 - Z403 ANTERIOR
 - Z404 SUPER-TRASLUCENT
 - Z COLOR
 - Z COLOR EXTRA-PLUS
 - Z COLOR ANTERIOR
 - Z COLOR SUPER-TRASLUCENT
 - Z MULTICOLOR EXTRA-PLUS
 - Z MULTICOLOR ANTERIOR
 - Z MULTICOLOR SUPER-TRASLUCENT
-

Sintering cycles on this data sheet provide useful information in order to sinter in a safe way and without defects, especially in case of complex shapes and diversified masses in the framework to be sintered.

Dental technician may, at his/her own choice, uses different sintering cycles, according to thickness and shape of framework.

CO.N.CE.P.T. may change data and values without giving notice.

For updates please visit the website www.zirconiaconcept.it

SINTERING CYCLES**ZYTTRIA® Z 401 WHITE Traslucent**

Sintering Temperature 1450°C

NOTICE

In order to have a good sintering and to achieve the best aesthetic result the framework must be well clean, dry and with no oleic residue. For drying of Zirconia after milling and colouring, see section 3.8 of this manual.

If the sintering kiln doesn't allow all the steps on our data sheet , it is possible to make the sintering cycles with less steps but with slower heating rate and/or cooling rate.

See example below:

1. 80°C - 900°C = 5°C/min= 300°C/h
2. 900°C = Stazionamento / HOLD TIME 15 MINUTES
3. 900°C - 1450°C = 2°C/min=120°C/h
4. 1450°C = Stazionamento / HOLD TIME 2 HOURS/Ore

The cycle could be simplified like this:

1. 80°C- 1450°C = 2°C/h
2. 1450°C: = Stazionamento / HOLD TIME 2 HOURS/Ore

Zyttria® Z 401 WHITE Traslucent

INDIVIDUAL CROWNS or BRIDGE up to 3 ELEMENTS with mass for element ≤3gr *

STEP	Velocità di Riscaldamento HEATING SPEED	Ventola Aria FAN	NOTES
20°C - 950°C	10°C/min = 600°C/h	ON	
950°C	Stazionamento / HOLD TIME 10 MINUTES	OFF	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE FRAMEWORK
950°C - 1450°C	6°C/min = 360°C/h	OFF	
1450°C	Stazionamento / HOLD TIME 120 Minutes	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 5h, 15 min.
1450°C - 700°C	7°C/min = 420°C/h	Raffreddamento controllato A 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione Total time Sintering Cycle approx 9h
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

Zyttria® Z 401 WHITE Traslucent

BRIDGE from 3 to 7 ELEMENTS with mass for element $\leq 3gr$

Consider mass even sintering support used as central support

STEP	Velocità di Riscaldamento HEATING SPEED	Ventola Aria FAN	NOTES
20°C - 950°C	10°C/min = 600°C/h	ON	
950°C	Stazionamento / HOLD TIME 15 MINUTES	OFF	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE FRAMEWORK
950°C - 1450°C	3,5°C/min = 210°C/h	OFF	
1450°C	Stazionamento / HOLD TIME 120 Minutes	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 6h, 10min.
1450°C - 700°C	4°C/min = 240°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 3 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 12h, 20min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

Zyttria® Z 401 WHITE Traslucent

BRIDGE ≥ 8 ELEMENTS BRIDGE with mass for element $\leq 2gr$. / FULL ARCH BRIDGE

Consider mass even sintering support used as central support

STEP	Velocità di Riscaldamento HEATING SPEED	Ventola Aria FAN	NOTES
20°C - 80°C	10°C/min = 600°C/h	ON	
80°C	Stazionamento / HOLD TIME 30 MINUTES	ON	Step non indispensabile con pezzo ben asciutto THIS STEP IS NOT ESSENTIAL WITH A DRY PIECE
80°C - 900°C	5°C/min = 300°C/h	ON	
900°C	Stazionamento / HOLD TIME 15 MINUTES	OFF	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE FRAMEWORK
900°C - 1450°C	2°C/min = 120°C/h	OFF	
1450°C	Stazionamento / HOLD TIME 120 Minutes	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 10h, 10min.
1450°C - 700°C	3,5°C/min = 210°C/h	Raffreddamento controllato A 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 4Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo TotaleCiclo sinterizzazione Total time Sintering Cycle approx 17h, 45min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

SINTERING CYCLES

ZYTTRIA® **Z402 EXTRA-TRASLUCENT PLUS**
Z404 SUPER-TRASLUCENT
Z COLOR EXTRA-PLUS
Z COLOR SUPER-TRASLUCENT
Z MULTICOLOR EXTRA-PLUS
Z MULTICOLOR SUPER-TRASLUCENT

Sintering Temperature 1450°C / 1500°C / 1550°C *

* To improve translucency is possible to increase the sintering temperature from 1450°C to 1500°C or 1550°C, changing hold time in order to avoid deterioration of technical characteristics.

NOTICE

In order to have a good sintering and to achieve the best aesthetic result the framework must be well clean, dry and with no oleic residue. For drying of Zirconia after milling and colouring, see section 3.8 of this manual.

If the sintering kiln doesn't allow all the steps on our data sheet , it is possible to make the sintering cycles with less steps but with slower heating rate and/or cooling rate.

See example below:

1. 950°C - 1330°C = 4°C/min= 240°C/h
2. 1330°C = HOLD TIME 15 MINUTES
3. 1330°C - 1450°C = 7°C/min=420°C/h
4. 1450°C = HOLD TIME 3,5 HOURS

The cycle could be simplified like this:

1. 950°C- 1450°C = 4°C/h
2. 1450°C: = HOLD TIME 3,5 HOURS

**ZYTTRIA® Z402 EXTRA-TRASLUCENT PLUS - Z COLOR EXTRA-PLUS - Z MULTICOLOR EXTRA-PLUS
Z404 SUPER-TRASLUCENT - Z COLOR SUPER-TRASLUCENT - Z MULTICOLOR SUPER-TRASLUCENT**

INDIVIDUAL CROWNS or BRIDGE up to 3 ELEMENTS with mass for element ≤3gr.

Consider as mass even possible central support

STEP	Velocità Riscaldamento / HEATING SPEED	Ventola Aria / FAN	NOTES
20°C - 950°C	10°C/min= 600°C/h	ON	
950°C	Stazionamento / HOLD TIME 15 MINUTES	ON	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE PIECE
Scegliere la temperatura di sinterizzazione (1450° o 1500° o 1550°C) e continuare * CHOOSE THE SINTERING TEMPERATURE (1450° OR 1500° OR 1550°C) AND GO ON *			
*Option 1 - SINTERING TEMPERATURE 1450°C			
950°C - 1450°C	6°C/min=360°C/h	OFF	
1450°C	Stazionamento / HOLD TIME 3,5 HOURS/Ore	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 6h, 36min.
1450°C - 700°C	7°C/min.=420°C/h	Raffreddamento controllato COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 10h, 23min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock).		
*Option 2 - SINTERING TEMPERATURE 1500°C			
950°C - 1500°C	6°C/min=360°C/h	OFF	
1500°C	Stazionamento / HOLD TIME 90 Minutes	SINTERING	Tempo Totale a fine sinterizzazione TOTAL TIME-END OF SINTERING approx 4h, 45min.
1500°C - 700°C	7°C/min=420°C/h	Raffreddamento controllato a COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 8h, 40min.
<200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		
* Option 3 - SINTERING TEMPERATURE 1550°C			
950°C - 1550°C	6°C/min=360°C/h	OFF	
1550°C	Stazionamento / HOLD TIME 30 Minutes	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 3h, 53min.
1550°C - 700°C	7°C/min=420°C/h	Raffreddamento controllato COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 7h, 54min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

BRIDGE from 3 to 7 ELEMENTS with mass for element \leq 3gr

Consider as mass even possible central support

STEP	Velocità di Riscaldamento / HEATING SPEED	Ventola Aria / FAN	NOTES
20°C - 950°C	10°C/min= 600°C/h	ON	
950°C	Stazionamento / HOLD TIME 15 MINUTES	ON	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE PIECE
950°C - 1330°C	4°C/min= 240°C/h	OFF	
1330°C	Stazionamento / HOLD TIME 15 MINUTES	OFF	
Scegliere la temperatura di sinterizzazione (1450° o 1500° o 1550°C) e continuare * CHOOSE THE SINTERING TEMPERATURE (1450° OR 1500° OR 1550°C) AND GO ON *			
*Option 1 - SINTERING TEMPERATURE 1450°C			
1330°C - 1450°C	7°C/min=420°C/h	OFF	
1450°C	Stazionamento / HOLD TIME 3,5 HOURS/Ore	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 7h, 25min.
1450°C - 700°C	4°C/min= 240°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 12h, 32min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		
*Option 2 - SINTERING TEMPERATURE 1500°C			
1330°C - 1500°C	7°C/MIN=420°C/h	OFF	
1500°C	Stazionamento / HOLD TIME 120 Minutes	SINTERING	Tempo Totale a fine sinterizzazione TOTAL TIME-END OF SINTERING approx 6h
1500°C - 700°C	4°C/min= 240°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 11h, 22min.
<200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		
* Option 3 - SINTERING TEMPERATURE 1550°C			
1330°C - 1550°C	7°C/MIN=420°C/h	OFF	
1550°C	Stazionamento / HOLD TIME 60 Minutes	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 5h, 10min.
1550°C -700°C	4°C/min=240°C/h	Raffreddamento controllato COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 10h, 40min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

BRIDGE ≥ 8 ELEMENTS with mass for element < 2gr. / FULL ARCH BRIDGE

Consider as mass even possible central support

STEP	Velocità di Riscaldamento / HEATING SPEED	Ventola Aria / FAN	NOTES
20°C - 80°C	10°C/min= 600°C/h	ON	DRYING PHASE / Fase di asciugamento
80°C	Stazionamento / HOLD TIME 30 MINUTES	ON	Step non indispensabile con pezzo ben asciutto THIS STEP IS NOT ESSENTIAL WITH A DRY PIECE
80°C - 950°C	5°C/min= 600°C/h	ON	
950°C	Stazionamento / HOLD TIME 15 MINUTES	ON	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE PIECE
950°C - 1330°C	2°C/min= 120°C/h	OFF	
1330°C	Stazionamento / HOLD TIME 10 MINUTES	OFF	
Scegliere la temperatura di sinterizzazione (1450° o 1500° o 1550°C) e continuare * CHOOSE THE SINTERING TEMPERATURE (1450° OR 1500° OR 1550°C) AND GO ON *			
*Option 1 - SINTERING TEMPERATURE 1450°C			
1330°C - 1450°C	3°C/min=180°C/h	OFF	
1450°C	stazionamento / HOLD TIME 3,5 HOURS/Ore	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME END OF SINTERING approx 11h, 15min.
1450°C - 700°C	3,5°C/min= 210°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 4 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 18h, 45min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		
*Option 2 - SINTERING TEMPERATURE 1500°C			
1330°C - 1500°C	3°C/MIN=180°C/h	OFF	
1500°C	Stazionamento / HOLD TIME 120 Minutes	SINTERING	Tempo Totale a fine sinterizzazione TOTAL TIME END OF SINTERING approx 10h
1500°C - 700°C	3,5°C/min= 210°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 4 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 17h, 50min.
<200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		
* Option 3 - SINTERING TEMPERATURE 1550°C			
1330°C - 1550°C	3°C/MIN=180°C/h	OFF	
1550°C	Stazionamento / HOLD TIME 90 Minutes	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME END OF SINTERING approx 9h, 50min.
1550°C - 700°C	3,5°C/min=210°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	approx. 4 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 17h, 50min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

SINTERING CYCLES**ZYTTRIA® Z 402 EXTRA-TRASLUCENT**

Sintering Temperature 1530°C / 1580°C *

* To improve translucency is possible to increase the sintering temperature from 1530°C or 1580°C, changing hold time in order to avoid deterioration of technical characteristics.

NOTICE

In order to have a good sintering and to achieve the best aesthetic result the framework must be well clean, dry and with no oleic residue. For drying of Zirconia after milling and colouring, see section 3.8 of this manual.

If the sintering kiln doesn't allow all the steps on our data sheet , it is possible to make the sintering cycles with less steps but with slower heating rate and/or cooling rate.

See example below:

1. 950°C - 1330°C = 4°C/min 240°C/h
2. 1330°C = HOLD TIME 15 MINUTES
3. 1330°C - 1530°C = 7°C/min 420°C/h
4. 1530°C = HOLD TIME 3,5 Ore

The cycle could be simplified like this:

1. 950°C- 1530°C = 4°C/h
2. 1530°C: = HOLD TIME 3,5 Ore

INDIVIDUAL CROWNS or BRIDGE up to 3 ELEMENTS with mass for element ≤3gr.

Consider mass even sintering support used as central support

STEP	Velocità di Riscaldamento HEATING SPEED	Ventola Aria / FAN	NOTES
20°C - 950°C	10°C/min= 600°C/h	ON	
950°C	Stazionamento / HOLD TIME 10 MINUTES	OFF	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE PIECE
Scegliere la temperatura di sinterizzazione (1530° o 1580°C) e continuare * CHOOSE THE SINTERING TEMPERATURE (1530° OR 1580°) AND GO ON *			
*Option 1 - SINTERING TEMPERATURE 1530°C			
950°C - 1530°C	6°C/min=360°C/h	OFF	
1530°C	Stazionamento / HOLD TIME 2 HOURS/Ore	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING = 5h, 20min.
1530°C - 700°C	7°C/min.=420°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 9h, 20min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		
*Option 2 - SINTERING TEMPERATURE 1580°C			
950°C - 1580°C	6°C/min=360°C/h	OFF	
1580°C	Stazionamento / HOLD TIME 60 Minutes	SINTERING	Tempo Totale a fine sinterizzazione TOTAL TIME-END OF SINTERING = 4h, 30min.
1580°C - 700°C	7°C/min=420°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 8h, 30min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

BRIDGE from 3 to 7 ELEMENTS with mass for element ≤ 3gr

Consider mass even sintering support used as central support

STEP	Velocità di Riscaldamento HEATING SPEED	Ventola Aria / FAN	NOTES
20°C - 950°C	10°C/min= 600°C/h	ON	
950°C	Stazionamento / HOLD TIME 15 MINUTES	OFF	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE PIECE
950°C - 1330°C	4°C/min= 240°C/h	OFF	
1330°C	Stazionamento / HOLD TIME 15 MINUTES	OFF	
Scegliere la temperatura di sinterizzazione (1530° o 1580°C) e continuare * CHOOSE THE SINTERING TEMPERATURE (1530° OR 1580°) AND GO ON *			
*Option 1 - SINTERING TEMPERATURE 1530°C			
1330°C - 1530°C	7°C/min=420°C/h	OFF	
1530°C	Stazionamento / HOLD TIME 3,5 HOURS/Ore	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 4h, 35min.
1530°C - 700°C	4°C/min= 240°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 13h
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		
*Option 2 - SINTERING TEMPERATURE 1580°C			
1330°C - 1580°C	7°C/MIN=420°C/h	OFF	
1580°C	Stazionamento / HOLD TIME 120 Minutes	SINTERING	Tempo Totale a fine sinterizzazione TOTAL TIME-END OF SINTERING approx 6h, 15min.
1580°C - 700°C	4°C/min= 240°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 12h
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

BRIDGE ≥ 8 ELEMENTS BRIDGE with mass for element ≤ 2gr. / CIRCULAR

Consider mass even sintering support used as central support

STEP	Velocità di Riscaldamento HEATING SPEED	Ventola Aria / FAN	NOTES
20°C - 80°C	10°C/min= 600°C/h	ON	Fase di asciugamento / DRYING PHASE
80°C - 950°C	5°C/min= 600°C/h	ON	Step non indispensabile con pezzo ben asciutto THIS STEP IS NOT ESSENTIAL WITH A DRY PIECE
950°C	Stazionamento / HOLD TIME 15 MINUTES	OFF	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE PIECE
950°C - 1330°C	2,5°C/min= 150°C/h	OFF	
1330°C	Stazionamento / HOLD TIME 10 MINUTES	OFF	
Scegliere la temperatura di sinterizzazione (1530° o 1580°C) e continuare * CHOOSE THE SINTERING TEMPERATURE (1530° OR 1580°) AND GO ON *			
*Option 1 - SINTERING TEMPERATURE 1530°C			
1330°C - 1530°C	5°C/min=300°C/h	OFF	
1530°C	Stazionamento / HOLD TIME 3,5 HOURS/Ore	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 10h, 35min.
1530°C - 700°C	4°C/min= 240°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo TotaleCiclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 15h, 45min.
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		
*Option 2 - SINTERING TEMPERATURE 1580°C			
1330°C - 1580°C	5°C/MIN=300°C/h	OFF	
1580°C	Stazionamento / HOLD TIME 120 Minutes	SINTERING	Tempo Totale a fine sinterizzazione TOTAL TIME-END OF SINTERING approx 9h, 15min.
1580°C - 700°C	4°C/min= 240°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 15h
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)		

SINTERING CYCLES**ZYTTRIA®****Z 403 ANTERIOR****Z COLOR ANTERIOR****Z MULTICOLOR ANTERIOR**

Sintering Temperature 1450°C

NOTICE

In order to have a good sintering and to achieve the best aesthetic result the framework must be well clean, dry and with no oleic residue. For drying of Zirconia after milling and colouring, see section 3.8 of this manual.

INDIVIDUAL CROWNS or BRIDGE up to 3 ELEMENTS with mass for element ≤ 3 gr.

Consider mass even sintering support used as central support

STEP	Velocità di Riscaldamento / HEATING SPEED	Ventola Aria / FAN	NOTES
20°C - 980°C	10°C/min= 600°C/h	ON	
980°C	Stazionamento / HOLD TIME 15 MINUTES	OFF	Fase per uniformare la temperatura della struttura STEP TO UNIFORM THE TEMPERATURE OF THE PIECE
950°C - 1450°C	8°C/min=480°C/h	OFF	
1450°C	Stazionamento / HOLD TIME 2 HOURS/Ore	SINTERING	Tempo Totale a fine Sinterizzazione TOTAL TIME-END OF SINTERING approx 4h, 50min.
1450°C - 700°C	10°C/min.=600°C/h	Raffreddamento controllato a 700°C COOLING WITH RATIO CONTROLLED AT 700°C	
700°C - 25°C	Approx. 2 Hours	Raffreddamento naturale in Forno NATURAL COOLING IN THE KILN	Tempo Totale Ciclo sinterizzazione TOTAL TIME SINTERING CYCLE approx 9h
< 200°C	Aprire il forno gradualmente / OPEN THE KILN GRADUALLY		
< 70/80°C	Non estrarre i pezzi a temperature superiori. Evitare l'esposizione a correnti d'aria (rischio di shock termico) Do not pull frameworks out at higher temperatures. Avoid to expose them to airflows (risk of thermal shock)K		