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**WORLD  
PREMIERE**  
Ceramill Sintron®

 **ceramill sintron®**



**AMANNGIRRBACH**

The non-precious metal revolution.



## CoCr sinter metal for in-house dry processing using the Ceramill Motion

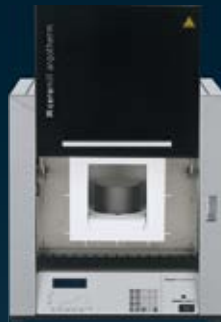
High innovation power is incorporated in the Ceramill Sintron® CoCr sinter metal from Amann Girrbach. The non-precious metal revolutionises the manufacturing process, as the wax-like texture of the Ceramill Sintron® blanks (CoCr blanks) allows them to be effortlessly dry milled on in-house desktop machines such as the Ceramill Motion 1 and 2. The labour-intensive and error-prone casting procedure and therefore time-consuming manually working stages are no longer required. The sinter process is also extremely easy: the press of a button is sufficient for an excellent result with regard to material quality. Maximum process reliability produces homogeneous, distortion-free frameworks without contraction cavities. Using the new Ceramill Sintron® it is possible to achieve predictable, reproducible fit and framework quality. Ceramill Sintron® can be veneered using any CoCr framework porcelain.

**ceramill motion**



Dry milling on Ceramill Motion 1 or 2

**ceramill argotherm**



Sintering in the Ceramill Argotherm under shielding gas flushing

**ceramill sintron®**



Sintered restoration showing polished and non-polished areas

### The highlights of Ceramill Sintron®:

- \_Effortless dry milling on desktop milling machines due to the "wax-like" texture of the blanks**
- \_Maximum convenience - the entire conventional crown and bridge non-precious metal casting procedure is no longer required**
- \_Maximum in-house value creation - outsourcing for non-precious metal is no longer required, no dispatch times**
- \_Great saving in time during manufacture of non-precious restorations due to in-house production and computer-based design process**
- \_Predictable, reproducible fit and framework quality thanks to the digital processing technique**

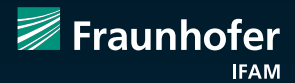
- \_Manufacturing process analogous to Ceramill Zi
- \_Amortisation turbo for the CAD/CAM system in the laboratory
- \_Maximum process reliability - homogeneous, distortion-free framework without contraction cavities
- \_No need to change the veneering porcelain (any conventional non-precious metal veneering porcelain can be used)
- \_Digital templates (tooth library) replace waxing up and accelerate the design
- \_Easy trimming and finishing of the milled framework in the green body state
- \_No remakes due to miscasts, as the quality is predictable
- \_Dry milling - no cooling necessary
- \_Minimal tool wear because of the wax-like texture of the blanks
- \_Time-consuming spruing for ingates is no longer required



## CoCr sinter metal for CAD/CAM dry milling

For the first time Ceramill Sintron® enables CNC-based\* dry milling of non-precious metal restorations using desktop milling machines in-house in the laboratory. Up to now it has not been possible to fabricate CoCr restorations on “small” laboratory milling machines because of the material hardness. Due to the “wax-like” texture of the Ceramill Sintron® blanks the material can be easily dry milled in the Ceramill Motion 1 and the Ceramill Motion 2. During the subsequent sinter process with shielding gas flushing the frameworks attain their final state - a non-precious unit with a very homogeneous material structure.

Ceramill Sintron® was developed in collaboration with the Fraunhofer IFAM Dresden, Germany ([www.ifam.fraunhofer.de/](http://www.ifam.fraunhofer.de/)). Independent universities and accredited test laboratories were commissioned with relevant material and procedure testing of Ceramill Sintron®. Based on the excellent test results and feedback, the process and material quality has been validated at the highest level and guarantees maximum safety for the user and patients.

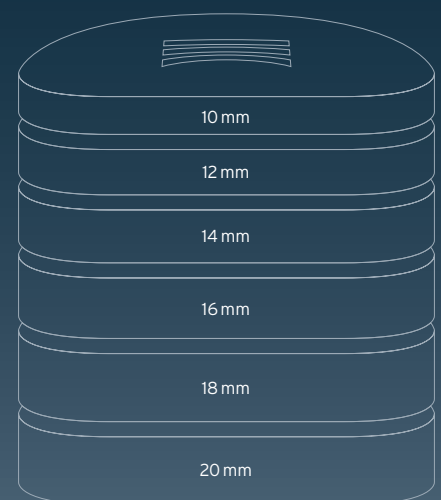


**Indications:**

- \_ Anatomically reduced and fully anatomical crown and bridge frameworks in the anterior and posterior region
- \_ Bridge frameworks with a maximum of two connected pontics in the anterior and posterior region and a maximum anatomical length of 50 mm
- \_ Cantilever bridges with a maximum of one bridge pontic (maximum one cantilever unit up to the second premolar maximum).

**Contraindications:**

- \_ Known incompatibility to the components



**Ceramill Sintron®71**

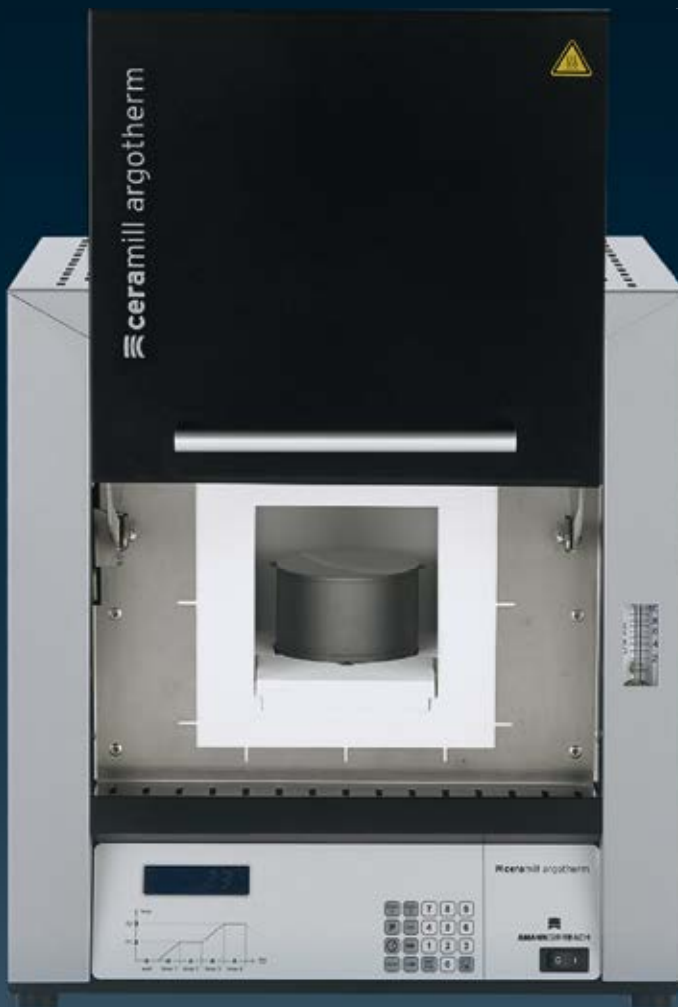
- \_ 6 heights of blank (XXS = 10 mm to L=20 mm)
- \_ Expansion factor of approx. 11%
- \_ Developed specially for processing in the Ceramill system
- \_ 25 to 30 units can be milled from one Ceramill Sintron® blank



# ceramill argotherm/argovent

## Intelligent shielding gas sintering for Ceramill Sintron®

Ceramill Argotherm is a high-temperature furnace and was specially developed for sintering Ceramill Sintron®. The Ceramill Argotherm is easily operated at the press of a button and controls the sinter programme of the milled CoCr units. The compact furnace that requires minimal space is used as a benchtop model and actively cools after sintering.



### ceramill argotherm

#### **Ceramill Argovent - the sinter chamber.**

- \_ Minimum shielding gas consumption
- \_ Perfect shielding gas flushing on the sinter framework
- \_ Can only be used in the Ceramill Argotherm
- \_ Capacity per sinter cycle: up to 30 units
- \_ Easy exchange
- \_ Low argon consumption
- \_ Minimum shielding gas consumption
- \_ Capacity per sinter cycle: up to 30 units

#### Technical data:

Art. No.: 178700

Dimensions (D x W x H) incl. servicing unit: 385 x 400 x 465 mm

Weight: 23 kg

Electrical connections: V/Hz 220-240/50-60

Power: 3.5 kW

Maximum temperature: 1,550° C

Control current fuse (slow): 4A Safety Class - IP20

Thermal protection class according to DIN EN 60519-2: Class 0

Sound pressure level: < 80 db (A)

Ambient conditions:

Temperature: +5 - +40°C

Humidity: 80%



**1** Scanning the model situation



**2** Design of the restoration (with virtual articulator)



**3** Milling the restoration from the Ceramill Sintron® blank (dry milling in the Ceramill Motion 1 or 2)



**4** Positioning the restoration in the sinter tray of the Argovent



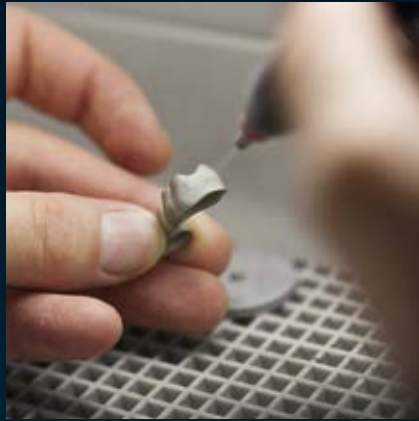
**5** Placing the sinter tray with fitted sinter cover in the furnace



**6** Putting on the sinter retort and starting the sinter process



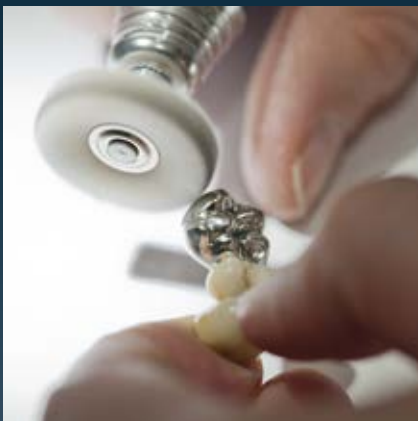
**7** Ceramill Sintron® restoration after sintering and removal from the Ceramill Argotherm sintering furnace



**8** Sandblasting the restoration and preparing for porcelain veneering



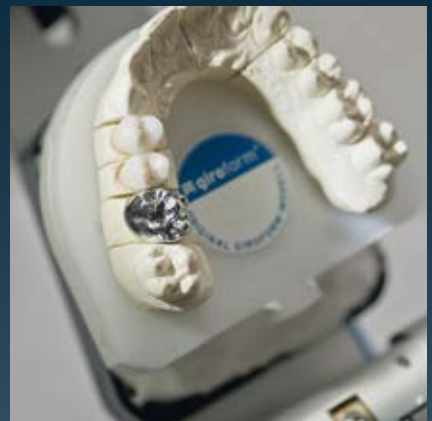
**9** Porcelain veneering of Ceramill Sintron®



**10** Polishing the fully anatomical sections

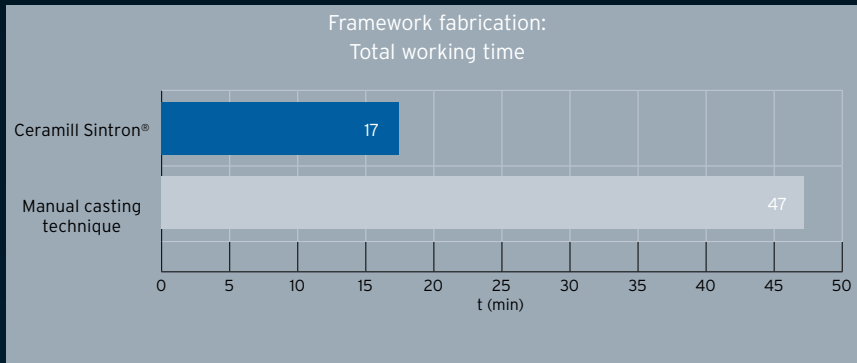


**11** Checking the fit and occlusion



**12** Veneered and polished Ceramill Sintron® restoration

## Saving in working time



Comparison of the saving in working time of the fabrication technique

Working stages taken into account: scanning > designing > nesting > sending data to the milling machine > separating connection > fitting > finishing

Source: Amann Girrbach R&D

## Corrosion resistance and biocompatibility

Results for corrosion tests and biocompatibility

Test start	Standard	Fulfilled?
Corrosion	DIN EN ISO 10271:2001	✓
Tarnish resistance	DIN EN ISO 22674:2006, Pkt. 8.6	✓
Static immersion test	DIN EN ISO 10271:2011-10, Pkt 4.1	✓
Static immersion test	DIN EN ISO 10271:2011-10, Pkt 4.5	✓
Sensitisation (allergenicity)	DIN EN ISO 10993-10	✓
Cytotoxicity (after 24 h and 72 h)	DIN EN ISO 10993-5	✓
Systemic toxicity	DIN EN ISO 10993-11	✓
Intracutaneous reactivity	DIN EN ISO 10993-10	✓

\_Ceramill Sintron® successfully passed all corrosion and biocompatibility tests

\_Ceramill Sintron® fulfils all standard requirements in relation to corrosion resistance and biocompatibility that are applicable for metal materials in dentistry

Source: BIOSERV Analytik und Medizinprodukte GmbH, Rostock, Germany

## Chemical composition

Components [%]	Casting alloy	
	Girobond NB	Sinter alloy Ceramill Sintron®
Cobalt (Co)	62	66
Chrome (Cr)	25	28
Molybdenum (Mo)	5	5
Tungsten (W)	5	-
Silicon (Si)	1	<1
Cerium (Ce)	<1	-
Iron (Fe)	<1	<1
Niobium (Nb)	<1	-
Manganese (Mn)	-	<1

Both alloys are free of nickel, beryllium, gallium and cadmium in accordance with DIN EN ISO 22674:2007.

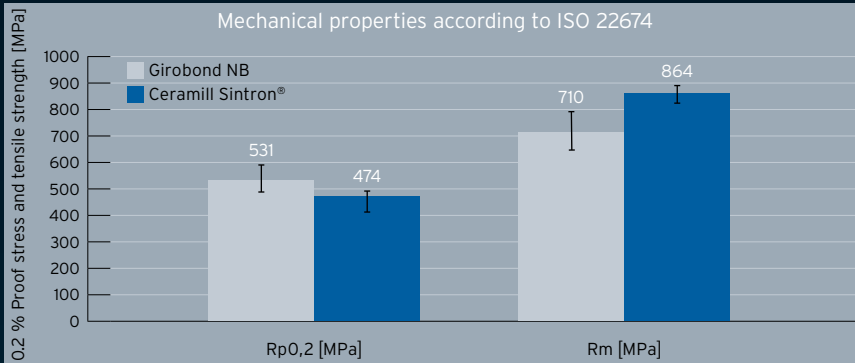
The chemical composition of Ceramill Sintron® is comparable to that of CoCr casting alloys.

Source: Amann Girrbach R&D





## Mechanical properties

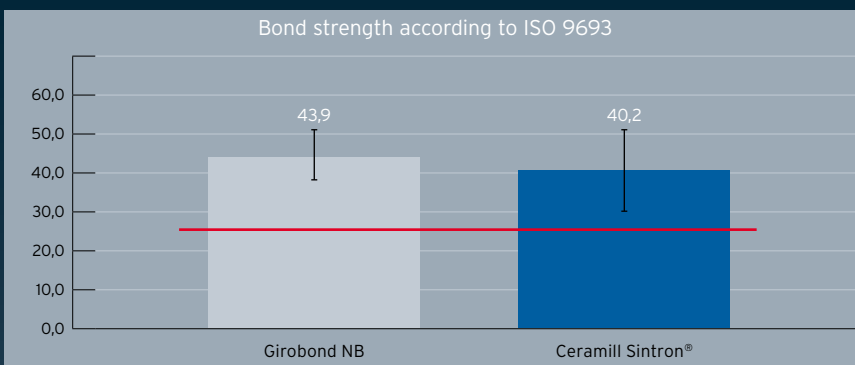


Ceramill Sintron® greatly surpasses the strength requirements of ISO 22674 for Class 4 alloys (Rp 0.2: 360 MPa).

The strength values are comparable with those of CoCr casting alloys.

Source: Amann Girrbach R&D

## Bond strength



The coefficient of thermal expansion (25-500°C) of Ceramill Sintron® is  $14.5 \times 10^{-6} / K$ .

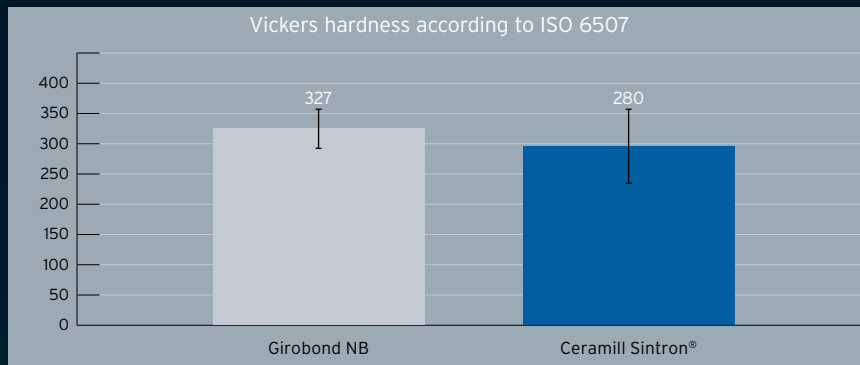
Ceramill Sintron® can therefore be veneered with all conventional non-precious metal veneering porcelains.

The bond strength of Ceramill Sintron® to veneering porcelain (in this case Creation CC) is comparable to the bond strength between CoCr casting alloys and veneering porcelain.

Source: Amann Girrbach R&D



## Vickers hardness HV 10



In the densely sintered state Ceramill Sintron® has a lower hardness than CoCr casting alloys, which facilitates workability/polishability.

Source: Amann Girrbach R&D

## Solderability / Laserability



The weldability and solderability of Ceramill Sintron® is given as analogous to CoCr casting alloys without restriction.

Source: Amann Girrbach R&D

## Ordering information

761101	Ceramill Sintron® 71XXS, CoCr blank, dental arch form	h = 10 mm	1 blank per pk.
761102	Ceramill Sintron® 71XS, CoCr blank, dental arch form	h = 12 mm	1 blank per pk.
761103	Ceramill Sintron® 71S, CoCr blank, dental arch form	h = 14 mm	1 blank per pk.
761104	Ceramill Sintron® 71, CoCr blank, dental arch form	h = 16 mm	1 blank per pk.
761105	Ceramill Sintron® 71M, CoCr blank, dental arch form	h = 18 mm	1 blank per pk.
761106	Ceramill Sintron® 71L, CoCr blank, dental arch form	h = 20 mm	1 blank per pk.





**Ceramill Sintron®** -  
discover online!

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