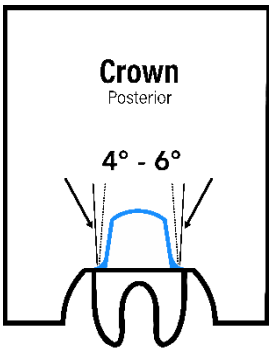
Short Application Note

saremco print CROWNTEC (A1, A2, A3, A3,5) on
DentaMile Desk MC-5

1. Tooth preparation

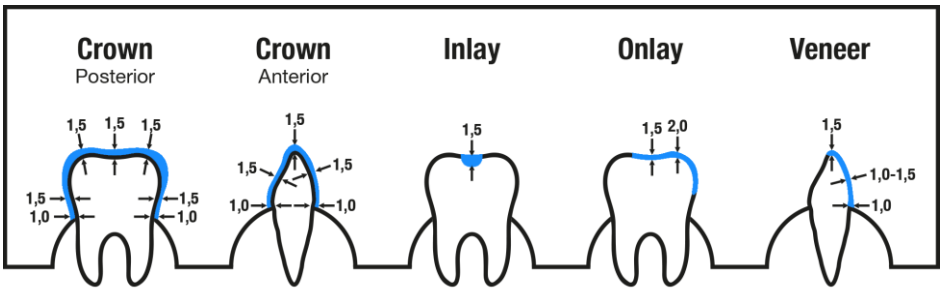


Tooth preparation

- Make sure to create a stump with a 4° - 6° cone. Round off all the transitions within the preparation to avoid unwanted tension under the restoration material.
- Also make sure to avoid tangential, spring edge or lip preparations. Therefore, exercise special care when using instruments with a round tip and do not introduce them any further than up to half their diameter at maximum! Please note that tangential preparations are technically unfeasible and would result in too thin, i. e. unstable and over contoured crown margins.
- The preparation limit must have a width of at least 1 mm.
- Both shoulder preparation with rounded interior angles and a distinct chamfer preparation may be carried out. Rework the preparation margin using finishing instruments of matching shape.

2. Model the workpiece on the computer

- Permanent crowns, inlays, onlays, veneers: Always keep the minimum wall thickness – even after manual grinding (The dimensions apply also to artificial teeth and temporary crowns, inlays, onlays and veneers).

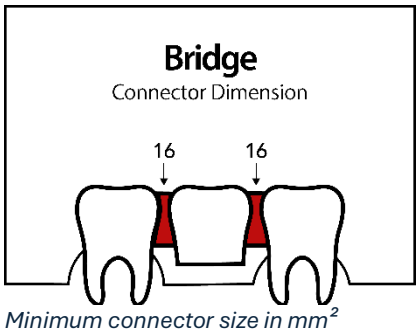


Minimum wall thickness in mm

- Temporary bridges: Keep a connector size of at least 16 mm^2.

  The connector area should be as large as possible. For physical stability, the height of the connector is more important than the width. Doubling the width results in only doubling

the strength, while doubling the height results in eight times the strength. Oval connector areas are therefore recommended.
Design temporary (long-term) bridges in the non-visible molar region in the form of a floating bridge (posterior bridge). A floating bridge does not sit firmly on the jaw but forms a surface that can be rinsed underneath and can therefore be optimally cleaned.

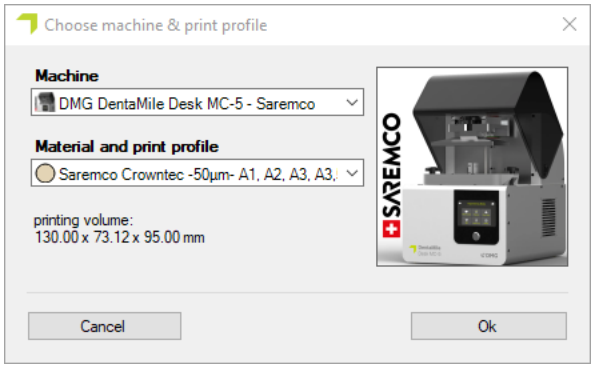


Minimum connector size in mm²

3. Generate the printing file with DentaMile CAM MC

3.1. Select printer and material

Open DentaMile CAM MC and select the machine **DMG DentaMile Desk MC-5 - Saremco**, as well as the material and print profile for **saremco print CROWNTEC A1, A2, A3, A3.5**.

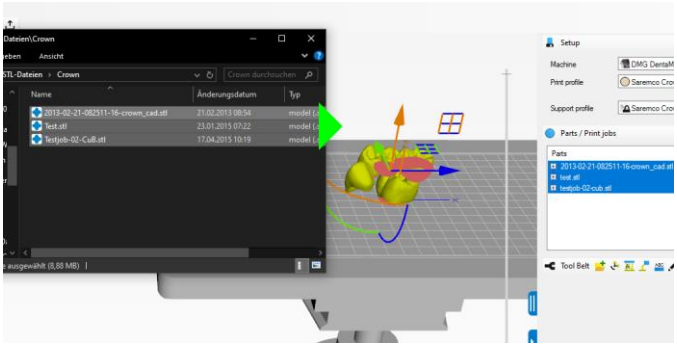


Note

You can download the machine from your machine configuration in DentaMile CAM MC

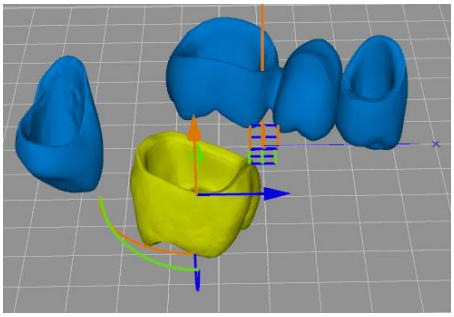
3.2. Import of the print files

Simply import the objects from the corresponding folder using drag and drop or select the **File import** function and navigate to your object files. In both cases, you can also select several objects at the same time.



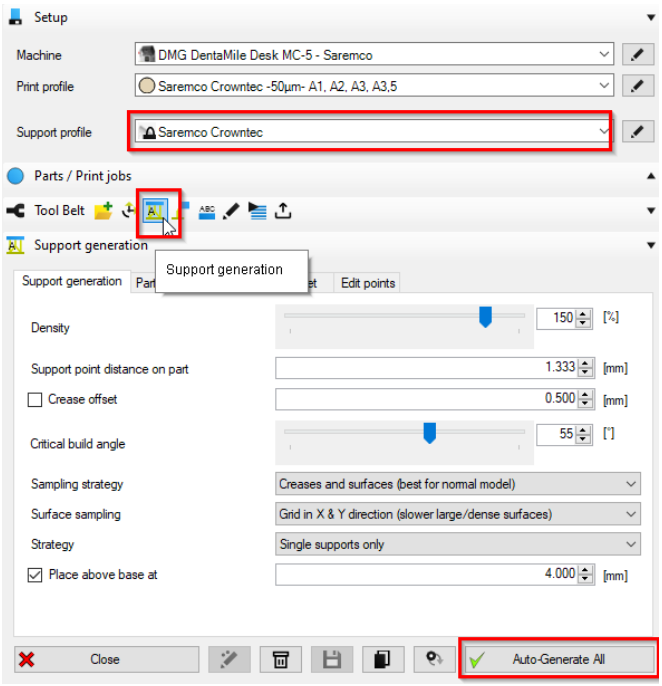
3.3. Orientation

Orient the crowns or bridges so that the occlusal surface points towards the build platform.



3.4. Support

For a flawless construction process, the objects require support structures. Select the **Support generation** button in the toolbar. The support profile **Saremco Crowntec** should already be selected and delivers optimum results. By clicking on **Auto-Generate All**, support structures are created for all objects on the build platform. The parts are positioned a few millimeters above the build platform and fitted with a base plate.



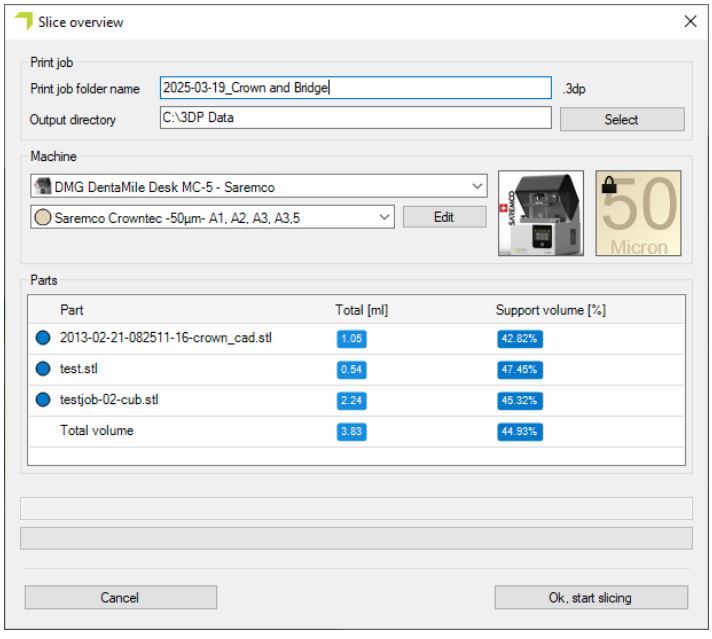
Please check your objects for support structures that are not optimally positioned. Supports that collide with the part are shown in red and should be removed. To do this, you can simply mark the supports with the mouse and remove them with **del** key on your keyboard. Make sure that you remove both the tip and the pole of the support.

The **edit support generation points** function can be used to add (and remove) individual supports in the same support profile if required. You can also add individual supports by using the **Manual Support** function.

3.5. Create build job and transfer to the printer

As soon as the arrangement, orientation and support of the components have been completed, you can start the slicing process via **start slicing**.

In the next dialog box, you can give your print job a suitable name or keep the suggested name. A folder on the computer's local hard disk or USB stick can be selected as the output directory. The print job will be saved in this directory. Printer and material parameters can also be checked and changed here.



If you receive a warning message that objects are close to the edge or outside the build area, check whether it is the objects or the base plates. If it is the base plates, you can ignore the warning. If parts are located outside the build area, they must be rearranged or reoriented and supported again if necessary.

Click on **Ok, start slicing** to create the build job. Now transfer the finished print job to your DentaMile Desk MC-5 via the printer connection and upload function in DentaMile CAM MC or USB stick.

4. Print

- Work as clean as possible.
- Dirty reservoirs or machines can cause deformation/discoloration.
- The build platform should be cleaned with isopropanol until no dark discoloration appears on a clean cloth.
- Briefly shake the resin and pour it into the reservoir of the printer.
- Start the printing process.

5. Post Process

5.1. Remove parts from build platform

- Remove excess resin from the build platform with a suitable spatula.
- Remove the building platform from the machine, place it on a cloth or paper.
- Remove the printed object carefully from the platform using a suitable spatula.

Useful hint

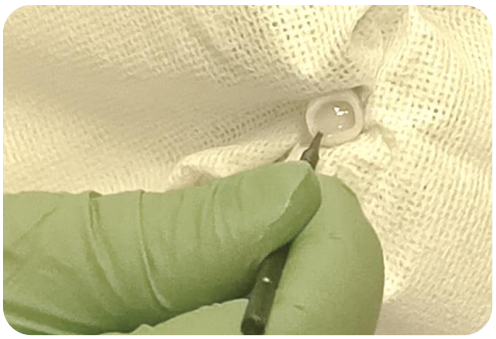
Working in an environment with yellow light is recommended.
The resin is light sensitive, and the print object could pre-cure before well cleaned.

5.2. Clean

- Roughly snap off the supports.

Option 1: Cleaning by hand

- Remove excessive material with an IPA-soaked (≥96 %) cloth or brush.
- Clean the interdental areas and the interior surfaces of the crown with a suitable IPA-soaked (≥96 %) brush, until the surface is slightly matt.



Note

Never soak the printed job into alcohol.

Freshly printed
Surface: glossy
Inside: glossy

Not enough cleaned
Surface: slightly matt
Inside: glossy

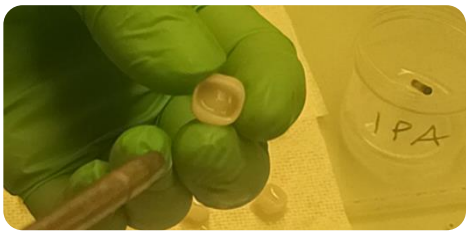
Well cleaned
Surface: slightly matt
Inside: slightly matt

Option 2: saremco print CLEANING CONCENTRATE

- Mix the concentrate with deionized water (see saremco product website)
  - For a homogeneous cleaning solution, it is essential to measure by **weight**. Measurements by volume are inaccurate.
  - Add **4** parts deionized water to **1** part concentrate. Shake well.
- Clean parts for **3 min** in ultrasonic bath in mixed cleaning solution
- Rinse well in warm water
- Blow off excess resin with compressed air
- Repeat process:
  Second ultrasonic bath only with fresh (!) cleaning liquid

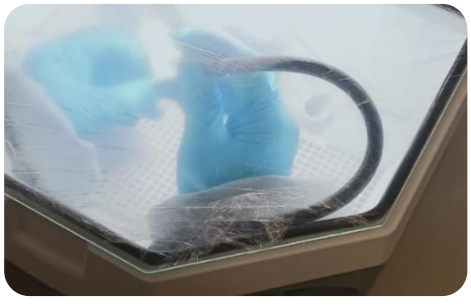
Dry

- Dry the parts thoroughly with compressed (oil free) air



Optional step: Sandblasting

- Carefully sandblast the printed part surfaces to remove the remaining coating using a sandblaster with polish blasting material 50 µm at a maximum blasting pressure of 1.5 bar.
- Grind down the remaining blunt supports with a suitable cutter.



Note

Take care to avoid any deformation or damage of the printed job.

Optional step: Individualization of the crown or tooth

Apply intensive colours e. g. els paintart from SAREMCO

5.3. Cure

Correct post-exposure is important to obtain biocompatible objects with optimum mechanical properties and a perfect fit. Therefore, always ensure compliance with the specified process conditions and use the appropriate and validated post-exposure device for your printing system. Do not place the printed objects on top of each other in the exposure chamber and ensure that the parts receive light from all sides.

Cure Device	Settings
DentaMile Cure MC	Crowntec-Srmc-St (Saremco Crowntec Sterilizer)

If the post-curing program for Saremco Crowntec is not stored in the favourites of the device, please contact our DMG support team or your local sales representative.

5.4. Color finalization

To achieve the final color shade, these steps are absolutely necessary!

- Place the printed objects in a sterilization unit for **5** minutes at **134 °C/273.2 °F**.
- Additionally, cure the object from each side 2 x 20 seconds with a hand polymerization lamp at full power (e.g. Bluephase G2).

For further information check saremco print CROWNTEC color finalization video on YouTube

5.5. Polish

- Work out the restoration with 40 µm and 12 µm diamond burs.
- Polish to a high gloss using polishing brushes, polishing discs, strips or silicone polishers.

6. Application

6.1. Attach – **permanent crowns**, inlays, onlays or veneers to the tooth

- Roughen the inside of the printed object by sandblasting with an abrasive (AI203, 110µm).
- Subsequently, fix it with an appropriate composite cement material permanently. Panavia V5 (Kuraray) and Variolink (Ivoclar) are recommended.

Note

Zinc-phosphate cements as well as glass-ionomer-cements are only of limited suitability due to their opacity.

6.2. Attach – **temporary crowns**, bridges, inlays, onlays or veneers to the tooth

- Attach the finished temporary prosthesis with commercially available provisional cement.

6.3. Attach – artificial teeth on a denture base

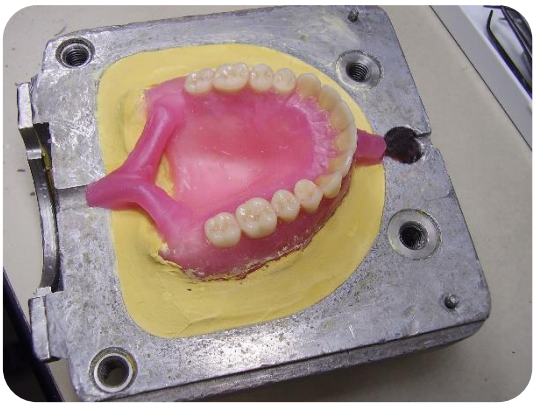
- Roughen the base surface of the printed artificial teeth for e.g., by sandblasting (Al203, 110µm).

- Apply a primer and a bonding material, insert in the prosthesis according to the natural shape and polymerize.

Alternatively, saremco print CROWNTEC or saremco print DENTURETEC can also be used directly as bonding material. Put a small amount of material with a brush on the roughened teeth-surface of the artificial tooth, put it into the prosthesis, eliminate any excess material and light-cure it from all sides for at least 20 seconds.

6.4. Attach – artificial teeth in a denture base (classical manufacturing)

Use a classical manufacturing procedure like the pouring method with cold cure resin after roughening the teeth.



https://de.wikipedia.org/wiki/Datei:Making_of_complete_denture_04.JPG#filelinks

Video Series saremco print on Youtube.
https://t.ly/BY-5