VERDENT

Ver. 1 from 28.04.2026

Verdent Sp. z o.o.
Ul. Lodowa 138,
93-232 Łódź, Polska

Instructions for Use

of prosthetic laboratory diamond coated burs, carbide cutters, steel cutters, zirconium oxide cutters, carbide cutters with diamond-like coating, carbide cutters with zirconium coating, diamond-coated burs with diamond-like coating, and diamond-coated burs with zirconium coating

1. General Information

This instruction manual applies to prosthetic burs and cutters intended for professional use in dental laboratories, dental technology workshops, and dental offices. Prosthetic cutters are precision rotary instruments used for processing materials applied in prosthetic dentistry and dental technology with the use of prosthetic micromotors. Prosthetic cutters are intended **for professional use only**.

2. Application

Prosthetic burs and cutters are used for processing materials such as:

- acrylics,
- waxes,
- composites,
- ceramics,
- zirconia,
- plasters,
- metals and metal alloys.

The scope of application includes:

- cutting,
- grinding,
- shaping,
- smoothing,
- surface finishing.

The selection of the appropriate cutter type depends on the processed material and the desired working result.

3. Types of Prosthetic Burs and Cutters

- **Carbide cutters used for:**

o Processing acrylic,
o Processing wax,
o Processing composite,
o Processing metal and metal alloys,
o Removing excess material.

- **Diamond-coated burs used for:**

o Processing ceramics,
o Processing zirconium dioxide.
o Processing hard materials.

- **Zirconium oxide cutters used for:**

o Precise processing of aesthetic materials,
o Surface finishing.

- **Steel cutters used for:**

o Processing acrylics,
o Processing plasters,
o Processing waxes,

o Processing thermoplastic materials.

- **Carbide Cutters with diamond-like coating (DLC):**

o The DLC (Diamond Like Carbon) coating provides exceptional hardness and reduces friction, increasing cutting precision.
o The coating increases wear resistance.
o The coating reduces friction and minimizes material adhesion to the tool.
o The coating reduces material heating.
o DLC-coated cutters are recommended for processing materials requiring high precision and reduced heat generation, including thermoplastic materials.

- **Carbide Cutters with zirconium coating (ZrN):**

o The zirconium nitride coating increases corrosion resistance and additionally strengthens mechanical durability.
o The coating increases wear resistance.
o The coating reduces friction and minimizes material adhesion to the tool.
o The coating reduces material heating.
o ZrN-coated cutters are recommended for processing materials requiring high precision and reduced heat generation, including thermoplastic materials.

4. Operating Guidelines

Before use, ensure that:

- the cutter is not damaged,
- the cutter is correctly mounted in the device,
- the drive unit is technically functional.
- the appropriate rotational speed is set

During operation:

- apply moderate pressure,
- avoid overloading the cutter,
- use dust extraction,
- use personal protective equipment.

5. Operating Parameters

Operating parameters should be selected according to:

- cutter type,
- diameter of the working part,
- type of processed material.

Basic recommendations:

- larger diameter = lower rotational speed,
- longer cutter = lower pressure,
- harder material = appropriate cooling and suitable cutting pattern.

Do not exceed the recommended operating parameters.

Maximum / Recommended Rotational Speeds		
Micromotor-driven instruments		
HP 104 shank	**Maximum speed**	**Recommended speed**
ISO Φ 1/10mm	**rpm**	**rpm**
008-021	120 000	25 000 – 50 000
023-045	80 000	15 000 – 40 000
050-060	50 000	8 000 – 30 000
080-100	40 000	7 000 – 20 000
120-180	24 000	6 000 – 10 000

Table 1. Maximum / recommended rotational speeds

6. Safety Instructions

Do not use cutters that are:

- damaged,
- corroded,
- worn out,
- vibrating during operation.

Incorrect use may lead to:

- cutter fracture,
- excessive vibration,
- damage to the processed material,
- overheating of the material.

7. Cleaning and Maintenance

- Before first use, disinfect the tools in a disinfectant solution for 30 minutes.
- After each use, mechanically remove all organic debris.
- Then clean the tools using an ultrasonic cleaner or under running water. Repeat if necessary.
- After cleaning, dry the tool thoroughly; otherwise, corrosion may occur.
- If required, sterilize the tools using moist heat.

8. Storage

Store the product in a dry place, protected from sunlight. After removing it from the original packaging, store it in conditions that protect it from moisture, contamination and mechanical damage.

9. Product Lifetime

The product lifetime is the period during which its functional properties are maintained. Loss of any of these properties (loss of diamond coating, nickel layer damage, deformation) qualifies the product for disposal.

A maximum of 10 sterilization cycles is permitted.

10. Disposal of Used Tools

Used prosthetic cutters must be disposed of in accordance with applicable waste management regulations. Due to sharp edges, they should be discarded in a manner that prevents the risk of injury.