VERDENT

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Instructions for use diamond dental burs, carbide and steel burs, zirconium dioxide burs, diamond dental burs with zirconium layer, diamond dental burs with diamond like carbon, carbide dental burs with zirconium layer, carbide dental burs with diamond like carbon layer.

REF

59076961diamdentalbursHJ – diamond dental burs,
59076961carbdentalbursEX – carbide dental burs,
59076961steeldentalburs8E - steel dental burs,
59076961dbwzirclayerVG – diamond dental burs with zirconium layer,
59076961zircdioxidedbDT - zirconium dioxide burs,
59076961dbwdiamlicala7X – diamond dental burs with diamond-like carbon layer,
59076961cbwzirclayerUB - carbide burs with zirconium layer,
59076961cbwdiamlicala6N - carbide burs with diamond-like carbon layer

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Medical device intended for professional use only.
Carefully read the instructions for use.
These instructions apply to the use of diamond dental burs, carbide dental burs, steel dental burs, zirconium dioxide dental burs, carbide dental burs with diamond like carbon, carbide dental burs with zirconium layer, diamond dental burs with diamond like carbon, diamond dental burs with zirconium layer.
The instructions include information on cleaning and sterilization before the first and each subsequent use.
The burs supplied by Verdent are in non-sterile condition and are for repeated use.

1. Introduction

1.1. Brief description of the product

Dental burs are precision tools used in dental procedures, made of high-quality materials such as carbide, stainless steel or diamond. They are used for drilling, shaping and removing tooth tissue, old fillings or surface treatment. They are available in a variety of sizes, shapes and lengths, allowing them to be used in various dental procedures. These burs meet safety standards, ensuring high efficiency and comfort for both the dentist and the patient.

1.2. Types of dental burs

- **Carbide burs**:
  - Used mainly for tooth preparation, removing old filling material and hard tooth tissue.
  - They are characterized by high hardness and abrasion resistance, which allows for effective tissue removal.
- **Diamond burs**:
  - Used mainly for hard dentin work in excavation of carious cavities.
  - Used for cutting hard materials used in dentistry like steel and ceramics.
- **Burs with diamond-like carbon layer (DLC)**:
  - Diamond-Like Carbon coating provides exceptional hardness and reduces friction, which increases cutting precision.
  - Used in more demanding procedures where precision and minimal tissue damage are key.
- **Burs with zirconium layer (ZrN)**:
  - The zirconium nitride coating increases the drill's resistance to corrosion and further strengthens its mechanical strength.
  - They are used in treatments that require greater resistance to mechanical damage and in cases where it is necessary to minimize the risk of overheating.

For detailed information on sizes, gradations and cuts, please visit: www.verdent.pl

1.3. Users

The burs may only be used by dentists and other qualified professionals,

Who have relevant education and experience:

- **Qualified dental practitioners** - The user should have knowledge of the properties and application of burs and the skills needed to use them safely and effectively.
- **Support staff (dental hygienists, dental assistants - qualified professionals)** - They can prepare the burs for the procedure and ensure their sterilization, but the work with the burs themselves should be done only by the dentist.

All burs must be used as intended, in accordance with the manufacturer's instructions, with precautions and sterilized in such a way as to ensure patient safety and the effectiveness of the procedure.

1.4. Target population

The burs are intended for use in the general population of dental office patients requiring dental care

Target patient groups:

- **Adult patients**: Burs are used for adult patients requiring dental treatment related to decay, removal of old fillings, preparation of teeth for prosthetic restorations, etc.
- **Children**: burs can also be used in pediatric dentistry, in procedures that require the preparation of deciduous or permanent teeth in young patients

- **Patients with systemic diseases**: Burs can be used in patients with systemic diseases, with appropriate precautions and in consultation with the treating physician.

1.5. Availability of instructions for use

The manual is available on the manufacturer's website at www.verdent.pl, the QR code leading to it is available on order forms, advertising materials and in the manufacturer's catalog.
The user may also receive a paper version of the manual free of charge within 7 business days, from the date of notification. To do so, send a message to verdent@verdent.pl

2. Intended use

Intended Use: Dental burs are designed for the initial stages of treatment. These burs are used to drill, shape, cut and remove tooth tissues such as enamel, dentin, restorative materials, and to prepare the tooth surface for prosthetic restoration. Burs can also be used to prepare carious cavities, remove old fillings, and prepare teeth before placing crowns, bridges or other prosthetic constructions.

2.1. Indications for use

The primary uses of carbide burs are:

- working in hard dentin for excavation of carious cavities
- cutting through crowns and metals in the mouth
- removal of composite materials.

The primary uses of diamond-coated burs are:

- working in hard dentin for excavation of carious cavities
- Cutting hard materials used in dentistry like steel and ceramics.

3. Warnings/contraindications

3.1. Precautions

⚠

- use only technically sound dental handpieces for turbines and contra-angle handpieces
- check the recommended speed
- When working with air turbine-driven tools, cool with water spray

3.2. Warnings - eliminating faulty tools

⚠

- Do not use tools with a curved shaft (vibration)
- Do not use tools with signs of corrosion (risk of fragmentation of the nickel coating, as well as the diamond coating and the occurrence of infections)
- Do not use blunt tools (thermal phenomena, vibration)
- Follow the instructions for use
- Clean and sterilize instruments according to instructions before first use and each subsequent use
- Wear gloves during use
- Wear goggles and a mask during use

- Check the tool for signs of corrosion/rusty, damaged or cracked parts
- Do not exceed the permissible pressure - see para. 5.5
- Do not force tools into the unit, this may damage the collet
- Do not exceed the recommended speeds - see para. 5.5
- Before using the drill, make sure that it is properly installed in the corresponding rotary tool
- Compatibility check: Make sure the bur is compatible with the micromotor or turbine being used. Burs must be properly seated in the tool to prevent them from falling out during operation
- Conduct an operation test: Briefly run the tool with the drill mounted at idle to make sure it is working properly and the drill is firmly attached and not vibrating.

3.3. Contraindications

Contraindications: The use of dental burs may be contraindicated if:

- Patients with allergies to drill materials (e.g., metal alloys).
- Patients in whom the use of drills can lead to complications, for example, in the case of diseases that require special precautions.
- In areas where drilling can lead to damage to adjacent structures, such as thin tooth walls, which can become perforated.

⚠ **All dental burs, regardless of the material from which they are made, must go through an appropriate pre-preparation process before use, which includes sterilization, disinfection, checking compatibility with the instrument, and technical inspection. Adherence to these procedures is essential to ensure patient safety and the clinical effectiveness of the burs.**

4. Clinical benefits

Expected clinical benefits of dental burs:

- The burs are characterized by high precision, which allows for a more accurate and faster procedure, Which reduces patient discomfort.
- Less risk of overheating: coatings on the burs, provide better heat dissipation, which reduces the risk of soft tissue damage during the procedure.
- High precision cutting and reduced vibration can lead to less tissue damage, which in turn reduces the risk of complications after surgery.
- Burs, especially those with coatings, have a longer life, which means they are less prone to wear and deformation.
- Thanks to the durable materials, the burs are less prone to breakage or fracture, ensuring greater safety during the procedure.

5. Performance characteristics of the product

Diamond dental burs achieve their intended action by rotating around a longitudinal axis at high speeds, provided by either an electric drive (accelerating contra-angle), or by pressure (air turbine)

Dental burs are precision tools used in dentistry for drilling, grinding, caries removal, cavity preparation, and tooth surface treatment. The burs are made of durable materials such as carbide, which provides them with adequate hardness, durability and wear resistance.

5.1. Mechanism of action

- **Cutting and drilling**: Burs work by mechanically removing material (tooth or filling) by rotating the tool at high speed. The drill's cutting edge effectively slices away the material, allowing precise shaping of the cavity.
- **Friction reduction**: Coatings, such as diamond-like or zirconia, reduce friction between the bur and the tooth surface. Less friction means a lower risk of overheating, which is important for protecting healthy tissue.
- **Heat dissipation**: During operation, drills generate heat. The materials they are made of and the coatings used help to effectively dissipate heat, preventing damage to tooth tissue and reducing patient discomfort.

5.2. Efficiency and durability

- **Cutting performance**: Thanks to the use of carbide and high-hardness coatings, these burs offer high cutting performance, resulting in faster and more precise procedures.
- **Length of use**: Carbide burs are extremely durable, making them less frequently replaced, which is economical for dental clinics.

5.3. Safety of use

- **Minimizing the risk of fractures**: Thanks to their robust design and high fracture resistance, the burs are safe to use, minimizing the risk of complications during procedures.

5.4. Hygiene and disinfection

- **Resistance to sterilization**: The burs are resistant to sterilization processes, including moist heat, ensuring long-lasting and safe use.
- **Ease of cleaning**: Smooth surfaces facilitate cleaning and prevent the deposition of residual organic materials, which is important for maintaining the sterility of the instrument.

5.5. Recommended speeds

- Each tool must be used within the range of permissible operating speeds which are specified in the following table - Table No. 1.
- The maximum speed is determined not only by the physical parameters of the treatment, but also by the amount of vibration, so it should never be exceeded. Exceeding it can result in the destruction of the dental handpiece.
- The minimum speed is limited by the efficiency of processing. Below this speed, the device does not work as expected.

Table 1 Permissible speeds

Prędkości obrotowe								
Narzędzia napędzane mikromotorem stomatologicznym						Narzędzia napędzane turbiną powietrzną		
chwyt 104 i 204	max prędkości obrotowe	zalecane prędkości obrotowe	chwyt 205	max prędkości obrotowe	zalecane prędkości obrotowe	chwyt 313 i 314	max prędkości obrotowe	zalecane prędkości obrotowe
ISO ø 1/10 mm	Obr /min	Obr /min	ISO ø 1/10 mm	Obr /min	Obr /min	ISO ø 1/10 mm	Obr/min	Obr/min
010-023	120.000	25.000-75.000	010-023	90.000	20.000-60.000	008-010	450.000	100.000-220.000
025-045	60.000	17.000-40.000	025-045	50.000	14.000-30.000	012-014	450.000	70.000-220.000
050-060	50.000	14.000-30.000	050-060	40.000	10.000-20.000	016-018	450.000	55.000-160.000
080-100	40.000	10.000-20.000	080-100	30.000	8.000-16.000	021-023	300.000	40.000-120.000
120-160	24.000	6.000-11.000	120-160	18.000	4.000-9.000	025-027	160.000	35.000-110.000
180-220	12.000	5.000-9.000	180-220	10.000	3.000-7.000	029-031	140.000	30.000-95.000
						033-040	120.000	25.000-75.000
						042-050	95.000	15.000-60.000

Ground rules

- Tools with large diameters require smaller rotations.
- Long tools require less clamping force.
- Attach instruments according to the instructions of the manufacturer of the dental unit/tips

Recommended clamping force

- Press force max 2 N

Do not exceed the recommended tool clamping force:

- Protects tools from plastic reshaping
- Prevents damage to the tissues being worked on
- Prevents damage to dental tip bearings.

Cooling

Water spray cooling is mandatory according to the law.

When working with air turbine-powered tools - see Table 1.

The purpose of cooling is not to lower the operating temperature of the tool, but to prevent heat from accumulating in the tooth and tool.

Adherence to the above recommendations, will extend the life of the tools and prevent the development of adverse side effects of work.

6. Cleaning and sterilization

- Disinfect the instruments in a disinfectant for 30 minutes before first use
- Mechanically remove any organic particles after each use.

- Then clean the tools with ultrasound or under running water. If necessary, repeat the operation.
- Dry the tool after cleaning, otherwise it may corrode.
- Sterilize instruments with moist heat

6.1. Disinfection before sterilization

Dental burs must be thoroughly cleaned of all biological residues and other contaminants before the sterilization process.

Disinfection process:

- **Chemical disinfection**: Using disinfectants to remove microorganisms from the surface of burs. It is important that the disinfectant is compatible with drill bit material to avoid damage to the drill bits. The disinfectant should be free of aldehydes, phenols and chlorine, which can damage the materials of the product.

- **Mechanical cleaning**: Involves cleaning the bur with special brushes and ultrasonic dental cleaners to remove residual material and plaque.

6.2. Sterilization Before Use

All dental burs, whether new or previously used, must undergo a sterilization process before they are used for the first time and before each subsequent procedure. This process is crucial to ensure patient safety and prevent infections.

Sterilization procedure:

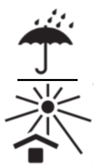
Steam sterilization (autoclaving): The most common method, placing burs in an autoclave: at an overpressure of 2 Bar. at 121°C for 15 minutes,
Or at 2 Bar. at 132°-134°C for 5 minutes. It is recommended to use packaging dedicated to sterilization.

7. Lifetime of the product

The life of a product is the period during which its functional characteristics are preserved. Loss of any of them (losses in the diamond coating, nickel coating, deformation) qualifies the product for elimination from use.

A maximum of 10 sterilization cycles are allowed.

8. Storage method



Store the product in a dry place not exposed to sunlight. After removing from the original packaging, store in conditions that protect it from moisture, dirt and mechanical damage.

9. Disposal of used tools

Used dental burs as cutting tools and potentially infectious items should be handed over to the recipient of medical waste in hard, puncture-proof packaging.

10. Reporting of serious medical incidents

Any serious incident related to the device should be immediately reported to the manufacturer at **Verdent Sp. z o.o Lodowa 138 Street, 93-232 Lodz,** or verdent@verdent.pl and to the competent authority of the Member State where the user or patient resides.

Serious incident - means an incident that directly or indirectly led to, may have led to, or may lead to any of the following:

a) Death of a patient, user or other person;
b) temporary or permanent serious deterioration of the health of a patient, user or other person;
c) A serious threat to public health.

Incident - means any malfunction or deterioration of the properties or performance, including usability error due to ergonomic features, of a product made available on the market, as well as any inaccuracy in the information provided by the manufacturer and any adverse effects.

11. Description of symbols used on the product label

	Manufacturer	MD	Medical device
	Date of manufacture of the device	UDI	Unique product identification code
CE	European compliance		Refer to the instructions for use
	Warning		

12. Contacting the manufacturer

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