



October 6, 2022

Vatech Acucera, Inc.
Kwon Wook
Manager
2544, Nambuk-daero, Idong-eup, Cheoin-gu
Yongin-si, Gyeonggi-do 17138
SOUTH KOREA

Re: K222686

Trade/Device Name: Perfit FS Dental Zirconia Fully Sintered Block
Regulation Number: 21 CFR 872.6660
Regulation Name: Porcelain Powder For Clinical Use
Regulatory Class: Class II
Product Code: EIH
Dated: August 22, 2022
Received: September 6, 2022

Dear Kwon Wook:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm> identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal

statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see <https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products>); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to <https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems>.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (<https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance>) and CDRH Learn (<https://www.fda.gov/training-and-continuing-education/cdrh-learn>). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (<https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice>) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Michael E. Adjodha, M.ChE.
Assistant Director
DHT1B: Division of Dental and
ENT Devices
OHT1: Office of Ophthalmic, Anesthesia,
Respiratory, ENT and Dental Devices
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

Indications for Use

510(k) Number (if known)
K222686

Device Name

Perfit FS Dental Zirconia Fully Sintered Block

Indications for Use (Describe)

The Perfit FS Dental Zirconia Fully Sintered Block is used for dental restorations using different CAD / CAM or manual milling machines. All blocks are processed through dental laboratories or by dental professionals.

Type of Use (Select one or both, as applicable)

Prescription Use (Part 21 CFR 801 Subpart D)

Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

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510(k) Summary-K222686

The following 510(k) summary is being submitted as required by 21 CFR 807.92;

- 5.1 Submitter:** Vatech acucera, Inc.
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- Date Prepared:** August 22, 2022

- 5.2 Device Identification**
- | | |
|-----------------------------|--|
| Device Trade Name | Perfit FS Dental Zirconia Fully Sintered Block |
| Common Name | Milling Block or Dental CAD/CAM Block |
| Classification Name, Number | Porcelain Powder for Clinical Use(21 CFR 872.6660) |
| Device Classification | II |
| Product Code | EIH |

- 5.3 Predicated or legally marketed devices which are substantially equivalent**
- Predicated device: K203590, "Perfit FS Dental Zirconia Blank, Perfit ZR UT Dental Zirconia Blank", manufactured by "Vatech acucera, Inc."

- 5.4 Device Description and Statement of Intended Use**
- The Perfit FS Dental Zirconia Fully Sintered Block consists of zirconium oxide which compresses ceramic for milling, grinding, and further firing. It is normally pre shaded, fully sintered and milled by dental technician with CAD/CAM machine for shaping artificial teeth such as crowns, bridges, veneers, inlay etc.

The Perfit FS Dental Zirconia Fully Sintered Block are zirconia oxide block made available in different versions and chemical compositions of various colors, shades and dimensions and will further process the discs by milling them to make final dental restorations such as crowns, bridges, veneers, inlays and on lays based on the anatomical rendering of the patient's teeth using CAD/CAM equipment. At the completion of the machining steps, the

dental restoration is fired (i.e., sintered) in the oven to harden the ZrO₂ so that its final properties can be achieved.

They are available in different models that differ in various specification and color. There are white zirconia products(White) and colored zirconia products, and colored zirconia is also divided into Monolayer(A1, A2, A3, A3.5, A4, B1, B2, B3, B4, C1, C2, C3, C4, D2, D3, D4, White) color products , Shade multi-layer(ML A1/A2/A3, A1M, A2M, A3M, A3.5M, A4M, B1M, B2M, B3M, B4M, C1M, C2M, C3M, C4M, D2M, D3M, D4M) color products.

The white zirconia is composed of ZrO₂+Y₂O₃+Nb₂O₅ and an additional inorganic pigment: Al₂O₃ and Other oxide. The color zirconia products are derived from the same zirconia powder as the regular white zirconia powder, with the addition of very small amount of inorganic pigments: Fe₂O₃ and other oxide. The inorganic pigments generate the color on the prosthetic dental device, after sintering at dental labs that matches natural color of patient's teeth.

The composition of the Dental Zirconia Block including the white zirconia and the color zirconia conforms to ISO 13356:2015, Implants for surgery -Ceramic materials based on yttria-stabilized tetragonal zirconia (Y-TZP) and the performance conforms to ISO 6872:2015/Amd1:2018, Dentistry: Ceramic Materials.

5.5 Statement of Intended Use

The Perfit FS Dental Zirconia Fully Sintered Block is used for dental restorations using different CAD / CAM or manual milling machines. All blocks are processed through dental laboratories or by dental professionals.

5.6 Non-clinical Test Conclusion

The results of comparative study performed according to ISO 6872:2015 were indicated The performance of formed zirconia dental blanks meets the applicable requirements of the following FDA recognized standards:

- *ISO 6872: 2015- Dentistry-Ceramic Materials*
- *ISO 13356: 2015, Implant for surgery – Ceramic materials based on yttria-stabilized tetragonal zirconia (Y-TZP)*
- *ISO 10993-1:2018, Biological evaluation of medical devices — Part 5: Evaluation and testing within a risk management process*
- *ISO 10993-3: 2014 Biological evaluation of medical devices Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.*
- *ISO 10993-5: 2009, Biological evaluation of medical devices - Part 5: Tests for In Vitro cytotoxicity.*
- *ISO 10993-6 Biological evaluation of the medical devices – Part 6: Tests for Local Effects after Implantation.*
- *ISO 10993-10: 2010, Biological evaluation of medical devices - Part 10: Tests for irritation('Oral mucosa irritation) and skin sensitization.*
- *ISO 10993-11:2017 Biological evaluation of medical device – Part 11: Tests for systemic toxicity*

Physical and mechanical properties of the subject device were evaluated according to ISO 6872:2015 and ISO 13356: 2015.

According to ISO 6872:2015, the subject device is classified into the following:

Type II: All other forms of ceramic products.

Class 4: Monolithic ceramic for prostheses involving partially or fully covered substructure

for four or more units or fully covered substructure for prostheses involving four or more units.

Bench test results allowed to conclude that Perfit FS Dental Zirconia Fully Sintered Block is substantially equivalent to the predicate devices for its intended use.

5.7 Clinical Test Conclusion

Clinical testing was not required for this submission.

5.8 Technical Characteristics and Substantial Equivalence

The following table shows similarities and differences of use, design, and material between our device and the predicate devices.

Table 1. General Device Characteristics Comparison Table

No.	Item	Subject Device	Predicate Device
1	Device Name	Perfit FS Dental Zirconia Fully Sintered Block	Perfit FS Dental Zirconia Fully Sintered Block
2	Manufacturer	Vatech acucera, Inc.	Vatech acucera, Inc.
3	510(k) Number	K222686	K203590
4	Product Code	EIH	EIH
5	Class	II	II
7	Review Panel	Dental	Dental
8	Indications for Use	The Perfit FS Dental Zirconia Fully Sintered Block is used for dental restorations using different CAD / CAM or manual milling machines. All blocks are processed through dental laboratories or by dental professionals.	The Perfit FS Dental Zirconia Fully Sintered Block is used for dental restorations using different CAD / CAM or manual milling machines. All blocks are processed through dental laboratories or by dental professionals.
9	Form	Block form	Block form
10	Dimension	Various	Various
11	Applied for (Milling Machine)	CEREC inLab(Sirona)	CEREC inLab(Sirona)
12	Material	Regular: Zirconia (ZrO ₂ + Y ₂ O ₃ + Nb ₂ O ₅ Al ₂ O ₃ ≥ 99.0%) Pre-Shaded: Zirconia (ZrO ₂ + Y ₂ O ₃ + Nb ₂ O ₅ + Al ₂ O ₃ ≥ 99.0%) Inorganic pigments (Fe ₂ O ₃ , MnO ₂ , and Er ₂ O ₃ < 1.0%)	Regular: Zirconia (ZrO ₂ + Y ₂ O ₃ + Nb ₂ O ₅ Al ₂ O ₃ ≥ 99.0%) Pre-Shaded: Zirconia (ZrO ₂ + Y ₂ O ₃ + Nb ₂ O ₅ + Al ₂ O ₃ ≥ 99.0%) Inorganic pigments (Fe ₂ O ₃ , MnO ₂ , and Er ₂ O ₃ < 1.0%)
13	Color	None, and Pre-shaded (for preshaded series)	None, and Pre-shaded (for preshaded series)
14	Flexural strength	≥ 500 MPa	≥ 500 MPa
15	Solubility	<2000µg/cm ²	<2000µg/cm ²
16	Radioactive	uranium-238 active concentration ≤ 1.0 Bq/g.	uranium-238 active concentration ≤ 1.0 Bq/g.
17	Conditions of Use	Professional use for the fabrication of artificial teeth in fixed or removable dentures, of jacket	Professional use for the fabrication of artificial teeth in fixed or removable dentures, of jacket

		crowns, facings, and veneers.	crowns, facings, and veneers.
18	Single Use	Yes	Yes
19	Supplied Sterile	No	No
20	Packaging	3ea or 5 ea blocks per box	3 ea blocks per box
21	Biocompatibility Testing	Tested to ISO 10993-1	Tested to ISO 10993-1
22	Performance Testing	Tested to ISO 6872	Tested to ISO 6872

Compared to the predicated device, the subject device has the same intended use, form and conditions of use, raw materials, and specifications of technology/mechanically. There only have differences in the packaging unit.

Although the subject device and predicate device are different in their packaging unit, their main components are substantially equivalent, and the differences do not affect the substantial equivalence of the subject device when compared to the predicate device.

5.9 Conclusion The information discussed above demonstrates that Perfit FS Dental Zirconia Fully Sintered Block, as effective, and performs as well as or better than the predicate devices

5.10 Declarations This summary includes only information that is also covered in the body of the 510(k).
This summary does not contain any puffery or unsubstantiated labeling claims.
Considering the existent models' design aspects such as their technical characteristics, it is warranted that the model to be added does not have any change that can have an impact on clinical performance and safety.