



FX Shoulder USA, Inc.  
Kathy Trier  
VP Regulatory, Quality, Clinical, Compliance  
13465 Midway Road, Suite 101  
DALLAS, TX 75244

July 16, 2020

Re: K191698

Trade/Device Name: TiN Coated Humeral Head  
Regulation Number: 21 CFR 888.3650  
Regulation Name: Shoulder joint metal/polymer non-constrained cemented prosthesis  
Regulatory Class: Class II  
Product Code: KWT, PHX  
Dated: July 7, 2020  
Received: July 8, 2020

Dear Kathy Trier:

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](mailto:DICE@fda.hhs.gov)) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Michael Owens  
Acting Assistant Director  
DHT6A: Division of Joint  
Arthroplasty Devices  
OHT6: Office of Orthopedic Devices  
Office of Product Evaluation and Quality  
Center for Devices and Radiological Health

Enclosure

## Indications for Use

510(k) Number -K191698

Device Name

TiN Coated Humeral Head

Indications for Use *(Describe)*

When used in the Humelock II Cemented Shoulder System:

The Humelock II Cemented Shoulder System is indicated for use in total and hemi-shoulder replacement to treat:

1. Proximal humeral fractures
2. A severely painful and/or disabled joint resulting from osteoarthritis, traumatic arthritis or rheumatoid arthritis;
3. Other difficult clinical problems where shoulder arthrodesis or resection arthroplasty are not acceptable (e.g. revision of a previously implanted primary component, a humeral plate or a humeral nail).

The humeral stem and glenoid components of the Humelock II Cemented Shoulder System are intended for cemented use only.

TiN coated Heads are not intended for hemi- shoulder arthroplasty.

When used in the Humeris Shoulder System:

In an anatomic shoulder configuration, the Humeris Shoulder System is indicated for use in total and hemi-shoulder replacement to treat:

- A severely painful and/or disabled joint resulting from osteoarthritis or rheumatoid arthritis;
- Other difficult clinical problems where shoulder arthrodesis or resection arthroplasty are not acceptable (e.g. revision of a previously implanted primary component, a humeral plate or a humeral nail).

TiN coated Heads are not intended for hemi- shoulder arthroplasty.

In a reverse shoulder configuration, the Humeris Shoulder is indicated for primary or revision total shoulder arthroplasty for the relief of pain and to improve function in patients with a massive and non-repairable rotator cuff tear.

The patient's joint must be anatomically and structurally suited to receive the selected implants and a functional deltoid muscle is necessary to use the device.

The humeral stem of the Humeris Cementless Shoulder is intended for cementless use only. The humeral stem of the Humeris Cemented Shoulder is intended for cemented use only. The glenoid components of the Humeris Shoulder System are intended for cemented use only. The glenoid baseplate component is intended for cementless use with the addition of screws for fixation.

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**

**Applicant/Sponsor:** FX Shoulder USA, Inc.  
13465 Midway Road, Suite 101  
Dallas, Texas 75244  
Establishment Registration No: 3014128390

**Manufacturer:** FX Solutions  
1663 Rue de Majornas  
Viriat, France 01440  
Establishment Registration No: 3009532798

**Contact Person:** Kathy Trier, Ph.D.  
VP Regulatory, Clinical, Quality, Compliance  
[ktrier@fxshoulder.com](mailto:ktrier@fxshoulder.com)  
800.280.0775

**Date:** July 15, 2020

**Proprietary Name:** TiN Coated Humeral Heads

**Common Name:** Anatomic Shoulder Prosthesis

**Product Code(s):** KWT, PHX

**Classification Name:** 21 CFR 888.3650: shoulder joint metal/polymer non-constrained cemented prosthesis – Class II

**Substantially Equivalent Devices:** Primary Predicate:  
Humelock II Cemented Shoulder System (K123814)  
Predicate:  
Humeris™ Shoulder System (K163669)  
Reference Device:  
LINK® Endo-Model® Knee System with PorEx®;  
LINK® Sled Knee System with PorEx® (K152431)

**Device Description**

The TiN Coated Humeral Head is a new component for Humelock II total shoulder replacement systems. The TiN Coated Humeral Head has a titanium nitride (TiN) coating, which is applied to the predicate humeral heads made of cobalt chromium molybdenum (CoCr). Compatible components for use with the TiN coated humeral heads

to complete the total shoulder replacement construct are the same as those previously cleared compatible components for use with the CoCr humeral heads in the respective predicate devices, including the primary predicate (K123814) and K163669 for the Humeris Shoulder System.

### **Intended Use / Indications**

When used in the Humelock II Cemented Shoulder System:

The Humelock II Cemented Shoulder System is indicated for use in total and hemi-shoulder replacement to treat:

1. Proximal humeral fractures
2. A severely painful and/or disabled joint resulting from osteoarthritis, traumatic arthritis or rheumatoid arthritis;
3. Other difficult clinical problems where shoulder arthrodesis or resection arthroplasty are not acceptable (e.g. revision of a previously implanted primary component, a humeral plate or a humeral nail).

The humeral stem and glenoid components of the Humelock II Cemented Shoulder System are intended for cemented use only.

TiN coated Heads are not intended for hemi-shoulder arthroplasty

When used with the Humeris™ Shoulder System:

In an anatomic shoulder configuration, the Humeris Shoulder System is indicated for use in total and hemi-shoulder replacement to treat:

- A severely painful and/or disabled joint resulting from osteoarthritis or rheumatoid arthritis;
- Other difficult clinical problems where shoulder arthrodesis or resection arthroplasty are not acceptable (e.g. revision of a previously implanted primary component, a humeral plate or a humeral nail).

TiN coated Heads are not intended for hemi-shoulder arthroplasty.

In a reverse shoulder configuration, the Humeris Shoulder is indicated for primary or revision total shoulder arthroplasty for the relief of pain and to improve function in patients with a massive and non-repairable rotator cuff tear.

The patient's joint must be anatomically and structurally suited to receive the selected implants and a functional deltoid muscle is necessary to use the device.

The humeral stem of the Humeris Cementless Shoulder is intended for cementless use only. The humeral stem of the Humeris Cemented Shoulder is intended for cemented use only. The glenoid components of the Humeris Shoulder System are intended for cemented use only. The glenoid baseplate component is intended for cementless use with the addition of screws for fixation.

**Summary of Technologies / Substantial Equivalence**

The TiN Coated Humeral Head is substantially equivalent to the primary predicate in that it is identical to the primary predicate on indications, design, dimensions, packaging, single use, sterilization, shelf life, pyrogen testing, biocompatibility, compatible components, instrumentation and surgical technique. It is identical to the primary predicate material CoCr. The change, subject of this 510(k), is to add the titanium nitride (TiN) coating to the surface of the humeral head, which is substantially equivalent to the technology of coating on the reference device based upon the characterization and testing in accordance with the same scientific methods and standards. Differences between the subject device and the predicate devices do not raise new questions of safety and effectiveness.

**Non-Clinical Testing**

Biocompatibility testing has been completed in accordance with FDA Guidance titled, "Use of International Standard ISO 10993-1. 'Biological evaluation of medical devices – Part 1: Evaluation and testing within risk management process'" (September 2016). Non-clinical biocompatibility testing is the same as the reference device and includes Acute System Toxicity Study; Cytotoxicity; GC/MS Fingerprint Study; Irritation Study; Sensitization Study. Characterization of the TiN coating demonstrates substantial equivalence of the subject device to the coating of the reference device – Bone Implantation Study, 28 Day Muscle Implantation Study; 90 Day Muscle Implantation Study are referenced for the subject device. Wear testing under worst case loading and worst case environment with analysis of surface roughness and both UHMWPE and metal particle analysis have been completed.

**Clinical Testing**

Clinical testing was not necessary to determine substantial equivalence of the TiN Coated Humeral Head to the predicate devices.

**Conclusion**

The subject device is identical to the primary predicate with the only modification of added TiN coating. The evidence reviewed to demonstrate substantial equivalence includes risk analysis, design controls, biocompatibility, wear properties of the TiN coating, and verification and validation activities to demonstrate that the TiN coating does not increase risk and does not raise new questions of safety and effectiveness of the TiN Coated Humeral Head.