



Permallon® | Tru

Orthopaedic Ceramics for
Total Hip Arthroplasty





Permallon® Tru CERAMIC FOR TOTAL HIP ARTHROPLASTY

CoorsTek Permallon® Tru is a state of the art material used for ceramic bearing surfaces in total hip arthroplasty. Comprised of an alumina matrix composite, Permallon® Tru incorporates advanced toughening mechanisms to improve the performance of the material.

Permallon® Tru is proven to provide excellent wear performance and longevity for acetabular liners and femoral heads. Both biocompatible and stable, Permallon® Tru offers favorable performance as compared to the leading ceramic material used for bearing surfaces in total hip arthroplasty.

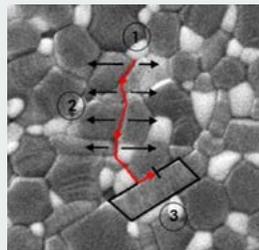
CoorsTek Bioceramics offers standard specifications for femoral heads and acetabular liners. CoorsTek also offers custom design and manufacturing capabilities for orthopaedic hip implant components.

TOUGHENING MECHANISMS

PERMALLON® TRU ALUMINA MATRIX COMPOSITE IS COMPRISED OF A PROPRIETARY BLEND OF ALUMINA AND ZIRCONIA.

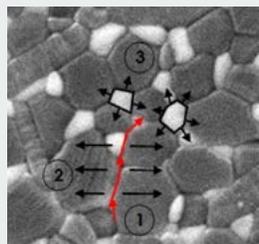
The microstructure of Permallon® Tru enhances toughness by two mechanisms: the first mechanism is crack deflection that occurs at the β -Alumina platelets. The second toughening phenomenon is crack suppression, which is promoted by the homogenous distribution of Zirconia particles within the Alumina Matrix. These toughening mechanisms are depicted on the right.

Figure 1: Crack Deflection at the β -Alumina Platelets



1. Crack Forms
2. Crack advances in tensile field
3. β -Alumina grain deflects the crack away from the tensile field and arrests propagation.

Figure 2: Crack Compression by Zirconia Particles



1. Crack forms
2. Crack advances in tensile field
3. Zirconia particles expand as the crack advances which compresses the fracture and arrests propagation.

CLINICAL USE

In over eleven years of clinical use, Permallon® Tru femoral heads and acetabular liners have performed comparable to competitive ceramic materials in terms of outcomes and survivorship.

QUALITY SYSTEMS & CERTIFICATIONS

CoorsTek Bioceramics offers best in class quality standards and testing procedures. Permallon® Tru ceramics are manufactured in an ISO 13485 certified facility that is FDA CFR 820 compliant. Permallon® Tru ceramic femoral heads and acetabular liners undergo strict quality control throughout the manufacturing process, from the preparation of the ceramic material through final testing.

CUSTOMER REGULATORY CERTIFICATIONS & CLEARANCES

CoorsTek Bioceramics maintains comprehensive technical files containing technical data and laboratory test results on the biological, mechanical, and tribological properties of the Permallon® Tru ceramic materials and products for total hip arthroplasty. These files are used to support the regulatory process for device submissions incorporating Permallon® Tru ceramic femoral heads and acetabular liners.

Devices incorporating CoorsTek Bioceramics products are registered by our customers.

Check for regulatory approval in your area:
www.coorstek.com/bioceramics-regulatory

SPECIFICATIONS

Standard Femoral Heads

ARTICULATION DIAMETER	SHORT OFFSET (S)	MEDIUM OFFSET (M)	LONG OFFSET (L)	EXTRA LONG OFFSET (XL)
28mm	-3.5mm	0mm	+3.5mm	
32mm	-4mm	0mm	+4mm	+7mm
36mm	-4mm	0mm	+4mm	+8mm
40mm	-4mm	0mm	+4mm	+8mm
44mm	-4mm	0mm	+4mm	+8mm

Standard Acetabular Liners

ARTICULATION DIAMETER	35mm OD/ TAPER	37mm OD/ TAPER	39mm OD/ TAPER	41mm OD/ TAPER	44mm OD/ TAPER	48mm OD/ TAPER	52mm OD/ TAPER
28mm	X	X	X	X	X	X	X
32mm			X	X	X	X	X
36mm					X	X	X
40mm						X	X
44mm							X

In addition to manufacturing standard size femoral heads and acetabular liners, CoorsTek Bioceramics works in partnership with our customers to offer expanded size and design options.

PARTNER WITH COORSTEK

Our customer focus is the reason we have become the world's leading manufacturer of technical ceramics. To learn more about CoorsTek and our bioceramic capabilities, contact us:

CoorsTek Bioceramics
Grand Junction, CO USA
info@coorstek.com
+1 303 271 7100
+1 855 929 7100



COORSTEK BIOCERAMICS

CoorsTek Bioceramics manufactures state-of-the-art technical ceramics for the medical device industry. Since 2005, CoorsTek Bioceramics has manufactured over six million products from implant grade materials. With a focus on orthopaedic reconstruction with total hip arthroplasty being the primary market, our ceramics are also used in other implantable devices such as spinal disc replacements, cochlear implants, pacemakers, and neurostimulators.

CoorsTek is a leading global supplier of technical ceramics and the partner of choice for technology and manufacturing companies worldwide. With unsurpassed materials expertise, vertically integrated manufacturing, and facilities across three continents, CoorsTek provides amazing solutions to complex technical challenges in virtually every industry in the global marketplace. For information on our materials, manufacturing capabilities and company history since 1910, visit www.coorstek.com.

Data contained herein is not to be construed as absolute and does not constitute a representation or warranty for which CoorsTek assumes legal responsibility. CoorsTek Bioceramics is a wholly owned subsidiary of CoorsTek, Inc. CoorsTek is a registered trademark of CoorsTek, Inc.



Americas
+1 303 271 7100 tel
+1 855 929 7100 toll free in USA
coorstek.com
info@coorstek.com

Europe
+49 160 530 3768
infoeurope@coorstek.com

Japan
+1 81 3 5437 8411
japaninfo@coorstek.com

China
+86 21 6362 1125
info_shanghai@coorstek.com

Korea
+82 31 613 2946
koreainfo@coorstek.com