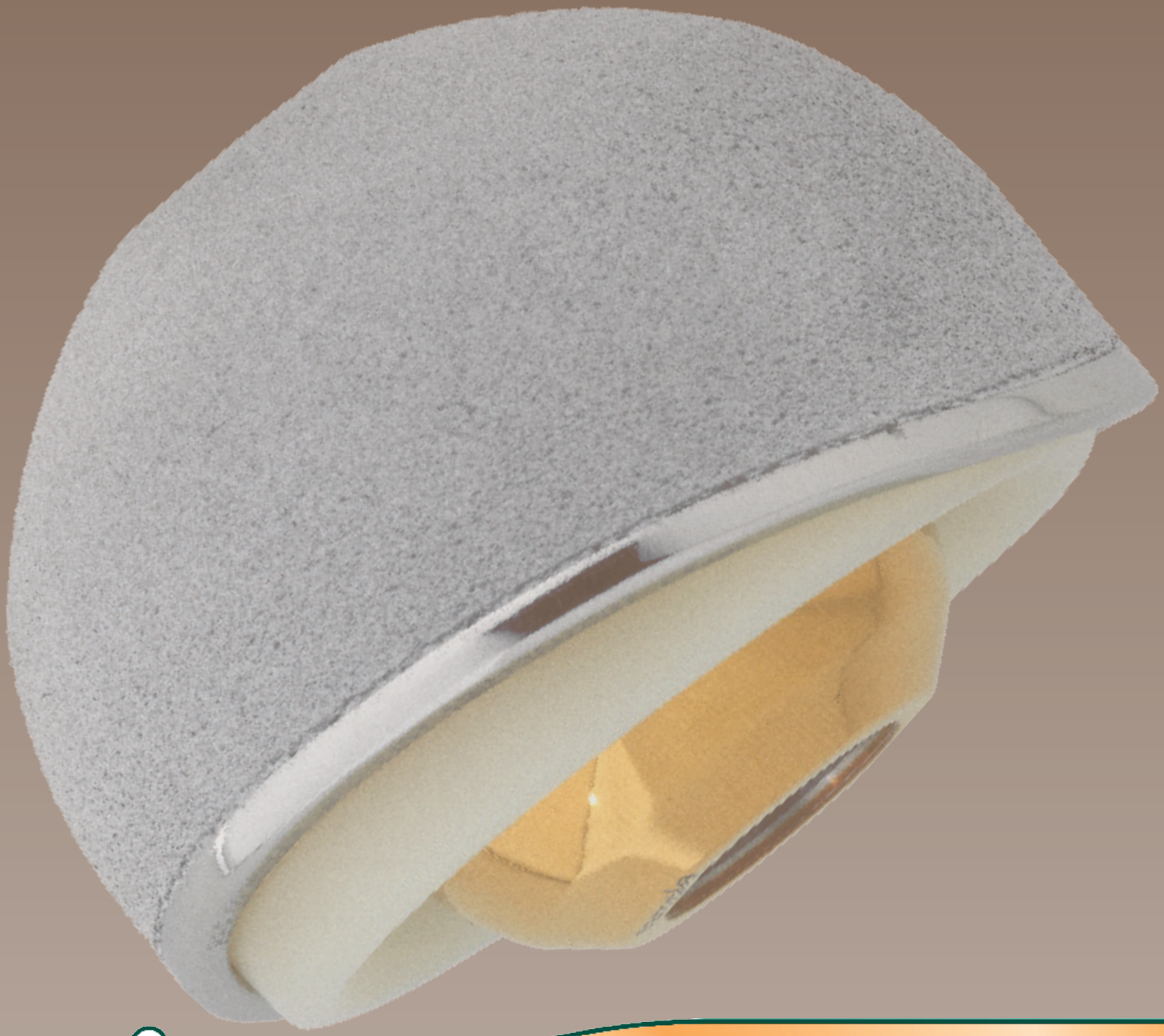
# EcoFit® 2M

## tripolar system



implantcast

DESIGN RATIONALE

# TABLE OF CONTENTS

# THE CONCEPT OF DUAL MOBILITY

A joint replacement is used, when all other treatments failed by being able to provide sufficient pain palliatives or joint mobility to the patient. In order to give patients an improved quality of life it is possible to replace the damaged joint with an artificially produced joint system.

Instability and aseptic loosening are the most common reasons for revisions in the arthroplasty. The first manufactured dual-mobility system was developed by Prof. Filles Bousquet and the engineer André Rambert in 1970. With the help of the dual-mobility system the high luxation rates of the hip replacements should be lowered preferentially [1],[2],[3].

The risk, that a contact between femoral neck and the rim of the acetabulum occur and due to this it leads into dislocation, is higher in the “simple mobility”, due to the smaller range of motion (ROM) compared to the dual-mobility system. By using the large femoral head it comes to the dual-mobility and there to a larger ROM. The system is designed both for primary intervention and for revision operations [2].

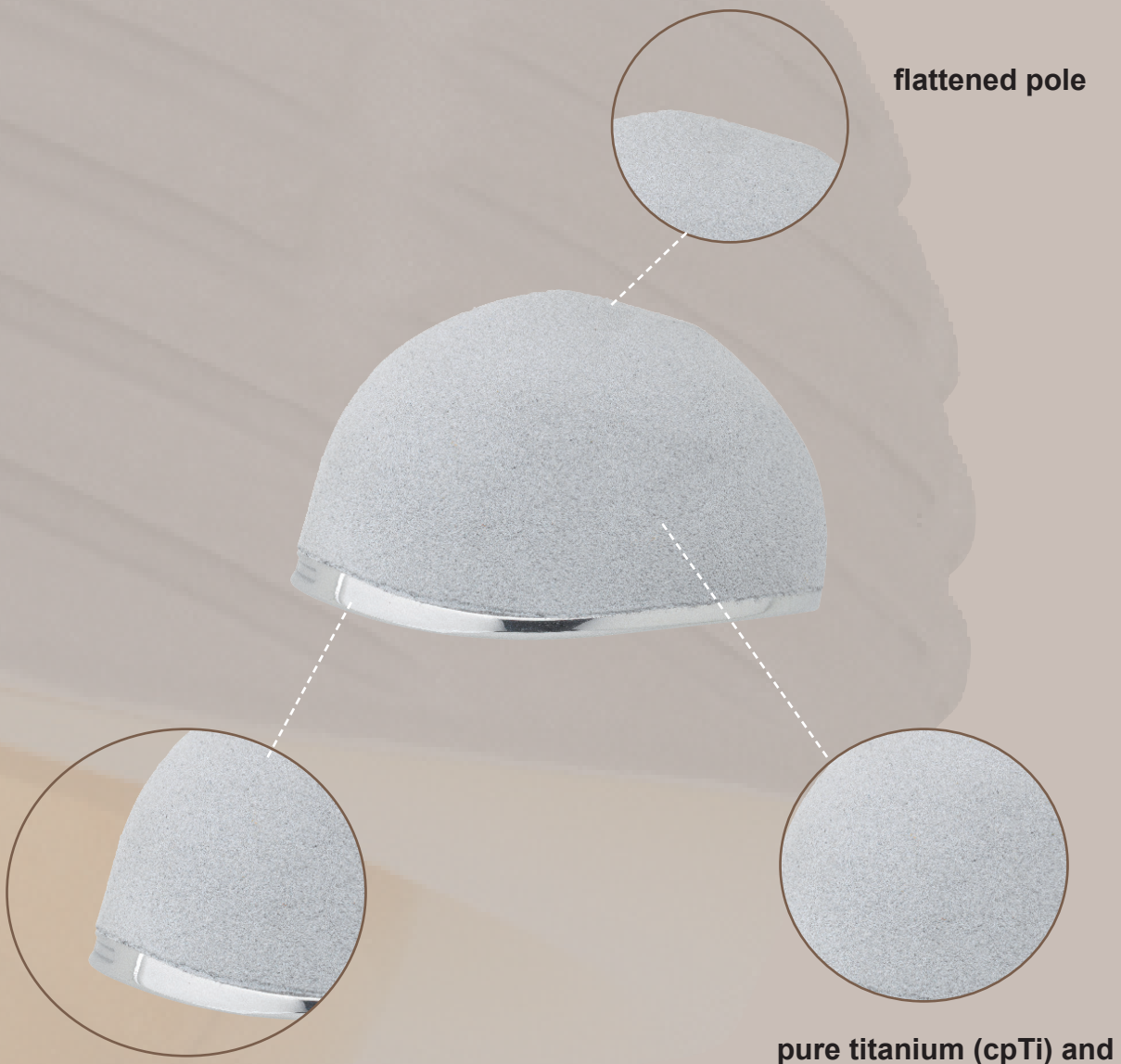
# CONVINCING PROPERTIES

## EcoFit® 2M cup, cementless

sizes: 42mm till 64mm

material: implavit® CoCrMo acc. to ISO 5832-4

The EcoFit® 2M cup cementless is characterized by a triradial design. Pure Titanium and hydroxylapatite coating care for improved primary fixation and stability. Secondary anchorage is characterized by osseointegration. The inner surface of the EcoFit® 2M cup is polished with an entire hemisphere with medial flattening. The flattened pole conduces to a better cup impaction and achievement of the press-fit in the equatorial area.



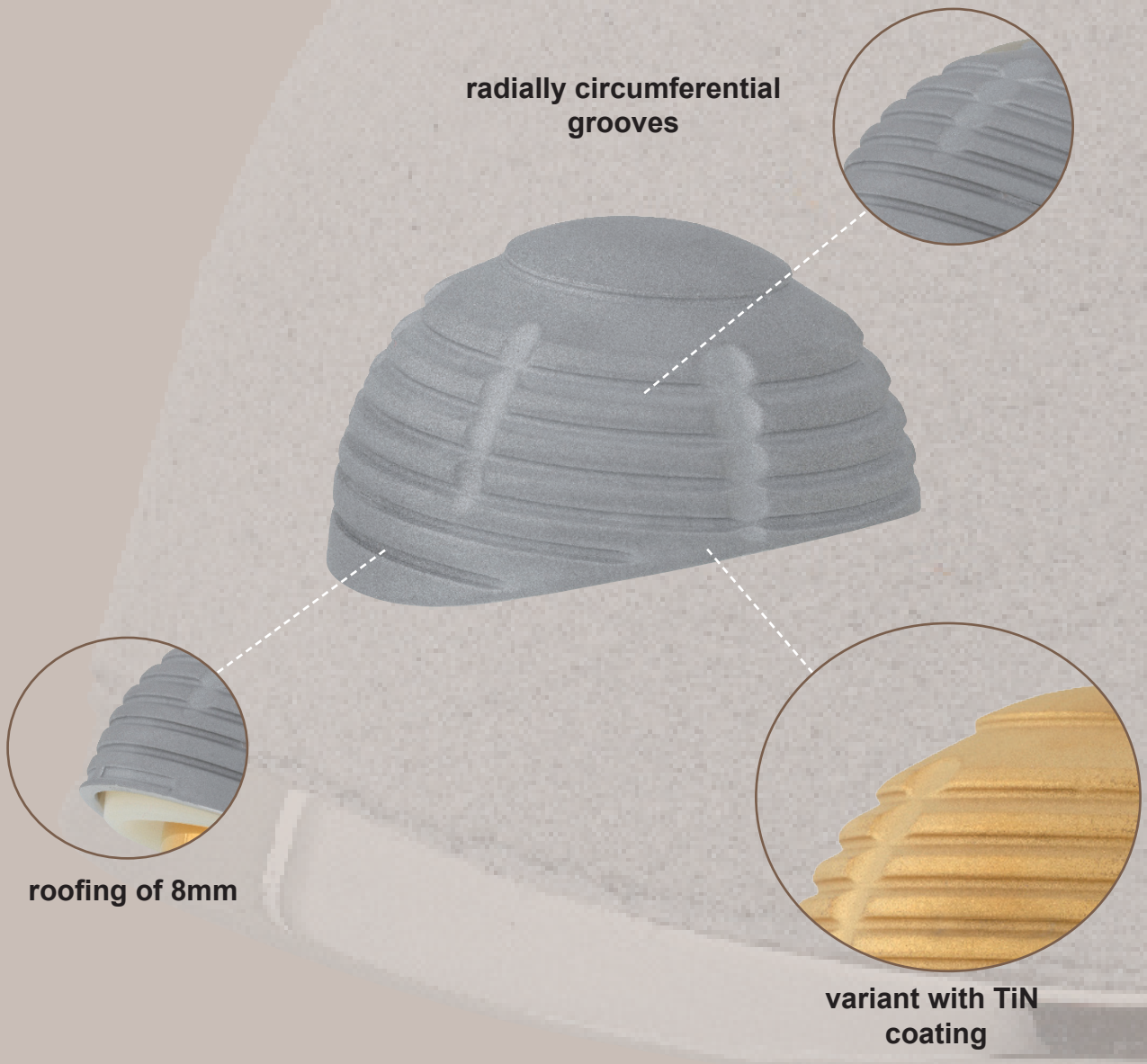
# CONVINCING PROPERTIES

## EcoFit® 2M cup, cemented

size: 44mm till 64mm

material: implavit® CoCrMo acc. to ISO 5832-4

The triradial design with with radial circumferential and longitudinal grooves in cross section provides primary anchoring and rotational stability in the cement mantle. Optionally the cemented cup is available with Titanium-Nitride coating (TiN) as a standard product. By TiN-coating the potential leakage of allergenic ions of the components is highly reduced [4]. For that reason the TiN-coating on implant components lends itself particularly suitable to patients with sensitization against nickel, chromium or cobalt [5].



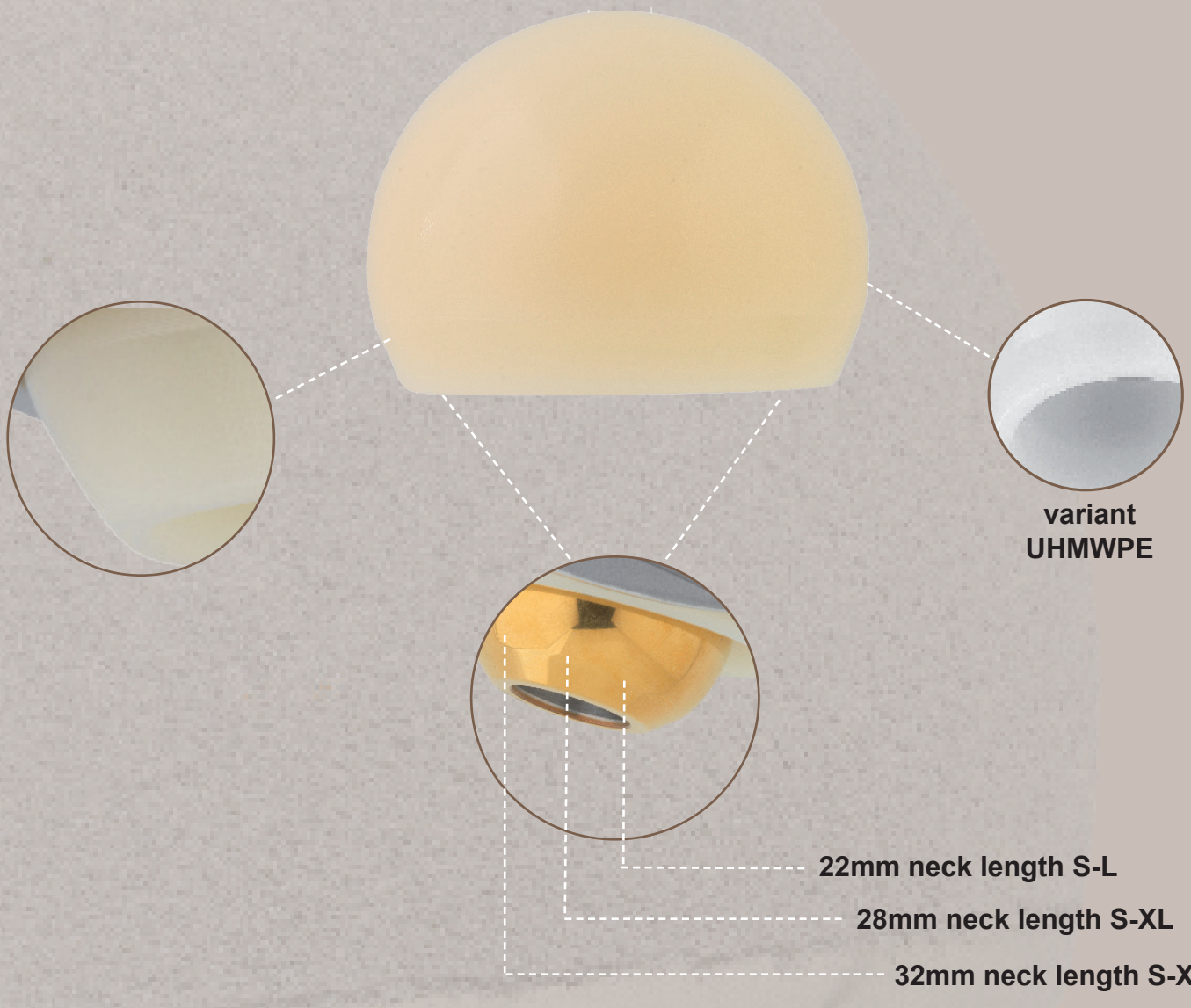
# CONVINCING PROPERTIES

## 2M implacross® E head

size: 22/38mm till 32/58mm

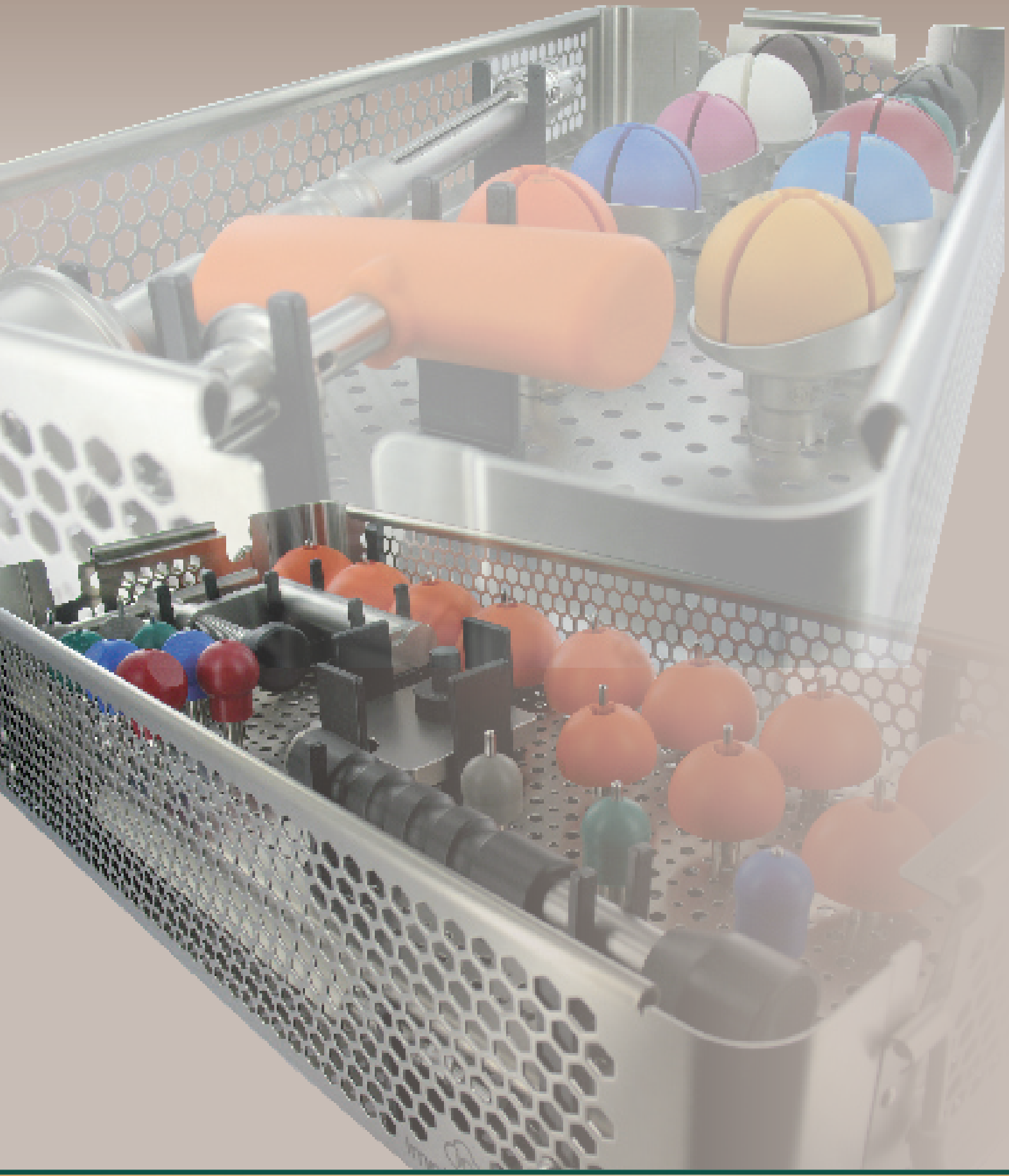
material: implacross® E, UHMWPE with Vitamin E

The freemoving implacross® E head is located in the hip cup and has a hemispherical inner- and outer surface. The outer surface of the PE head articulates with the hip cup, the inner surface in contrast with the head. For additional stability the femoral head is anchoraged in the eccentric 2M implacross® E head.



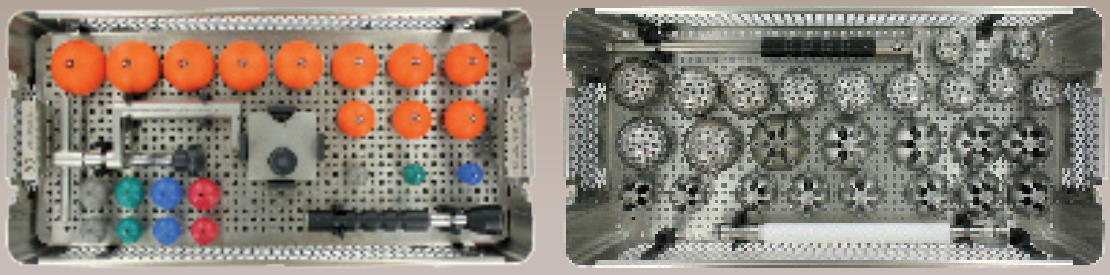

**The 2M implacross® E head can be combined with the following heads of the company implantcast: ic head CoCrMo; ic head Titanium; ic head BIOLOX® delta; ic head BIOLOX® forte. The ic-heads 22mm are only available in CoCrMo respectively CoCrMo with TiN coating.**

# INSTRUMENTS

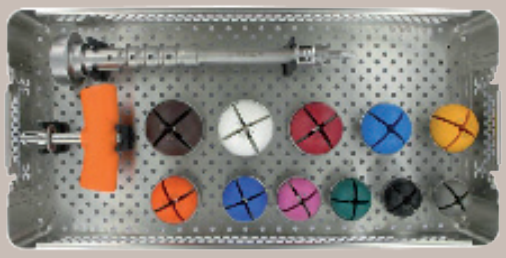


# INSTRUMENTS

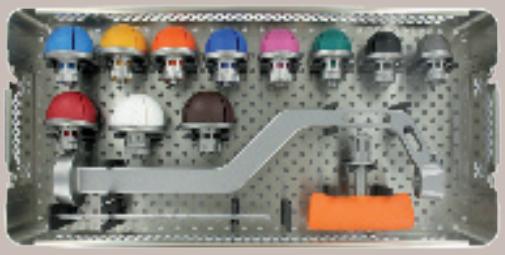
02201081 - EcoFit® 2M container 1



02201082 - EcoFit® 2M container 2



02201083 - EcoFit® 2M container 3



## implacross® E WITH VITAMIN E

Vitamin E occurs naturally in our food and is a collective term for all existing tocopherols and tocotrienols [6].

In the 2M implacross® heads the UHMWPE-powder with Vitamin E (1000 ppm or rather 0,1 Gew.-%) is doped and crosslinked with gamma radiation (75 kGy ± 10 %), to increase the oxidation resistance and the long-term stability. Ageing tests showed that the Polyethylen doped with Vitamin E in contrast to the conventional UHMWPE having almost unaltered mechanical properties after the ageing process [7],[8],[9],[10].

## LESS ABRASION

An in vitro test (5 million cycles in a hip simulator) of the highly crosslinked and with Vitamin E doped UHMWPE-components shows a weight loss of circa 1,52 ± 0,75 mg/$10^6$ after the wear test (corresponds to a volumetric wear rate of 1,69$mm^3$ / $10^6$ cycles) [11].

# LITERATURE


[1] P.Bauchu, O.Bonnard, A.Cypres, A.Fiquet, P.Girardin, & D.Noyer. (2008). The Dual-Mobility POLARCUP: First Results From a Multicenter study. Orthopedics;

[2] C.Vielpeau, B.Lebel, L.Ardouin, G.Burdin, & C.Lautridou. (2011). The dual mobility socket concept: experience with 668 cases. International Orthopaedics, S. 225-230.

[3] R. Phillipot, J.P. Camilleri, B. Boyer, P. Adam, F. Farizon, (2008). The use of a dual-articulation acetabular cup system to prevent dislocation after primary total hip arthroplasty: analysis of 384 cases at a mean follow-up of 15 years

[4] Wisbey et al. Application of PVD TiN coating to Co-Cr-Mo based surgical implants. Biomaterials 1987, 11.

[5] Baumann A. Keramische Beschichtungen in der KTEP Standardlösung für Allergiker. JATROS Orthopädie & Rheumatologie 2001, 6:16-17

[6] A.Domke, R.Großklaus, B.Niemann, H.Przyrembel, K.Richter, E.Schmidt, et al. (2004). Verwendung von Vitaminen in Lebensmitteln - Toxikologische und ernährungsphysiologische Aspekte Dahlem: Bundesinstitut für Risikobewertung.

[7] C.Wolf, K.Lederer, & U.Müller. (2002). Test of biocompatibility of a-tocopherol with respect to the use as a stabilizer in ultrahigh molecular weight polyethylene for articulating surfaces in joint endoprosthesis. Journal of Materials Science: Materials in Medicine, S. 701-705.

[8] E.Oral, A.S.Malhi, K.K.Wannomae, & O.K.Muratoglu. (2008). Highly Cross-Linked Ultrahigh Molecular Weight Polyethylene With Improved Fatigue Resistance for Total Joint Arthroplasty. The Journal of Arthroplasty , S. 1037-1044.

[9] P.Bracco, V.Brunella, M.Zanetti, M.P.Luda, & L.Costa. (2007). Stabilisation of ultra-high molecular weight polyethylene with Vitamin E. Polymer Degradation and Stability , S. 2155-2162.

[10] P.Gijsman, H.J.Smelt, & D.Schumann. (2010). Hindered amine light stabilizers: An alternative for radiation cross-linked UHMWPE implants. Biomaterials , S. 6685-6691.

[11] ISO 14 242 - Wear test on hip joints EcoFit® 2M Test report A061/12

implantcast GmbH
Lüneburger Schanze 26
21614 Buxtehude
Germany
phone: +49 4161 744-0
fax: +49 4161 744-200
e-mail: info@implantcast.de
internet: www.implantcast.de

CE 0482

Your local distributor

ECO2MBRE-031115