



MobileLink

Acetabular Cup System

Product Rationale

Many years of experience with successful implant systems and fixation concepts as well as the latest material and coating technologies have been taken into account and used in the design of this acetabular system. The result is the versatile cementless MobileLink Acetabular Cup System.

The MobileLink Acetabular Cup System comes in two different versions: A cluster-hole press-fit cup and a multi-hole press-fit cup. Both versions of the shells are available in a PlasmaLink, a TiCaP double coating or a TrabecuLink surface.

The TiCaP double coating combines a porous surface for primary fixation with our osseointegrative⁷ HX calcium phosphate coating. This combination is designed to give optimal primary and secondary stability through accelerated osseointegration.



The 3-dimensional TrabecuLink structure, with its pore size, porosity and type of structure, also provides an excellent basis for promoting osseointegration and microvascularization, taking into account the requirements for the cell-adhesive protein layer (fibronectin - vitronectin - fibrinogen).^{17,18}

The MobileLink Acetabular Cup System can be used with ceramic or UHMWPE inserts. UHMWPE inserts are available in X-LINKed and E-DUR (highly cross-linked, Vit-E PE) versions. All UHMWPE inserts are available in a standard version and also with protection against luxation.

The MobileLink Acetabular Cup System can be combined with modular offset and/or inclining casing/insert adapters (Face Changer). The adapters allow restoration of the anatomy in revision cases and necessary adjustments. In

addition, the adapters permit the use of ceramic inserts in revision arthroplasties as well.

The MobileLink Acetabular Cup System can be transformed into a modular dual mobility system, with the use of Dual Mobility Inserts made from EndoDur. The DM Insert is to accommodate poly DM Liners from the BiMobile Dual Mobility System.

The dual mobility concept was developed by Prof. Gilles Bousquet in the 1970s with the aim of avoiding recurrent hip luxations. A modular Dual Mobility System is composed of a Dual Mobility Insert with a highly polished inner surface placed in a Shell in which a mobile polyethylene Liner with a pressed-in Prosthesis Head is moving.

Features and Advantages of the Dual Mobility System:

- Dual mobility leads to reduced risk of dislocation and increased range of motion (RoM)¹
- Polished inner surface^{2,3}
- Elevated shoulder to facilitate removal of the liner in case of revision.
- Self-centering Liner promotes even wear patterns and enhances dislocation resistance⁴



Shells



TrabecuLink
Cluster Hole



TrabecuLink
Multi Hole



TiCaP
Cluster Hole

Inserts



E-DUR



E-DUR
(with 5 mm shoulder)



X-LINKED

Shell/Insert Adapter (Face Changer)



Neutral



Offset

Dual Mobility Insert & Liner



Dual Mobility Insert
EndoDur



TiCaP
Multi Hole



PlasmaLink
Cluster Hole



PlasmaLink
Multi Hole



X-LINK
(with 5 mm shoulder)



Ceramic
BIOLOX delta*



Ceramic
CeraDur



10° Inclination



20° Inclination



Dual Mobility Liner
UHMWPE



Dual Mobility Liner
E-DUR



Wide range of sizes

- 42 - 72 mm
- 74 - 80 mm, on request



Triple locked inserts

Secure fixation of polyethylene insert to shell by a "snap-lock mechanism", conical coupling and antirotation tabs



Variable bone screw options

- Cluster Hole Shell screw holes are pre-closed with removable caps.
- $\pm 15^\circ$ screw angulation possible⁶



Color coding

for streamlined workflow



3 dimensional TrabecuLink structure

The pore size, porosity and type of structure ensure an excellent cell fill^{17,18,19}



Rough Titanium-Plasma + HX Coating → TiCaP

Double layer coating promotes bony ongrowth.^{5,7}



50/36 – Outside small, inside big
36 mm prosthesis heads starting from 50 mm shell size for polyethylene inserts

MAT

Latest material selection

- E-DUR polyethylene
- X-LINKed
- Ceramic



Dual Mobility Insert

Dual mobility leads to reduced risk of dislocation and increased range of motion (RoM)¹



Face Changer

Shell/Insert Adapters (Face Changer) made from **Ti/astan**-S⁶



Safe technology

for Face Changer fixation^{6,16}



Great versatility, reduced inventory

due to size grouping of inserts and introduction of Face Changers, great versatility with limited amount of polyethylene inserts



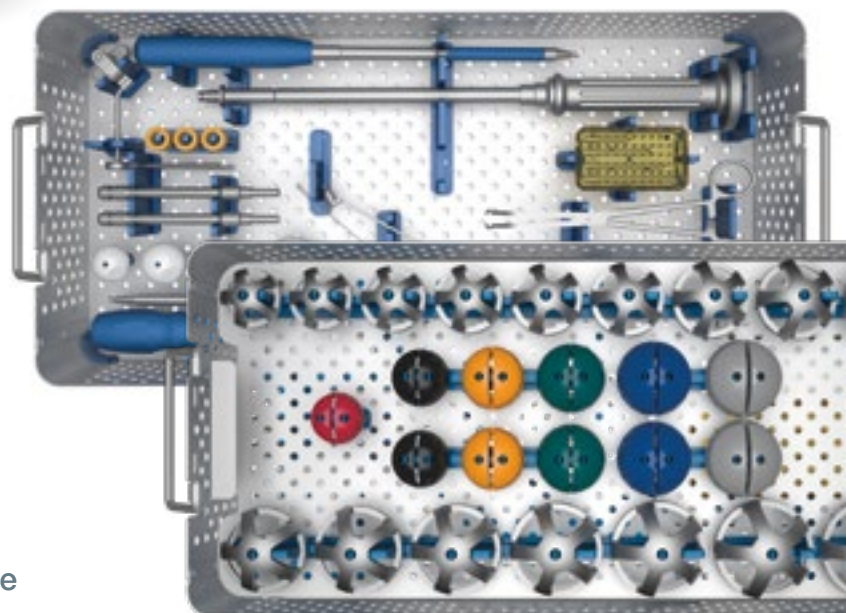
Intraoperative flexibility

One instrument platform for primary and revision surgery



Streamlined surgical experience

through simple, ergonomic instruments and color coding



TrabecuLink

3-dimensional structure for effective cell ongrowth

- The pore geometry (porosity: 70%, pore size: 610-820 μm , structure depth: up to 1 mm) ensures excellent cell ongrowth.^{17,18,19}

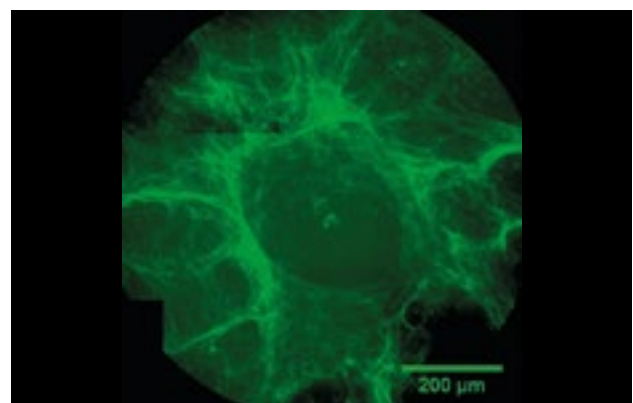
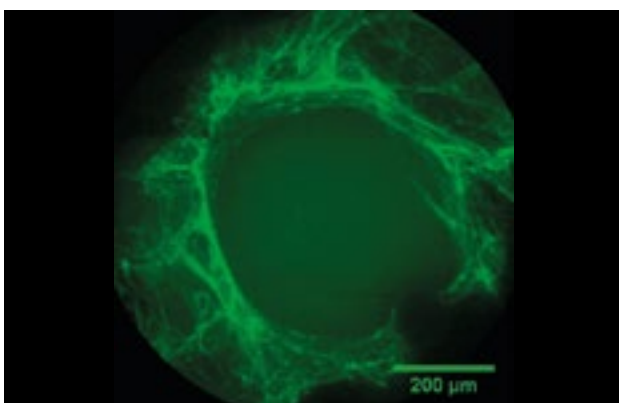
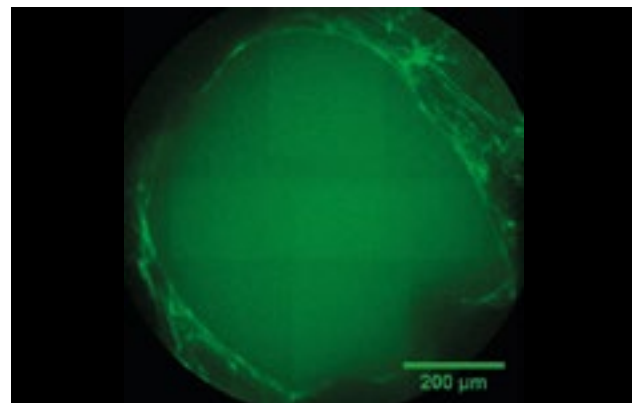
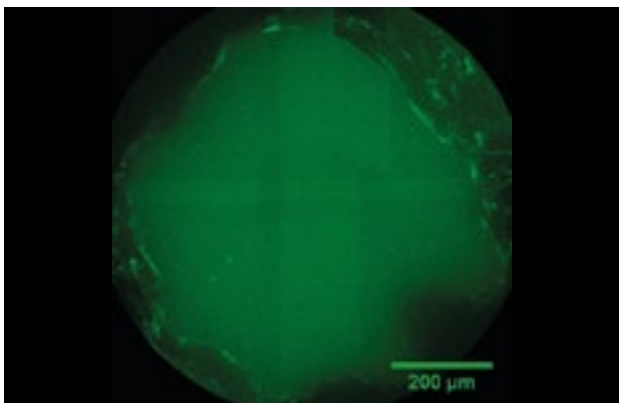


TrabecuLink pore filling

The sequence of images shows a pore of the TrabecuLink structure being filled with tissue under in-vitro cell culture conditions. The fibronectin laid down by human fibroblasts and continually reorganized over a period of eight days is visible as green fibers.

Fibronectin is a component of the extracellular matrix that is formed at an early stage of the healing process. It forms a basis for the embedding of collagen,

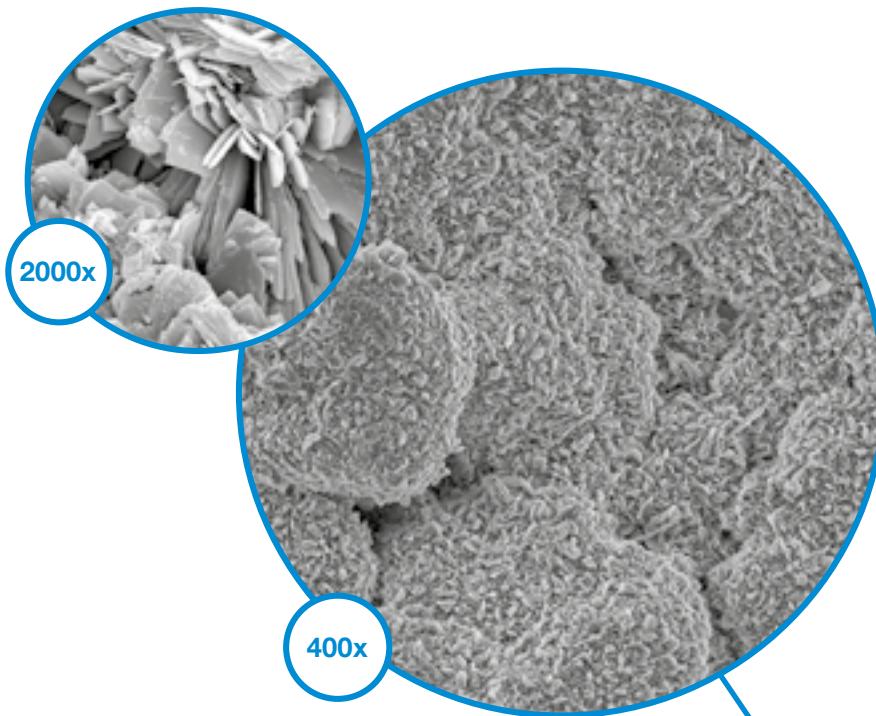
which is essential for mineralization of the tissue and ingrowth of bone into the structure. Apart from the accumulation of fibronectin, which increases over time, a clear contraction of the matrix towards the center of the pore can be observed. This contraction mechanism, which is attributable to the cellular forces acting in the tissue, accelerates the rate at which the pore is filled with tissue, compared to a layer-by-layer tissue growth.



(Reference: Joly P et al., PLOS One 2013; <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0073545>). Julius Wolff Institute, Charité - Universitätsmedizin Berlin

TiCaP Double Coating: Titanium (Ti)/Calcium Phosphate (CaP)

The TiCaP coating is applied by first vacuum plasma spraying a highly dense adhesive layer of titanium, approximately 450 µm thick, onto the surface of the implant. In a second step, on top of this porous surface, an approx. 15 µm thick HX layer of mechanically stable calcium phosphate is deposited in an electrochemical process. Animal experiments have demonstrated ingrowth on 47.9% of the implant surface.⁸



The excellent suitability of UHMWPE as a bearing material for joint replacement is accepted since the 60s.^{8,9,10}

The following features characterize UHMWPE:

- Biocompatibility
- High wear resistance^{6,10}
- Impact resistance
- Fatigue and crack resistance

With these characteristics the national and international standards for implant materials are fulfilled.⁹

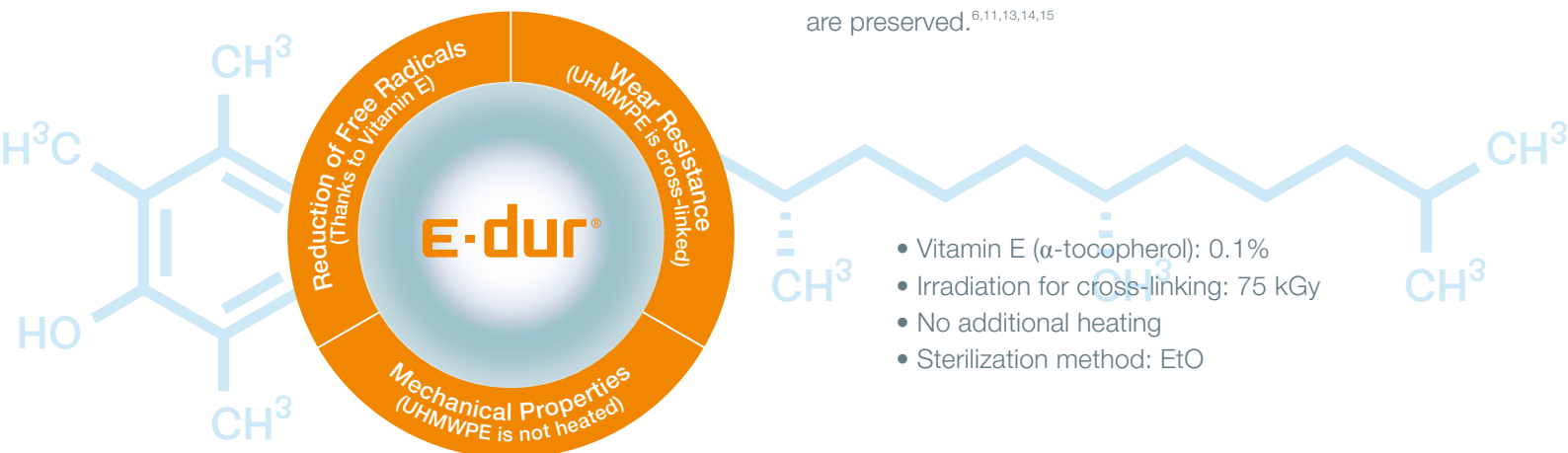
UHMWPE was developed to be the "Gold Standard" for articulating surfaces in endoprostheses reconstructions.

The "Gold Standard" has since taken additional steps to further improve mechanical properties and longevity of the material.⁶ By cross-linking the material, the wear resistance improved substantially.⁶ The enrichment with Vitamin E protects against oxidation.^{11,12}

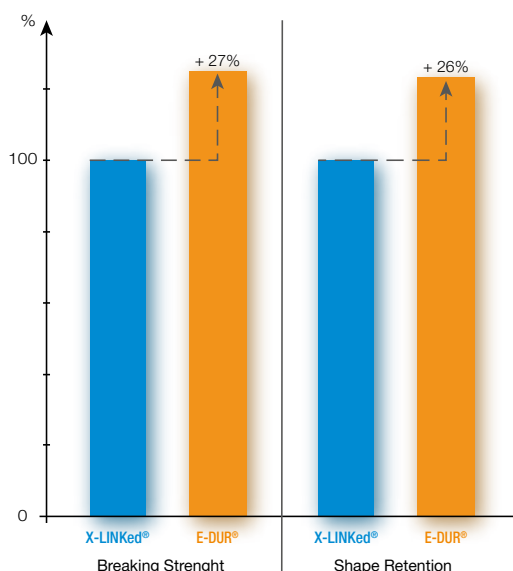
For the ε-dur® Vit-E Inserts the Vitamin E is used as an antioxidant to neutralize the free radicals during the process of the cross-linking.

Due to the cross-linking process the wear resistance of the UHMWPE material is improved. The enrichment of Vitamin E counteracts the aging process.⁶

The mechanical properties and the biocompatibility are preserved.^{6,11,13,14,15}

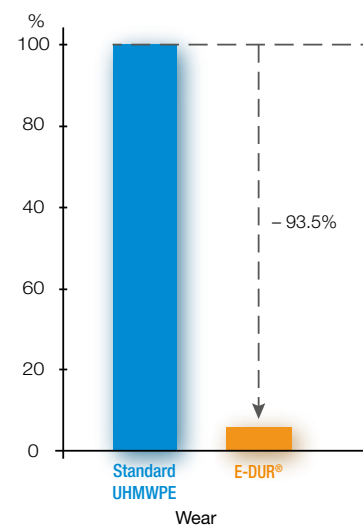


- Vitamin E (α-tocopherol): 0.1%
- Irradiation for cross-linking: 75 kGy
- No additional heating
- Sterilization method: EtO



Mechanical Properties

The mechanical properties of the ε-dur® Vit - E Inserts – defined via Breaking Strength and Shape Retention – are improved due to the enrichment of Vitamin E in contrast to the cross-linked UHMWPE X-LINKed.⁵



Wear Resistance

Due to the cross-linking process the wear resistance of the UHMWPE material is improved. The enrichment of Vitamin E is counteracting the aging process.⁵

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