

Product Catalogue

Modern Cementing Technique





Together for a
healthy future
since 1993

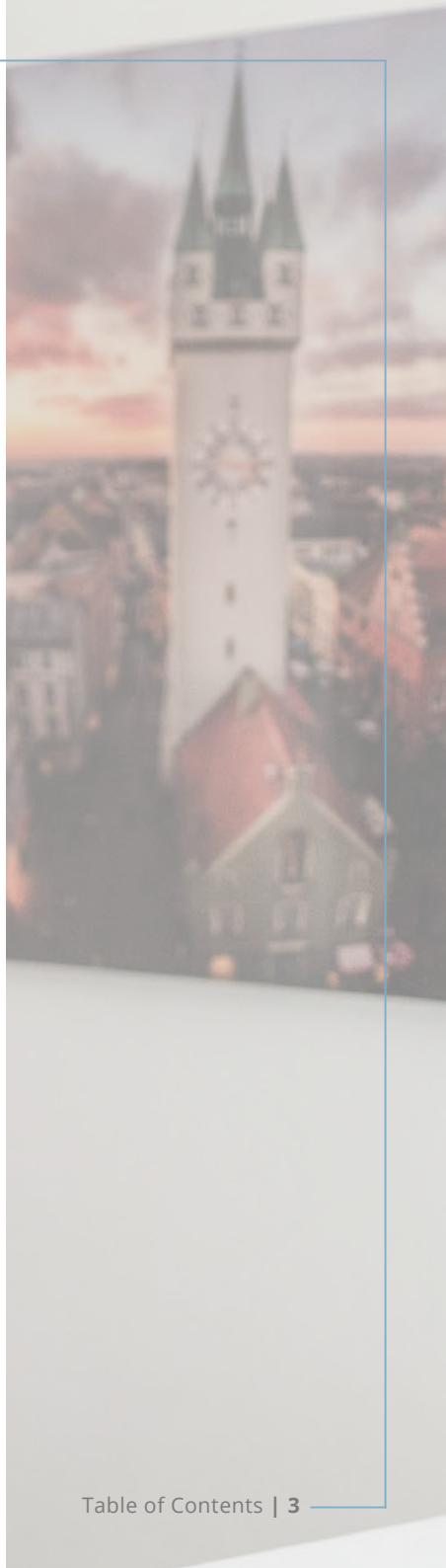


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SHAPING HEALTH. TOGETHER.

Healthcare is constantly evolving. New requirements emerge, structures change, and we too are taking the next step.

What has grown over many years and already works closely together today will become even more closely united in the future. INTERATIO-MediTec and LOSCH Medical are bringing their expertise together, creating the foundation for a clear, unified presence.

Amid all this change, what has always defined our collaboration remains essential: reliability, personal partnerships and our commitment to providing solutions for the demands of everyday clinical practice.

For more than three decades, we have combined experience with a forward-looking approach. We listen, continue to develop and focus on long-term collaboration with our customers and partners. For us, progress happens where experience, clinical practice and new ideas come together.

By moving forward together, we are creating even better conditions for the future. What has proven successful will remain, expertise will come together, and two closely connected companies will become one unified presence.

Together for a healthy future.

Lothar F. Schwarz

Handwritten signature of Lothar F. Schwarz



ESTABLISHED. NOW UNITED.

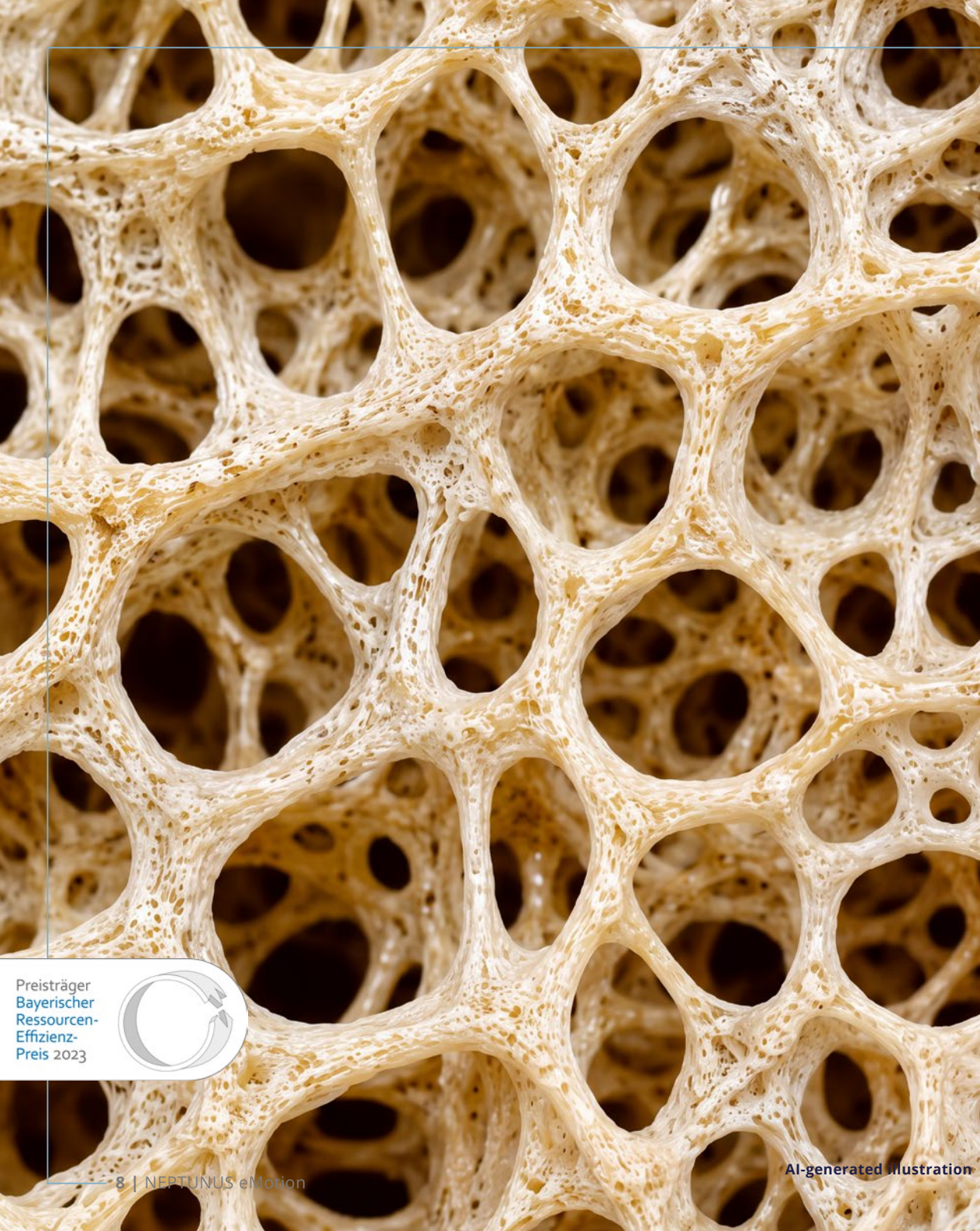
Trusted expertise under one name.

Two familiar names are becoming one shared presence. INTERATIO-MediTec and LOSCH Medical have worked closely together for many years and have been part of the LOSCH healthcare Group since 2022. On 1 January 2027, we will take the next consistent step and move forward together under the name LOSCH Medical.

This will make visible externally what is already closely connected today. Development and manufacturing as well as national and international sales will be brought together under one common brand presence. This creates a consistent appearance for our products, services and expertise.

For our customers and partners, this step means one thing above all: continuity. Your contacts will remain the same, as will our products, article numbers, existing agreements and supply relationships. What will change is our shared presence.

Under the name LOSCH Medical, we are bringing together what has proven successful and continuing to develop it together. With more than three decades of experience and a clear focus on the challenges of tomorrow.



Preisträger
Bayerischer
Ressourcen-
Effizienz-
Preis 2023



NEPTUNUS[®]
eMotion



NEPTUNUS eMOTION

PULSE LAVAGE SYSTEM

The NEPTUNUS eMotion is a powerful pulse lavage system designed for professional use in orthopaedics and trauma surgery. It combines strong rinsing performance with effective suction and a quiet electric drive. Two power levels enable targeted adjustment to the respective application and support efficient operation.

The one-piece aluminium housing combines ergonomics, stability and durability. High-quality materials, the reparability of the system and the recyclability of its components take further aspects of the product life cycle into account alongside reuse. Production in Germany and transparent supply chains complement our commitment to quality, patient safety and the responsible use of resources.

INCLUDED IN THE SET

- electrically powered, resterilisable NEPTUNUS eMotion handpiece
- resterilisable power cable (3.5 m) with safety connector
- compact power supply unit (input: 90–240 V, 50/60 Hz; output: 12 V, 5 A) with power plug
- sterile single-use kit (tubing length 3 m)

IRRIGATION KITS

The two irrigation kits combine smart design with premium materials. A removable, adjustable splash guard with built-in stop function supports controlled use in the OR. The proven suction geometry ensures reliable removal of bone and tissue particles.



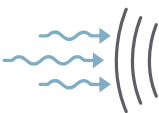
Distance to Object	
NEPTUNUS eMotion	25 mm
Single-use system	24 mm



Pulse Frequency	
NEPTUNUS eMotion	55.6 Hz
Single-use system	21.0 Hz



Flow Rate	
NEPTUNUS eMotion	0.8 l/min
Single-use system	1.9 l/min



Impact Force	
NEPTUNUS eMotion	3.7 N
Single-use system	1.9 N



Waterproof 12 V cable connection rated to protection class IP58



Removable, adjustable splash guard with integrated stop function



Flexible and shatter-resistant irrigation nozzles



COMPACT PACKAGING. DIRECT COMPARISON.

Paper- and cardboard-based materials are used for the packaging of NEPTUNUS eMotion irrigation kits. The compact design takes into account not only the packaging material itself, but also the requirements of transport, storage and stock management.

The difference becomes clear in a direct comparison of the required storage space: ten NEPTUNUS eMotion irrigation kits take up less than half the storage space of ten conventional single-use systems. Existing storage areas can therefore be used more efficiently, allowing larger quantities to be stored within a comparable space.

Efficient shipping and logistics planning is also taken into account. The use of paper- and cardboard-based packaging materials, as well as the reuse of packaging materials already received, forms part of our company-wide approach to packaging and shipping.

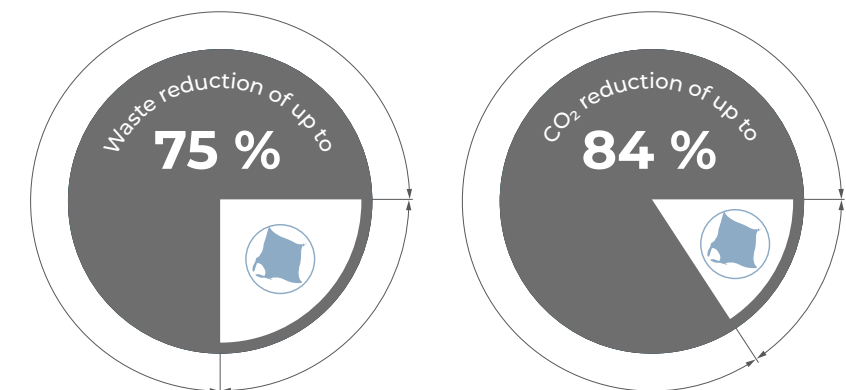
Left: Ten NEPTUNUS eMotion irrigation kits
Right: Ten conventional single-use systems



RESOURCES IN FOCUS. POTENTIAL HIGHLIGHTED.

The NEPTUNUS eMotion system combines a reusable handpiece with single-use irrigation sets. A validated comparative assessment considers production, logistics and disposal. Compared with the reference single-use system, differences can be seen in CO₂ emissions as well as in the amount of plastic and electronic waste. (LOSCH Medical, 2020)

For the assessment of the annual potential, approximately 252,000 applications in Germany are used as a reference. This figure is based on published healthcare data. (Bleß & Kip, 2016)



Up to 75% less plastic and electronic waste and up to 84% lower CO₂ emissions compared with the reference single-use system. (LOSCH Medical, 2020)

View publication



CAPTAIN NEPTUN INITIATIVE



Hospitals and healthcare facilities are increasingly required to document environmental metrics in a transparent and traceable manner. Such data can be relevant both for internal reporting and for requirements throughout the supply chain.

As part of the Captain Neptun initiative, the calculated reductions in CO₂ emissions and plastic waste compared with the reference single-use system are documented on the basis of the validated comparative assessment. The evaluation is carried out individually based on the respective usage.

The calculated values are summarised annually and documented in a certificate. This provides participating facilities with traceable metrics for their internal documentation and own communication.

PARTNERS OF OUR CAPTAIN NEPTUN INITIATIVE

Numerous hospitals and healthcare facilities from our customer base have already joined us on this journey.



LOSCH LAVAGE ELECTRIC VERSION

Developed as a complete disposable irrigation system for orthopaedic procedures as well as wound irrigation and cleansing. The electric version is operated with the separately available power supply unit.

SET INCLUDES:

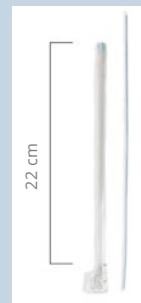
- Handpiece
- Cable for AC adapter
- Short irrigation attachment (working length 8 cm)
- Long irrigation attachment (working length 16 cm)
- Inlet tube (3 m)
- Suction tube (3 m)



Additional irrigation attachments,
available separately:



Femoral brush
Working length 27 cm
Diameter 0.8 cm



Irrigation attachment, large
Working length 22 cm
Diameter 0.8 cm



Irrigation attachment, extra large
Working length 29.5 cm
Diameter 1.2 cm

Additional irrigation attachment,
available separately:



Femoral brush
Working length 22.5 cm
Diameter 0.8 cm

LOSCH LAVAGE CORDLESS VERSION

Developed as a complete disposable irrigation system for orthopaedic procedures as well as wound irrigation and cleansing. The cordless version enables use independently of an external power supply unit.

SET INCLUDES:

- Handpiece
- Short irrigation attachment (working length 8 cm)
- Long irrigation attachment (working length 22 cm)
- Inlet tube (3 m)
- Suction tube (3 m)





NEPTUN[®]
Plug



NEPTUN PLUG CEMENT RESTRICTOR

The NEPTUN Plug is a resorbable cement restrictor for use in the medullary canal during cemented endoprosthetic procedures. It limits uncontrolled distal migration of the bone cement and enables targeted pressurisation in the femoral shaft. This supports an even distribution of the bone cement within the adjacent implant bed.

The restrictor is available in diameters from 8 to 18 mm in 2 mm increments and adapts flexibly to the anatomical conditions. The elastic gelatin-based biomaterial is resorbed at body temperature within a few days. Removal of the restrictor is also not required during revision procedures.

A suitable insertion instrument is available for positioning the cement restrictor in the medullary canal. The corresponding trial olives can be used to determine the diameter of the medullary canal and select the appropriate restrictor size.

BENEFITS AT A GLANCE:

- Resorbable gelatin-based biomaterial
- Sizes from 8 to 18 mm in 2 mm increments
- Flexible adaptation to anatomical conditions
- Targeted pressurisation in the femoral shaft
- Size determination using trial olives
- Suitable insertion instrument for positioning
- No removal of the restrictor required during revision procedures

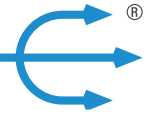


PROCEDURE IN THE OPERATING ROOM:

Irrigation and suction	Size determination using a trial olive	Placement of the Plug	Implantation of the prosthesis
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NEPTUN *mix* 





View application video



NEPTUN MIX BOWL

The NEPTUN Mix Bowl was developed for use in orthopaedics and primary knee endoprosthetics. The system enables simple and reproducible preparation of bone cement and accommodates quantities of up to 120 g.

The special rotational axis mechanism ensures uniform mixing with low porosity and a homogeneous consistency. Studies and practical experience reports are available regarding these properties.

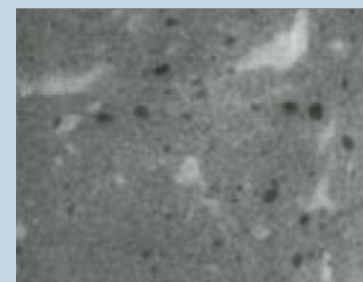
After mixing, an ergonomically shaped spatula facilitates removal of the bone cement. The supplied curette is used for the targeted removal of excess material. The NEPTUN Mix Bowl is intended for applications involving manual cement application, from primary knee replacement to complex revision procedures.

VACUUM PUMP AND TUBING SYSTEM

- Footswitch for starting/stopping the pump
- Manometer for reliable vacuum monitoring
- Activated carbon filter for vapour absorption
- Clamp for secure fixation of the vacuum hose



Bowl mixing system with rotational axis design



Manual mixing

X-ray images comparing manual mixing and a bowl mixing system (Kurdy, Hodgkinson, & Haynes, 1996)

NEPTUN MIX CARTRIDGE

The NEPTUN Mix cartridge cement mixing system provides uniform mixing of bone cement with simple handling. The transparent cartridge enables visual monitoring throughout the entire process. The threaded connection allows the cartridge to be attached directly to the application gun. The system is designed for bone cement quantities of up to 80 g and is compatible with different types of bone cement.

CARTRIDGE AND APPLICATION UNIT

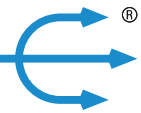
- Transparent cartridge for monitoring mixing and application
- Ergonomic T-handle for comfortable mixing
- Colour marking of the predetermined breaking point
- Threaded connection to the application gun
- Suitable for up to 80 g of bone cement
- Femoral seal
- Ampoule filter
- Flat knee nozzle
- Narrow nozzle with a diameter of 9 mm available separately



View application video





NEPTUN *fix* 



NEPTUN FIX

G40-HV

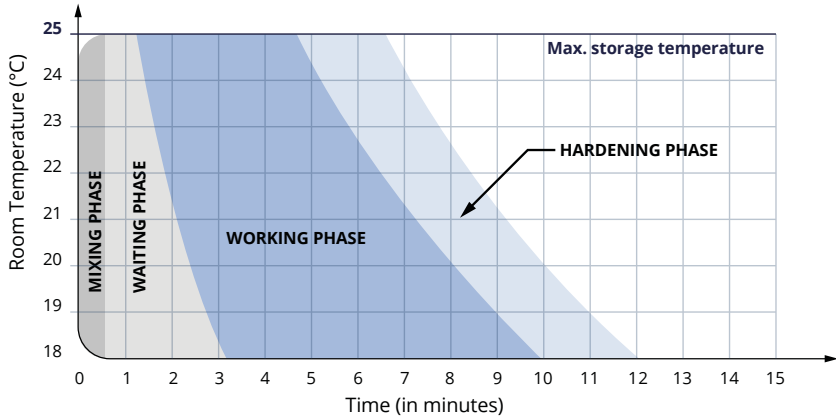
The high-viscosity, antibiotic-loaded bone cement with added gentamicin is intended for use in cemented endoprosthetic procedures. It is used for the fixation of endoprostheses in human bone.

In addition to the composition, the working and setting properties as well as the release of gentamicin are particularly relevant. The following information and diagrams provide an overview of the composition, the temperature-time profile during setting and the duration of antibiotic release.

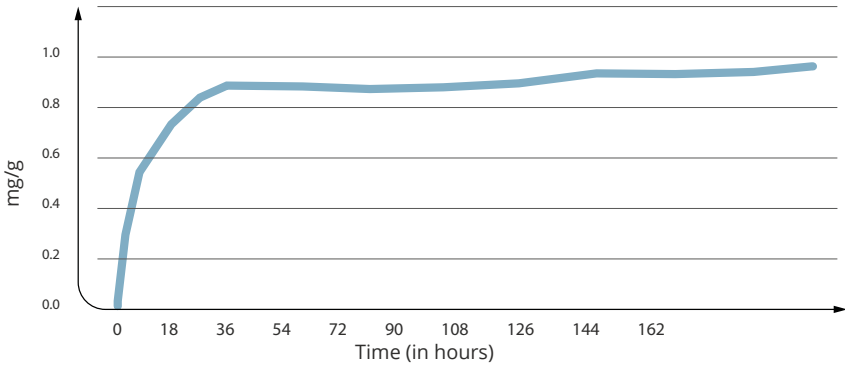
COMPOSITION:

Polymer:		Monomer:	
Polymethylmethacrylate	84.3 %	Methylmethacrylate	84.4 %
Benzoyl peroxide	2.4 %	Butylmethacrylate	13.2 %
Barium sulfate	9.6 %	N,N-Dimethyl-p-toluidine	2.4 %
Gentamicin sulfate	3.8 %	Hydroquinone	20 ppm
(corresponding to 1 g pure Gentamicin)			

Temperature-Time Diagram



Antibiotic Release



Diagrams for NEPTUN Fix G40-HV (Teknimed SAS, n.d.)

NEPTUN TRAY

DESIGNED TO FIT

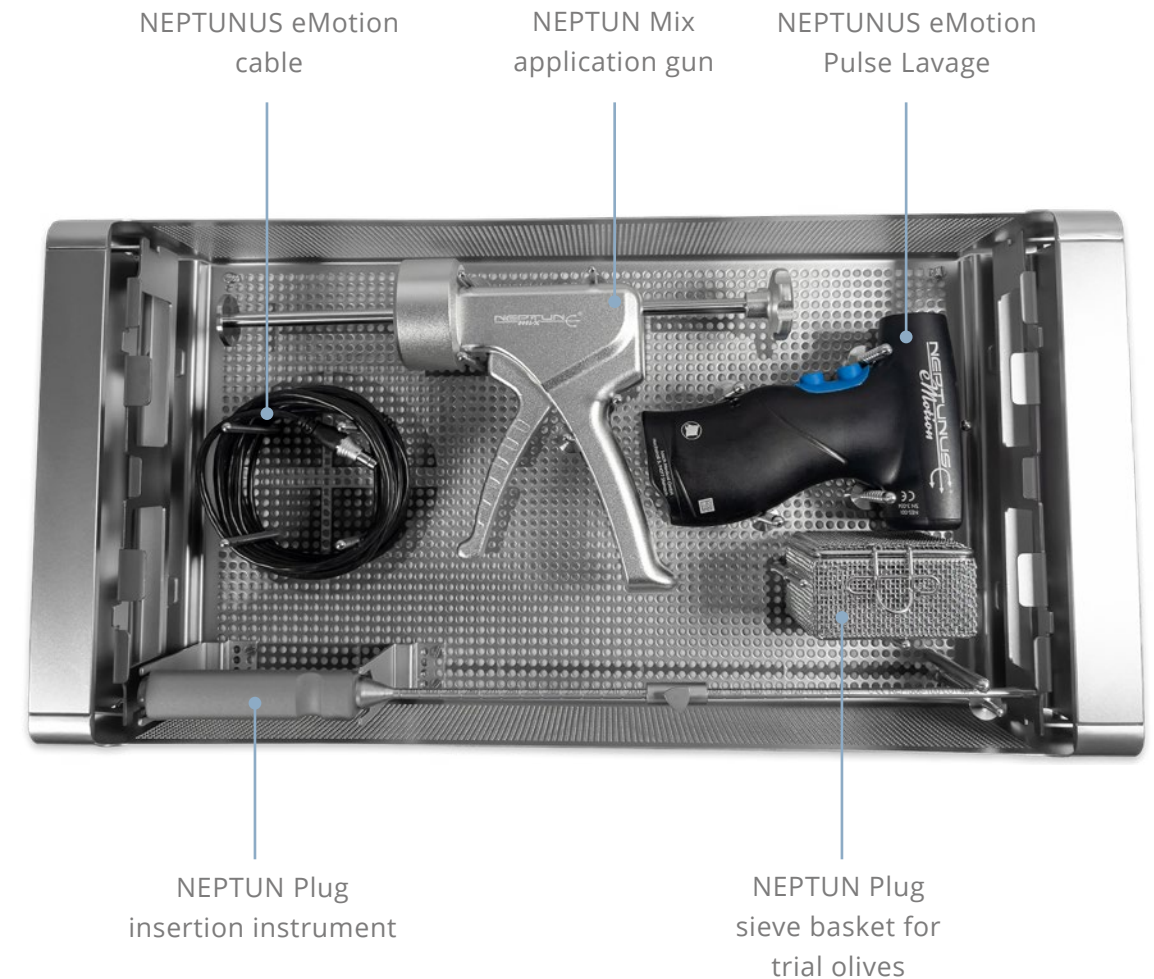
The NEPTUN Tray complements the NEPTUN product line with a coordinated solution for the organised and protected reprocessing of reusable components.

Predefined positions in the shadow layout provide a fixed place for each product. Secure fixation protects the components from unnecessary mechanical stress during transport and reprocessing while also allowing cleaning within the tray.

The holding elements are specifically designed for the components of the NEPTUN product line and ensure precise positioning. Thanks to its high thermal and chemical resistance, the tray is designed to meet the requirements of reprocessing and sterilisation. The matching lid keeps the components securely in their designated positions and supports protected transport and storage. The lightweight, stackable design also facilitates space-saving organisation in everyday clinical use.

BENEFITS AT A GLANCE:

- Clear assignment through shadow layout
- Secure fixation to protect the products
- High thermal and chemical resistance
- Lightweight, stackable design
- Designed for the components of the NEPTUN product line
- Secure closure and storage with matching lid





View online catalogue

CUTTING & ROTARY INSTRUMENTS

Our portfolio includes cutting and rotary instruments for orthopaedics and trauma surgery, which we offer through our established partner Komet Medical.

SURGICAL SAW BLADES

The portfolio includes sterile-packaged EZ Blades and KMS Blades knee saw blades as well as non-sterile, reusable EVO Blades. In addition, we offer standard saw blades for small and large bone surgery.

DRILL PINS AND THREADED PINS

For knee endoprosthetics, the portfolio includes drill pins and threaded pins for the temporary fixation of knee templates during implant preparation.

TWIST DRILLS

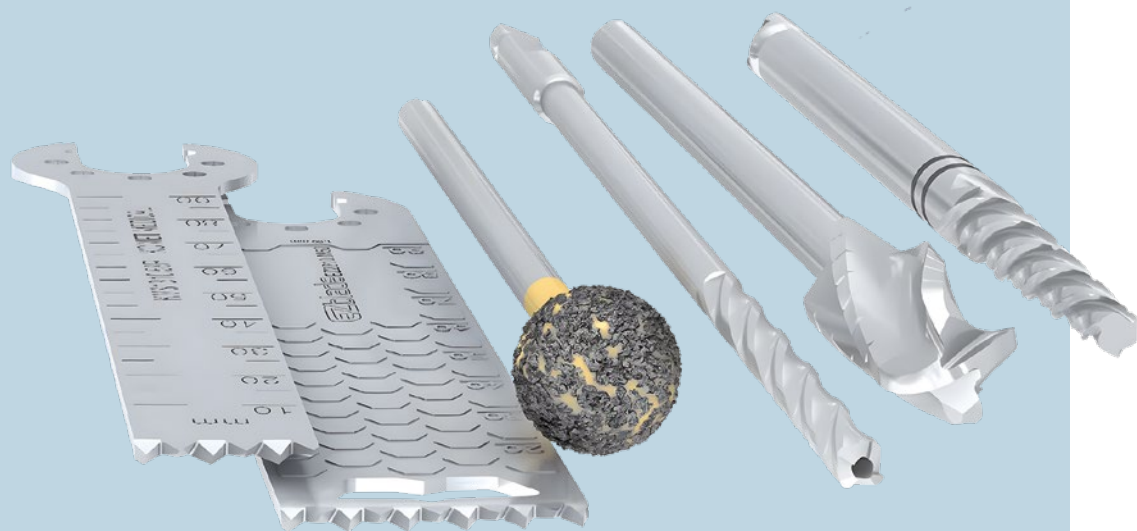
Twist drills for bone surgery are available with a round shank or AO quick coupling. Cannulated versions are also available for guided applications.

MIS FOOT BURS

MIS foot burs are intended for minimally invasive and percutaneous procedures in foot surgery and are used for bony corrections with limited access.

ROTARY INSTRUMENTS

The portfolio includes solutions for various surgical disciplines, including ENT surgery, oral and maxillofacial surgery, foot surgery and neurosurgery.



Workshops & Training

WORKSHOPS ON MODERN CEMENTING TECHNIQUE

In cementing technique, not only the products used but also their preparation and application play an important role. Mixing, waiting times, pressurisation and preparation of the implant bed are all part of the overall procedure. This is precisely where our workshops and training sessions come in.

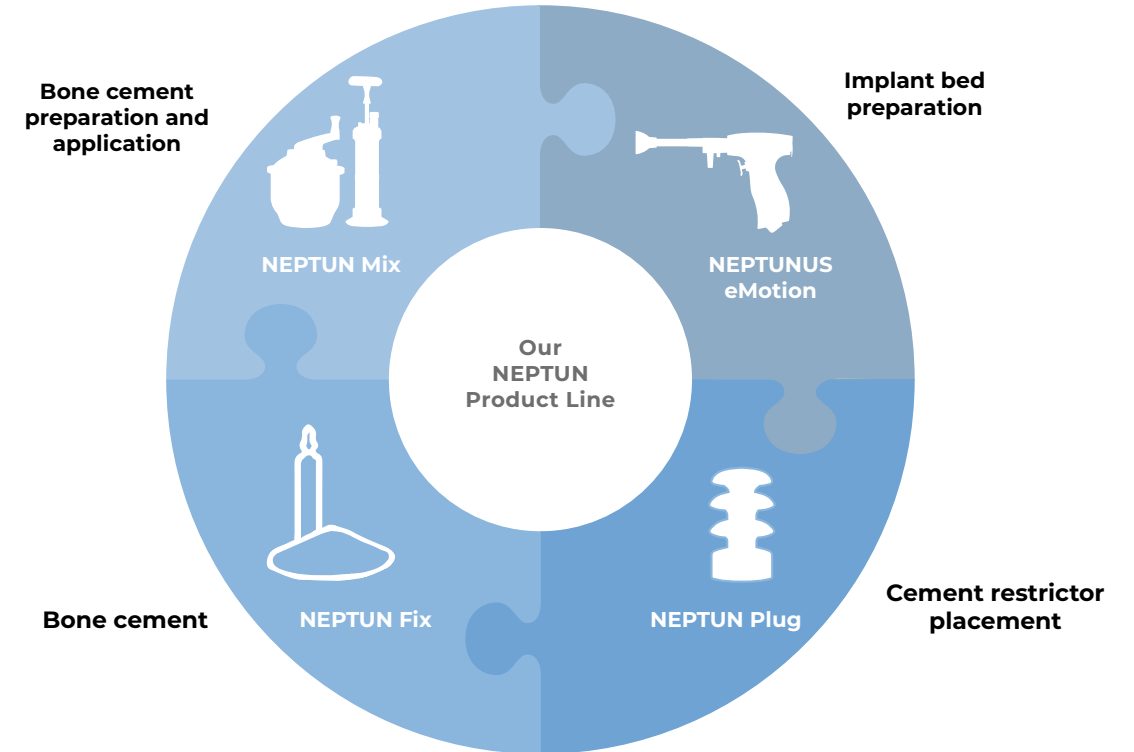
Our in-house training sessions take place where our products are used: in the hospital. Together with the respective team, we look at the application of the NEPTUN product line, from the Pulse Lavage system and vacuum bone cement mixing systems to the application of bone cement.

In our cementing technique workshops, we go beyond product application and address the technical fundamentals throughout the entire procedure. Typical topics include the different phases of bone cement, the influence of temperature and working time, the function of the cement restrictor and pressurisation in the medullary canal. Content and focus can be adapted individually.

We also participate in professional events and expert forums, where we address topics from clinical practice and continue the professional exchange. Feedback from practical application also contributes to the further development of our products.

INTERESTED IN A WORKSHOP OR TRAINING SESSION?

Talk to us. We can coordinate the content, format and timing together.





More Information

RESPONSIBILITY AT LOSCH MEDICAL

For us, responsibility is reflected in the decisions we make about products, packaging and operational processes. We consider which materials are used, how systems are designed and which components can be reused. After all, material use and waste generation are determined not only by the function of a product, but also by its design and handling.

One example is the NEPTUNUS eMotion system. It combines a reusable handpiece with single-use irrigation sets. In a validated comparative assessment, different system variants were evaluated for defined application scenarios. The results provide a transparent view of how the respective system design affects material use and waste generation.

We also take action beyond the operating room. Paper and cardboard are used for product packaging and shipping, and existing shipping materials are reused wherever possible. In addition, we review our internal processes in areas such as energy, materials, mobility and catering and continue to develop existing measures.

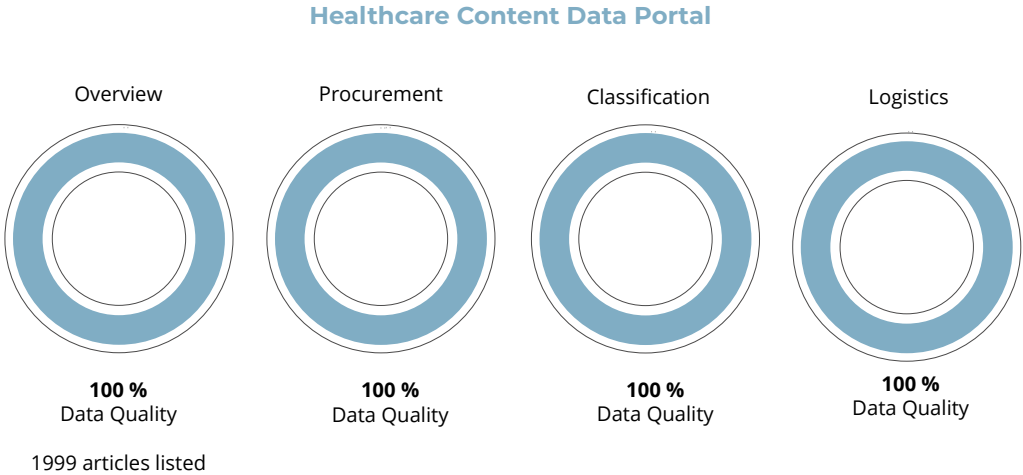
The Captain Neptun initiative complements this approach with documented evaluations based on the validated comparative assessment. Further information on our measures and supporting evidence is summarised in our regularly updated sustainability report.

MASTER DATA & DIGITAL SERVICES

Our central master data system ensures up-to-date, consistent product information based on established standards such as eClass and the COVIN rule set.

Our product data is available via the HealthCareDataPortal with a verified data quality of at least 97%. Through our connection to Pagero, we support integration into eProcurement processes, including invoicing and digital document processing.

The result is a reliable foundation for efficient processes and transparent, future-ready collaboration.



LIST OF ARTICLES

NEPTUNUS eMotion Pulse Lavage

Article Number	Product	Product Description	Packaging Unit
NES	NEPTUNUS eMotion System	includes handpiece, power cord, power supply unit	1 set
NES-001	Handpiece	NEPTUNUS eMotion System	1 piece
NES-002	Power cord	NEPTUNUS eMotion System	1 piece
NES-003	Power supply unit	NEPTUNUS eMotion System	1 piece
OMP-9100	Hip/Knee irrigation kit with suction	Irrigation/suction attachment, sterile	10 pieces

NEPTUN Plug - Cement Restrictor

Article Number	Product	Packaging Unit
NP-770008	resorbable cement restrictor “NEPTUN Plug” – Size 8 mm	1 piece
NP-770010	resorbable cement restrictor “NEPTUN Plug” – Size 10 mm	1 piece
NP-770012	resorbable cement restrictor “NEPTUN Plug” – Size 12 mm	1 piece
NP-770014	resorbable cement restrictor “NEPTUN Plug” – Size 14 mm	1 piece
NP-770016	resorbable cement restrictor “NEPTUN Plug” – Size 16 mm	1 piece
NP-770018	resorbable cement restrictor “NEPTUN Plug” – Size 18 mm	1 piece
I-NP-001	Insertion set for NEPTUN Plug incl. trial olives 8–18 mm and sieve basket	1 piece

NEPTUN Fix - Bone cement

Article Number	Product	Product Description	Packaging Unit
NF-G4-HV	NEPTUN Fix G40-HV	surgical bone cement with Gentamicin 40 g - high viscosity	1 piece

NEPTUN Mix - Vacuum Mixing Systems

Article Number	Product	Product Description	Packaging Unit
NM-K1	NEPTUN Mix Cartridge - sterile	Vacuum mixing system for surgical bone cement incl. ampoule filter, long, short and flat nozzle, and femoral seal max. filling volume: 80 g	10 pieces
NM-ZP	Application gun	for NEPTUN Mix mixing system NM-K1	1 piece
NM-B1	NEPTUN Mix Bowl - sterile	Vacuum mixing system for surgical bone cement incl. spatula and curette max. filling volume: 120 g	10 pieces
NM-VP	Vacuum foot pump	for NEPTUN Mix mixing system NM-K1 and NM-B1 incl. compressed air tube	1 piece
NM-SD	Narrow Nozzle - sterile	Outer diameter 9 mm inner diameter 7 mm	10 pieces

LOSCH Lavage - Electric Version

Article Number	Product	Product Description	Packaging Unit
LL-AC	Single-use pulse lavage system – sterile	Electric version, to be used with power supply unit LL-NT	10 pieces
LL-NT	Power supply unit	for single-use pulse lavage system	1 piece
LL-BA	Femoral brush - sterile	Working length 27 cm, diameter 0.8 cm	10 pieces
LL-SA-L2	Irrigation attachment - large - sterile	Working length 22 cm, diameter 0.8 cm	10 pieces
LL-SA-L1	Irrigation attachment - extra large - sterile	Working length 29.5 cm, diameter 1.2 cm	10 pieces

LOSCH Lavage - Cordless Version

Article Number	Product	Product Description	Packaging Unit
LL-BP	Single-use pulse lavage system – sterile	Cordless version	5 pieces
LL-BT	Femoral brush - sterile	Working length 22.5 cm, diameter 0.8 cm	10 pieces

NEPTUN Tray - Transport and Sterilisation

Article Number	Product	Product Description	Packaging Unit
NT-ST	NEPTUN Tray	Tray for transport and sterilisation	1 piece
452-013	NEPTUN Tray lid	Matching lid for NEPTUN Tray	1 piece

OUR CUSTOMER FEEDBACK



Priv.-Doz. Dr. med. Jens Anders - Department of Orthopaedics, Kliniken Dr. Erler, Nuremberg
NEPTUNUS eMotion Pulse Lavage System

We have been using the NEPTUNUS Pulse Lavage System for several years during total knee arthroplasty procedures. Why has this system proven itself? First, the effectiveness of this jet lavage is high compared to competitors, as the system allows intuitive selection between two intensity levels depending on the bone structure. Second, the well-balanced, fixed yet removable front cover allows universal application, even in hard-to-reach joint areas. The shape and material consistency of the tip enable rinsing with minimal spray and effective suction. There's no need to change the suction tubing in the OR. Environmentally speaking, the lavage stands out with its reusability and PVC/phthalate-free materials. The new NEPTUNUS eMotion model is even more ergonomic, quieter, and more efficient. We can therefore fully recommend this system.



Torsten Klepzig - Head of Department, Orthopaedics and Rheumatic Surgery | Johanniter Hospital Treuenbrietzen
NEPTUN Plug – Cement Restrictor

At Johanniter Hospital Treuenbrietzen, we have been using the NEPTUN Plug cement restrictors from LOSCH Medical for many years in orthopaedic procedures especially in endoprosthetics. The current instrumentation for applying the restrictors is easy to use, and selecting the correct size for the plug to be inserted is efficient. With sizes ranging from 8 mm to 18 mm, we have sufficient options to achieve the desired cementing result. We can therefore also highly recommend the NEPTUN Plug resorbable cement restrictors from LOSCH Medical.



Prof. Dr. med. Maximilian Rudert - Orthopaedic Clinic | König-Ludwig-Haus Würzburg
NEPTUN Mix Bowl – Vacuum Mixing Systems

What are the advantages of vacuum mixing and the bowl? Above all, the mixing bowl convinces us through its reproducible results when mixing cement under vacuum. The option of simply adding antibiotics during revisions is another advantage. We've been successfully using the bowl vacuum mixing systems for knee endoprostheses since 2013 and have completed over 4,000 procedures. The geometry and rotational paddle (agitator) ensure safe handling during surgery. The maximum fill volume of 120 g is particularly beneficial and speaks for the system. We were convinced by the bowl, as it consistently provides reliable mixing results with minimal effort.



Dr. med. Michael Breul - former Senior Consultant | Evangelisches Krankenhaus Oldenburg
NEPTUN Mix Cartridge – Vacuum Mixing Systems

The department for trauma surgery, orthopaedics, and sports traumatology at Evangelisches Krankenhaus Oldenburg uses products from LOSCH Medical in its daily surgical work with cemented prostheses. The well-designed cartridge-based mixing system, including the application gun, enables us to produce high-quality bone cement. Its easy and reproducible performance gives surgeons confidence and supports reliable anchoring of cemented prosthesis components. We are completely convinced by the cartridge-based vacuum mixing system.



Dr. med. Peter Mark - Specialist in Orthopaedics and Trauma Surgery/Rheumatology | Westklinik Dahlem (Berlin)
NEPTUN Fix G40-HV - Bone Cement

Since early 2018, we at Westklinik Dahlem have been using the cementing technique of LOSCH Medical with consistent results in handling and homogeneity. One challenge in choosing products lies in aligning the different interests of all stakeholders. The easy and safe handling of the products and services offered by LOSCH Medical was convincing. As a result, it was a natural step for us to use the NEPTUN Fix G40-HV bone cement. With over 400 uses to date, we can say that the cement reliably meets our requirements in terms of handling and homogeneity. Based on our experience, we can confidently recommend NEPTUN Fix G40-HV.

Arzneimittelkommission der deutschen Ärzteschaft. (2008). „UAW – Aus Fehlern lernen“: Kardiopulmonale Zwischenfälle bei der Verwendung von Knochenzement. Deutsches Ärzteblatt, 105(50), A2524–A2526.

Bedard, N. A., Callaghan, J. J., Stefl, M. D., & Liu, S. S. (2015). Systematic review of literature of cemented femoral components: What is the durability at minimum 20 years follow up? *Clinical Orthopaedics and Related Research*, 473(2), 563–571.

Bishop, N. E., Ferguson, S., & Tepic, S. (1996). Porosity reduction in bone cement at the cement–stem interface. *The Journal of Bone and Joint Surgery – British Volume*, 78(3), 349–356.

Bleß, H.-H., & Kip, M. (Hrsg.). (2016). Weißbuch Gelenkersatz: Versorgungssituation endoprothetischer Hüft- und Knieoperationen in Deutschland (S. 18). Springer Berlin.

Breusch, S., Lukoschek, M., Schneider, U. & Ewerbeck, V. (2000). „State of the art“ der zementierten Hüftendoprothetik. Deutsches Ärzteblatt, 97 (30), A2030–A2033.8.

Bulstra, S. K., Geesink, R. G. T., Bakker, D., Bulstra, T. H., Bouwmeester, S. J. M., & van der Linden, A. J. (1996). Femoral canal occlusion in total hip replacement using a resorbable and flexible cement restrictor. *Journal of Bone and Joint Surgery – British Volume*, 78(6), 892–898.

Carter, D. R., Gates, E. I., & Harris, W. H. (1982). Strain-controlled fatigue of acrylic bone cement. *Journal of Biomedical Materials Research*, 16(5), 647–657.

Christie, J., Robinson, C., Singer, B. & Ray, D. (1995). Medullary lavage reduces embolic phenomena and cardiopulmonary changes. *The Journal of Bone and Joint Surgery Br*, Vol 77(3): 456-459.

Dunne, N. J., Orr, J. F., Mushipe, M. T., & Eveleigh, R. J. (2003). The relationship between porosity and fatigue characteristics of bone cements. *Biomaterials*, 24(2), 239–245.

Eveleigh, R. L. (2001, März). Mixing systems and the effects of vacuum mixing on bone cement. *British Journal of Perioperative Nursing*, 11(3), 132, 135–140.

Eveleigh, R., Dunne, N., Orr, J., Mushipe, M., & Beverland, D. (2002). The fatigue life of bone cement: How it is affected by mixer design, vacuum level and user technique. *Journal of Advanced Perioperative Care*, 1(1), 12–16.

Feldmeier, S. L. (2022, Mai). Planungskonzept zur Masterthesis (Unveröffentlichtes Manuskript). IU Internationale Hochschule.

Hargrove, R., Ridgeway, S., Russell, R., Norris, M., Packham, I. & Levy, B. (2006). Does pulse lavage reduce hip hemiarthroplasty infection rates? *Journal of Hospital Infection* 62, 446-449.

Health Care Without Harm. (2003). Strategie zur Risikominimierung für DEHP: Zusammenfassung einer KEMI-Studie für die EU.

Heudorf, U., Mersch-Sundermann, V. & Angerer, J. (2007). Phthalates: Toxicology and exposure. *International Journal of Hygiene and Environmental Health*, 210(5), 623–634.

International Organization for Standardization (ISO). (2008, Mai 15). ISO 16402: Implants for surgery — Acrylic resin cement — Flexural fatigue testing of acrylic resin cements used in orthopaedics (1. Aufl.). ISO.

Jasty, M., Maloney, W. J. & Bragdon, C. R. (1991). The initiation of failure in cemented femoral components of hip arthroplasties. *Journal of Bone and Joint Surgery – British Volume*, 73(B), 551–558.

Kartesz D. (1992). Infected Pressure and Diabetic Ulcers. *Clinics in Geriatric Medicine*, 8(4), 835.

Kurdy, N. M. G., Hodgkinson, J. P., & Haynes, R. (1996). Acrylic bone cement: Influence of mixer design and unmixed powder. *Journal of Arthroplasty*, 11(7), 813–819.

Lewis, G., Nyman, J. S., & Trieu, H. H. (1997). Effect of mixing method on selected properties of acrylic bone cement. *Journal of Biomedical Materials Research (Applied Biomaterials)*, 38(3), 221–228.

Lidgren, L., Drar, H., & Möller, J. (1984). Strength of polymethylmethacrylate increased by vacuum mixing. *Acta Orthopaedica Scandinavica*, 55(5), 536–541.

Lidgren, L., Bodelind, B., & Möller, J. (1987). Bone cement improved by vacuum mixing and chilling. *Acta Orthopaedica Scandinavica*, 58(1), 27–32.

Lindén, U. (1988). Porosity in manually mixed bone cement. *Clinical Orthopaedics and Related Research*, 231, 110–112.

Lindén, U., & Gillquist, J. (1989). Air inclusion in bone cement: Importance of the mixing technique. *Clinical Orthopaedics and Related Research*, 247, 148–151.

Lindén, U. (1989). Fatigue properties of bone cement: Comparison of mixing techniques. *Acta Orthopaedica Scandinavica*, 60(4), 431–433.

Majkowski, R., Miles, A., Bannister, O., Perkins, J. & Taylor, G. (1993). Bone surface preparation in cemented joint replacement. *The Journal of Bone and Joint Surgery*, Vol 75-B, Nr.3.

Malchau, H., Herberts, P., Söderman, P. & Odén, A. (2000). Update from the Swedish National Hip Arthroplasty Registry 1979–1998 [Scientific exhibit March 15–19]. Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), Orlando, FL, United States.

Meehan M. (1994). National Pressure Ulcer Prevalence Survey. *Advances in Wound Care*, 7(3), 27-30.

O’Toole, S. (2003). Microemboli identified in TKA patients. *Orthopaedics Today*.

Orishimo, K. F., Claus, A. M., Sychterz, C. J., & Engh, C. A. (2003). Relationship between polyethylene wear and osteolysis in hips with a second-generation porous-coated cementless cup after seven years of follow-up. *The Journal of Bone and Joint Surgery – American Volume*, 85(6), 1095–1099.

Prendergast, P. J., Birsthille, P., Waide, D. V., & Kumar, N. V. G. (1999). An investigation of the performance of Biostop G and Hardinge bone plugs. In *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine*, 213(4), 361–365.

Phthalate in Medizinprodukten: Expertengespräch im BfArM. (2005). *Umweltmedizin – Forschung – Praxis*, 10(1), 56.

Schreurs, B. W., Spierings, P. T. J., Huiskes, R., & Slooff, T. J. J. H. (1988, August). Effects of preparation techniques on the porosity of acrylic cements. *Acta Orthopaedica Scandinavica*, 59(4), 403–409.

Smeds, S., Goertzen, D., & Ivarsson, I. (1997, January). Influence of temperature and vacuum mixing on bone cement properties. *Clinical Orthopaedics and Related Research*, 334, 326–334.

Spoelhof G. (1993). Pressure Ulcers in Nursing Home Patients. *American Family Physician*, 47; 1207.

Teknimed SAS. (n.d.). Orthopedic range: Technical guide – CEMFIX®, GENTAFIX®, VACUUKIT®, CEMSTOP®. Teknimed.

Topoleski, L. D. T., Ducheyne, P. & Cuckler, J. M. (1990). A fractographic analysis of in vivo poly(methylmethacrylate) bone cement failure mechanisms. *Journal of Biomedical Materials Research*, 24, 145–154.

Wang, J. S., Toksvig Larsen, S., Müller Wille, P., & Franzén, H. (1996). Is there any difference between vacuum mixing systems in reducing bone cement porosity? *Journal of Biomedical Materials Research (Applied Biomaterials)*, 33(2), 115–119.

Wixson, R. L., Lautenschlager, E. P., & Novak, M. A. (1987). Vacuum mixing of acrylic bone cement. *Journal of Arthroplasty*, 2(2), 141–149.

Wixson, R. L. (1992). Do we need to vacuum mix or centrifuge cement? *Clinical Orthopaedics and Related Research*, 285, 84–90.

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