Optivac

15 years of successful mixing
Aseptic loosening due to porosity in bone cement has been a major problem since the start of cemented hip arthroplasty. The first experiments to reduce porosity in bone cement took place almost 25 years ago. This later led to the patented invention of bone cement collection under vacuum, which has been proven to eliminate macropores. In 1993, Optivac was introduced on the market and now celebrates 15 years of successful mixing.

Optivac is the world-leading vacuum mixing system and is a result of many years of continuous improvement.

Optivac is unmatched in documentation among vacuum mixing systems.¹,²,³,⁴,⁵
Minimized porosity and improved mechanical strength

Cement porosity directly affects the fatigue behavior of the bone cement. Reducing the number of pores can lead to remarkable improvements in cement strength and fatigue life. Several methods have been introduced in the interest of reducing cement porosity, the most efficient of which is applying vacuum throughout the mixing and collection of the cement. The fatigue life improves 10 times with vacuum mixing at 4°C compared to hand mixing. Improvement of bone cement quality by using a vacuum mixing system is one of the key pillars in Modern Cementing Technique.
Improvement of bone cement quality

Mixing and collection under vacuum minimizes both macropores and micropores

Two types of pores are classified in fully polymerized bone cement:
1) macropores, with a pore diameter of more than 1.0 mm.
2) micropores, with a pore diameter of 0.1–1 mm.\textsuperscript{1,8}

Mixing under vacuum reduces the cement’s microporosity, but has less effect on macro-porosity. Continuous vacuum – from mixing to collection – prevents macropore entrapment in high viscosity cement.

With its patented design for collection under vacuum, Optivac reduces both microporosity and macroporosity.\textsuperscript{1,5,4,2,9}

By dramatically reducing macroporosity, Optivac helps to prolong cement fatigue life.
**Safe working environment**

Optivac meets modern safety standards and the high demands on mixing bone cement. Bone cement in Optivac is mixed and delivered in the same cartridge, precluding direct contact with the bone cement.

By drawing monomer fumes through special filters, Optivac minimizes MMA exposures in the OR to barely detectable levels.

The packing is PVC free and the blister pack also serves as a working tray, which minimizes the waste.

Optivac contains no latex.

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**Retrograde filling**

Optigun and Optigun Ratchet are used to deliver bone cement from the Optivac vacuum mixing system in a retrograde fashion. The guns are identical except for the feeding mechanism and rod. With the Optigun and Optigun Ratchet you will get adequate cement filling and the application under pressure will increase the cement’s interface strength and prevent air and blood inclusions in the cement mantle.\(^3\)\(^,\)\(^11\)

The Swedish Arthroplasty Register has shown that retrograde cement filling of the femur reduces risk of revision and is an important step in Modern Cementing Technique.\(^10\)
The Optivac standardized mixing procedure produces homogeneous cement with the lowest possible porosity.

All types of bone cements can be mixed with the Optivac system. Optivac is adaptable to various application areas, such as hip, knee or shoulder arthroplasty. Suitable nozzles can be found in our assortment to be used for different types of application areas.

Depending on the amount of the bone cement required, choose the suitable Optivac cartridge. Three sizes of Optivac cartridges are available, small, medium and large.

Mixing is easy, requiring only a few simple steps. Illustrated step-by-step instructions can be found on every product.

Optivac was introduced in 1993 and celebrates 15 years of successful mixing.

All sets include cartridge, nozzle, a vacuum line with sterile charcoal filter, a funnel, ampoule breakers and a working tray. The Optivac Hip and Optivac M sets also include a femoral pressurizer for optimal pressurization of the femoral canal.
Ordering information

**Optivac sets**

For low volume cements
- Optivac Hip Set ........................................... 4150
- Optivac S ........................................... 4161
- Optivac M ........................................... 4160
- Optivac L ........................................... 4152

For high volume cements
- Optivac + Hip Set .......................................... 4250

**Instrumentation**

- Optigun ............................................. 4193
- Optigun Ratchet ..................................... 4195
- Vacuum pump ........................................ 4232

**Accessories**

- Nozzle angled ......................................... 4149
- Optivac Nozzle Knee ............................. 4146
- Nozzle slim ......................................... 4154
- Nozzle revision ..................................... 4155
- Knee cementation nozzle .................... 4312
- Nozzle cutter ...................................... 4159
References


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