PALACOS® LV
Low viscosity, radiopaque bone cement
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Working times 6
(Revision status: 2019-08)

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(修订状态: 2019 年 08 月)
Properties – Composition
PALACOS® LV is a slow-curing, radiopaque bone cement which exhibits low viscosity. It is obtained by mixing a polymer powder component with a liquid monomer component. Zirconium oxide has been added to the cement powder as an X-ray contrast medium.

The sterile-filtered monomer component is supplied in an amber glass ampoule and comes in a sterile blister pack. The polymer powder component is supplied in a double sterile packaging. The inner polyethylene sachet which contains the powder component is wrapped in a additional polyethylene sachet; both sachets were sterilized with ethylene oxide. The polyethylene sachets are contained in a non-sterile protective aluminium packaging. Copper complexes of chlorophylls and chlorophyllins (E141) has been used to obtain the green colour of PALACOS® LV in order to ensure clear visibility of the cement at the operating site.

After mixing, a plastic dough is obtained which is filled into the bone as an anchoring medium. The cement which then hardens in the bone allows stable fixation of the endoprostheses. The stress forces resulting from motions are transferred via the cement coating widely onto the bone.

Intended use
PALACOS® LV is a radiopaque cement-like substance which allows the implantation and fixation of prostheses in the bone.

Indikationen
PALACOS® LV is indicated for the fixation of prostheses in the bone in partial and total arthroplastic surgery of the hip, knee or other joints.

Contraindications
PALACOS® LV must not be used during pregnancy or nursing. In cases of known hypersensitivity to the constituents of the bone cement PALACOS® LV must not be used.

Warning information – Side effects
PALACOS® LV has not been evaluated with regard to spinal surgery. In some cases, the use of this cement beyond the listed indications in spine surgery resulted in serious, life-threatening complications. Cases of pulmonary embolism, respiratory and cardiac insufficiency and death have been reported.

Prior to using PALACOS® LV the surgeon should be familiar with its properties, handling and application during arthroplastic surgery. It is also recommended for surgeons to practice mixing, handling and application of PALACOS® LV prior to the use. Precise knowledge is also required, if mixing systems and syringes are used for the application of the cement. The monomer liquid is highly volatile and flammable; accordingly, suitable precautionary measures should be taken for use in the operating room. The monomer is also a powerful lipid solvent and should not come into direct contact with the body. When working with the monomer or the cement, gloves must be worn to ensure adequate protection against the penetration of the monomer (methyl methacrylate) into the skin. PVP (three-layer polyethylene, ethylene-vinyl alcohol-copolymer, polyethylene) and Viton/Butyl gloves have proven to provide good protection over an extended period. Wearing two pairs of gloves has also proved to offer adequate protection.

Composition

<table>
<thead>
<tr>
<th>Composition</th>
<th>PALACOS® LV 1x40</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 sachet of 40.0 g powder contains:</td>
<td></td>
</tr>
<tr>
<td>Poly(methyl acrylate, methyl methacrylate)</td>
<td>33.6 g</td>
</tr>
<tr>
<td>Zirconium dioxide</td>
<td>6.0 g</td>
</tr>
<tr>
<td>Hydrous benzoyl peroxide</td>
<td>0.4 g</td>
</tr>
<tr>
<td>1 ampule with 20 ml liquid contains:</td>
<td></td>
</tr>
<tr>
<td>Methyl methacrylate</td>
<td>18.4 g</td>
</tr>
<tr>
<td>N,N-Dimethyl-p-toluidine</td>
<td>0.4 g</td>
</tr>
<tr>
<td>Other constituents:</td>
<td></td>
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<tr>
<td>In the powder: colourant E141</td>
<td></td>
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<tr>
<td>In the liquid: colourant E141, hydroquinone</td>
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</table>
The use of latex or polystyrene-butadiene gloves, however, must be avoided. Please request the confirmation of your glove supplier whether the respective gloves are suitable for use with **PALACOS® LV**.

The monomer vapors may irritate the respiratory tract and the eyes and possibly damage the liver. Skin irritations have been reported, which must be attributed to the contact with the monomer.

Manufacturers of soft contact lenses recommend the removal of the lenses in the presence of harmful or irritating vapors. Since contact lenses are permeable to liquids and gases, they should not be worn in the operating room if methyl methacrylate is used.

**Precautionary measures**

Blood pressure, pulse and breathing must be carefully monitored during and immediately after implanting the bone cement. Any significant change of these vital signs must be immediately responded to with adequate measures.

When using **PALACOS® LV** the prepared bone should be carefully cleaned, aspirated and dried just before the bone cement is placed.

To reduce the considerable increase in pressure in the intraosseous area during the implantation of the prosthesis, it is recommended to use suction drainage. If pulmonary, cardiovascular complications arise, monitoring and – in some cases – even increasing the blood volume may be required. In case of acute respiratory insufficiency, anaesthesiological measures should be taken.

**Undesired effects**

Frequently, a temporary drop in blood pressure immediately after the implantation of the bone cement and the endoprosthesis has been observed. Rare cases of hypotension, including anaphylactic shock, followed by cardiac arrest and sudden death have been reported.

The following, additional undesired effects of the use of methyl methacrylate bone cement have been observed: Thrombophlebitis, superficial wound infection, deep wound infection, pulmonary embolism, haemorrhage and haematoma, trochanter bursitis, loosening or displacement of the prosthesis, trochanter detachment.

Other side effects observed: heterotopic bone regeneration, myocardial infarction, temporary cardiac arrhythmia, cerebrovascular accident.

**Interactions**

Not known for **PALACOS® LV**.

**Incompatibilities**

Aqueous solutions (e.g. containing antibiotics) must not be added to the bone cement since they considerably impair the mechanical properties of the cement.

**Dosing and preparation**

A single dose is prepared by mixing the entire content of a powder sachet with one ampoule. The quantity to be used depends on the respective surgical operation and the technique employed. Before the beginning of the operation, at least one additional dose of **PALACOS® LV** should be readily available. Each dose is prepared separately.

The following is required to prepare the bone cement: Sterile working surface, porcelain or stainless steel bowls, sterile mixing spoons or porcelain or stainless steel spatulas or a sterile vacuum mixing system.

The protective aluminium packaging, the outer non-sterile polyethylene sachet and the blister pack of the ampoules should be opened by an assistant in a way to maintain sterility. The sterile polyethylene sachet and the ampoule are placed under aseptic conditions on a sterile table.

Sterile conditions must be ensured when opening the polyethylene sachet and the ampoule.

**Application**

Two different methods can be used for mixing:

- Manual mixing
- Mixing under vacuum

**Manual mixing**

The liquid is poured into a bowl and the powder is added. Do not open the ampoule over the mixing device to prevent contamination of the cement with glass fragments. Then the mixture is stirred carefully for 30 sec.

If the dough-like mass no longer sticks to the rubber gloves, it can be processed. The application time depends on the material and room temperature. If the required consistency is obtained, the cement can be applied. To ensure adequate fixation, the prosthesis should be implanted and stabilized within the given time until the bone cement has hardened completely. Surplus cement must be removed as long as it is still soft.

If additional cement is needed during the operation, another sachet of powder can be mixed with one ampoule of liquid as described above. The kneadable mass which is obtained must be applied to the previously applied cement before it hardens. It is always required to mix the entire content of a sachet with the entire content of an ampoule.

**Mixing under vacuum**

To obtain a bone cement with reduced porosity, the cement components are mixed under vacuum. For this purpose an airtight closed system and rapid build-up of sufficient vacuum in the mixing equipment are required (absolute pressure: approx. 200 mbar). The stirring times for mixing under vacuum and mixing without vacuum are identical (30 sec). For details of the mixing method refer to the instructions of the mixing system used.
**Storage**
Do not store above 25°C (77°F).

**Shelf life/Sterility**
The shelf life is 3 years. The expiration date is printed on the folded box, the protective aluminium packaging and the inner sachet. **PALACOS® LV** must not be used after the expiration date. The contents of unused but opened or damaged packs must be discarded and must not be resterilized. **PALACOS® LV** has been sterilized with ethylene oxide gas and must not be resterilized. The polymer powder must not be used if it exhibits yellow discoloration. Please see the date of production and shelf life information on label.

**Disposal**
Single components of the bone cement, cured solid material as well as (uncleaned) packaging material must be disposed by following the regulations of the local authorities.

Registrant/Manufacturer name: Heraeus Medical GmbH
Registered office address: Philipp-Reis-Straße 8/13, 61273 Wehrheim, Germany
Manufacturing address: Philipp-Reis-Straße 8/13, 61273 Wehrheim, Germany
Telephone: +49 (0) 6181.35-3399
Fax: +49 (0) 6181.35-3366
Website: www.heraeus-medical.com

After sale-service agent/Name of agent:
LandMover Medical & Technology (Beijing) Co., Ltd.
Address: Room 606, 607, Fifth F., Tower 3, 16# South 3rd Ring West Road, Fengtai District, Beijing, China
Tel: +86 10 6750 6618
Fax: +86 10 6750 6618 ext.804

License number/Product technical requirement:
20143135900
Date of preparation or revision of the manual: 2019-08
Working times for manual mixing (not pre-chilled bone cement)

<table>
<thead>
<tr>
<th>Room temperature (°C)</th>
<th>Time (min)</th>
</tr>
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<tbody>
<tr>
<td>25</td>
<td>1</td>
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<tr>
<td>24</td>
<td>2</td>
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<td>23</td>
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<tr>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>17</td>
<td>9</td>
</tr>
</tbody>
</table>

Working times for vacuum mixing (not pre-chilled bone cement)

<table>
<thead>
<tr>
<th>Room temperature (°C)</th>
<th>Time (min)</th>
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</thead>
<tbody>
<tr>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>2</td>
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<tr>
<td>23</td>
<td>3</td>
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<td>4</td>
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<td>18</td>
<td>8</td>
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<tr>
<td>17</td>
<td>9</td>
</tr>
</tbody>
</table>

Test conditions: Not pre-chilled vacuum mixing system PALAMIX®️, 55% humidity.
性质-成分
PALACOS® LV为一种不透辐射的快凝骨水泥，呈低粘性。其制备方法为将一聚合体粉末状成分与一液状单体成分相混合。二氧化锆被已作为X线造影剂加入该骨粉。该经无菌过滤的单体成分供货时以琥珀玻璃安瓿瓶装，外加有无菌泡罩包装，其经环氧乙烷灭菌。

成分

<table>
<thead>
<tr>
<th>成分</th>
<th>PALACOS®LV 1x40</th>
</tr>
</thead>
<tbody>
<tr>
<td>每小袋中的40.0 g粉中含有：</td>
<td></td>
</tr>
<tr>
<td>丙烯酸甲酯-甲基丙烯酸甲酯聚合物</td>
<td>33.6 g</td>
</tr>
<tr>
<td>二氧化锆</td>
<td>6.0 g</td>
</tr>
<tr>
<td>过氧化苯酰</td>
<td>0.4 g</td>
</tr>
<tr>
<td>每安瓿瓶中的20 ml液体中含有：</td>
<td></td>
</tr>
<tr>
<td>甲基丙烯酸甲酯</td>
<td>18.4 g</td>
</tr>
<tr>
<td>N,N-二甲基-对甲苯胺</td>
<td>0.4 g</td>
</tr>
<tr>
<td>其它成分：</td>
<td></td>
</tr>
</tbody>
</table>

在粉中：叶绿素铜（E141）
在液体中：叶绿素铜（E141）对苯二酚。

禁忌症

在怀孕期或哺乳期禁用PALACOS® LV。并在已知对骨水泥PALACOS® LV的成分过敏的病例中禁用。

警示信息—副作用

未在脊椎手术方面对PALACOS® LV做过评价。在针对上述适应症之外的病症的脊椎手术中使用该水泥可导致严重的危及生命并发症，已有肺栓塞、呼吸功能不全、心功能不全乃至死亡的报道。在使用PALACOS® LV之前，外科医生应熟悉其在关节造影术中的性质、处理方法和应用。建议外科医生在使用PALACOS® LV之前，练习其混合、处理和使用。如果在使用水泥时使用混合系统和注射器，需了解详尽的有关知识。单体液体具有高度的挥发性和易燃性，因此在手术室内应采用适当的预防措施。该单体液也是强脂溶剂，不应与皮肤直接接触。当用处理单体液或水泥时，应戴上手套以充分地防止皮肤（甲基丙烯酸甲酯）渗入皮肤。由三层聚乙烯、丁基-乙烯醇共聚物、聚乙烯和氟橡胶（Viton®）/丁基制成的手套经长时间的检验，已被证明可提供充分的保护。戴两层手套也被证明可提供充分的保护。但必须避免仅戴乳胶或聚苯乙烯-丁二烯手套。请要求您的手套供应商确认有关手套是否适用于PALACOS® LV。
单体气可刺激呼吸道和眼，可能对肝造成损害。已有因与单体接触而引起的皮肤炎症的报道。软性隐形眼镜的生产厂家建议在有害或刺激性气体存在的情况下除掉镜片，因为液体和气体可渗透过隐形眼镜的镜片。如使用甲基丙烯酸甲酯，不得在手术室内戴隐形眼镜。

预防措施
应在植入骨水泥时或紧接植入水泥后仔细监测血压、脉搏和呼吸。如果这些生命标志有任何显著的变化，必须立刻采取适当的措施。

使用PALACOS® LV时，在置放骨水泥前，需要将骨头彻底清洗，并吸出液体然后将其干燥。如发生肺、心血管并发症，需要监测血量，在一些病例中甚至可能需要增加血量。在急性呼吸功能不全的情况下，应采取麻醉措施。

不良反应
经常在植入骨水泥和内假体后立即观察到暂时的血压降低。据报道在一些少见的病例中有伴随过敏性反应的血压过低发生，这些过敏性反应包括过敏性休克、心跳骤停和骤死等。下列使用甲基丙烯酸甲酯骨水泥后产生的其它不良反应已被观察到：血栓性静脉炎、表面伤口感染、深度伤口感染、肺栓塞、出血和血肿、转子粘液囊炎、假体松动与移位和转子脱离。观察到的其它副作用：异位成骨、心肌梗塞、短暂性心律不齐和脑血管事件。

相互作用
对PALACOS® LV尚无资料。

不兼容性
勿将水溶液（例如含抗生素的）加入骨水泥，因为这些水溶液会相当大地损害水的力学性质。

剂量和制备
将一装粉的小袋中全部内容物与一个安瓿内的液体相混合以制备一剂。使用剂量取决于相应手术和所采用的技术。在手术开始前，必须准备至少一剂备用的PALACOS® LV。每一剂应单独制备。

下列为制备骨水泥所需要的条件：无菌工作台面、瓷或不锈钢碗、无菌搅拌勺、瓷或不锈钢调药刀或一无菌真空混合系统。

应由助手以保持无菌的方法打开保护性铝包装、外层非无菌聚乙烯小袋和安瓿泡罩包装。无菌聚乙烯小袋和安瓿应在无菌条件下放置地无菌工作台上。并应保证在无菌状况下打开聚乙烯小袋和安瓿。

使用
两个不同的方法可用于混合，手动混合；真空下混合。

手动混合
将液体倾倒入碗中，再加入粉。请勿在混合设备上方打开安瓿，以防骨水泥被玻璃碎片污染。然后仔细地搅拌混合物30秒。

真空下混合
该产品有效期三年。为了得到多孔性较低的骨水泥，将骨水泥成分在真空下混合。为了这个目的，必须有一个气密性系统，并在混合系统中快速建立足够的真空（绝对压力：约200 mbar）。在真空下混合的搅拌时间（30 s）与非真空下混合的相同。混合方法详见所采用的混合系统的使用说明。

储存
勿储存在高于25℃ (77°F)的温度下。
储存期/无菌状态
该产品有效期三年。过期日期被印在折叠的盒、保护性铝包装和内层小袋上。过期后，PALACOS® LV不能使用。未使用过的、但已打开或损坏的包装必须丢弃，不能再对其灭菌。聚合体粉如已呈黄色，不能再使用。生产日期及有效期请见标签。

废弃处理
必须根据当地的规范性规定废弃处理骨水泥各组分、硬化骨水泥以及(未清洁的)包装材料。

注册人 / 生产企业名称: Heraeus Medical GmbH
注册人 / 企业中文名称：贺利氏医疗有限公司
住所：Philipp-Reis-Straße 8/13, 61273 Wehrheim, Germany
生产地址：Philipp-Reis-Straße 8/13, 61273 Wehrheim, Germany
电话：+49 (0) 6181.35-3399
传真：+49 (0) 6181.35-3366
网址：www.heraeus-medical.com

售后服务单位 / 代理人名称：
雷德睦华医药科技(北京)有限公司
住所：北京市丰台区南三环西路16号3号楼5层606、607
电话：010- 6750 6618
传真：010- 6750 6618转 804
医疗器械注册证编号 / 产品技术要求编号：
国械注进20143135900
说明书的编制或修订日期：2019-08
手动混合的工作时间(非预冷骨水泥)

温度

时间(min)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

真空混合的工作时间(非预冷骨水泥)

温度

时间(min)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

测试条件：未预冷，使用PALAMIX真空混合 55% 湿度
SYMBOLS / 符号

Manufacturer/生产厂商

Sterilized using aseptic processing techniques/无菌处理

Sterilized using ethylene oxide/环氧乙烷灭菌

Consult instructions for use/参考使用说明书

Keep away from sunlight/避免光照

Keep dry/保持干燥

Do not store above 25°C (77°F)/请勿储存于25摄氏度(77华氏度)以上的环境

Do not re-use/请勿二次使用

Do not resterilize/请勿二次灭菌

Catalogue number/产品编号

Use by date/有效期

Batch code/批号

Flammable liquid – Flashpoint 10°C/易燃液体-闪点10摄氏度

Causes skin irritation/刺激皮肤

Do not use if the product sterile barrier system or its packaging is compromised/如果产品无菌屏障系统或其包装已受损，请不要使用