1. **NAME OF THE MEDICINAL PRODUCT**

Beriplast P Combi-Set 0.5 ml, 1 ml, 3 ml
Powders and solvents for sealant.

2. **QUALITATIVE AND QUANTITATIVE COMPOSITION**

**Qualitative composition**

Combi-Set I:
*Active substances*
Human fibrinogen, Coagulation Factor XIII (human), Aprotinin (bovine)

Combi-Set II:
*Active substances*
Human thrombin, Calcium Chloride

**Quantitative composition**

<table>
<thead>
<tr>
<th>Combi-Set I</th>
<th>per 1 ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vial 1 Fibrinogen Concentrate:</td>
<td></td>
</tr>
<tr>
<td>total dried substance</td>
<td>174 mg</td>
</tr>
<tr>
<td>fibrinogen (human plasma protein fraction)</td>
<td>90 mg</td>
</tr>
<tr>
<td>coagulation factor XIII (human plasma protein fraction)</td>
<td>60 IU</td>
</tr>
<tr>
<td>Vial 2 Aprotinin Solution:</td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td>1.0 ml</td>
</tr>
<tr>
<td>bovine lung aprotinin</td>
<td>1000 KIU*</td>
</tr>
<tr>
<td>corresponding to</td>
<td>0.56 PEU**</td>
</tr>
</tbody>
</table>

* KIU = Kallikrein Inactivator Unit
** PEU = Ph. Eur. Unit (1 PEU = 1800 KIU)

<table>
<thead>
<tr>
<th>Combi-Set II</th>
<th>per 1 ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vial 3 Thrombin:</td>
<td></td>
</tr>
<tr>
<td>total dried substance</td>
<td>7.6 mg</td>
</tr>
<tr>
<td>with a human plasma protein fraction thrombin activity</td>
<td>500 IU</td>
</tr>
<tr>
<td>Vial 4 Calcium Chloride Solution:</td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td>1.0 ml</td>
</tr>
<tr>
<td>calcium chloride dihydrate</td>
<td>5.9 mg</td>
</tr>
</tbody>
</table>

For the full list of excipients, see section 6.1.
3. PHARMACEUTICAL FORM

Powders and solvents for sealant.

4. CLINICAL PARTICULARS

4.1 Therapeutic indications

Supportive treatment where standard surgical techniques are insufficient
- for improvement of haemostasis (including endoscopic treatment of bleeding gastroduodenal ulcer)
- as a tissue glue to promote adhesion/sealing or as suture support

4.2 Posology and method of administration

The use of Beriplast is restricted to experienced physicians and/or surgeons.

*Posology*
The volume of Beriplast to be applied and the frequency of application should always be oriented towards the underlying clinical needs of the patient.

The dose to be applied is governed by variables including, but not limited to, the type of surgical intervention, the size of the area and the mode of intended application, and the number of applications.

Application of the product must be individualised by the treating physician. In clinical trials, the individual dosages have typically ranged from 0.5 to 4 ml. For some procedures (e.g., liver traumata, or the sealing of large burned surfaces) larger volumes (10 ml or more) may be required.

The initial volume of the product to be applied at a chosen anatomic site or target surface area should be sufficient to entirely cover the intended application area. The application can be repeated, if necessary.

*Paediatric population*
The safety and efficacy of Beriplast in children and adolescents has not yet been established in controlled clinical studies.
**Method of administration**

For epilesional use.

For instructions on reconstitution of the medicinal product before administration, see section 6.6.

The reconstituted solutions (of vial 1 and 3) are to be administered locally to the tissue (sequentially or in combination). Unlike other haemostatic agents that must be removed once haemostasis is achieved, Beriplast remains in place after application and is degraded by the normal physiological process of clot lysis.

Prior to applying Beriplast the surface area of the wound needs to be dried by standard techniques (e.g. intermittent application of compresses, swabs, use of suction devices). Beriplast should only be reconstituted and administered according to the instructions and with the devices as provided with this product. See section 6.6 for more detailed instructions.

### 4.3 Contraindications

Beriplast must not be applied intravascularly.

Arterial and strong venous bleeding.

Hypersensitivity to the active substances or to any of the excipients listed in section 6.1.

### 4.4 Special warnings and precautions for use

For epilesional use only. Do not apply intravascularly.

Life threatening thromboembolic complications may occur if the preparation is unintentionally applied intravascularly.

Before administration of Beriplast care is to be taken that parts of the body outside the desired application area are sufficiently protected (covered) to prevent tissue adhesion at undesired sites.

As with any protein product, allergic type hypersensitivity reactions are possible. Signs of hypersensitivity reactions include hives, generalised urticaria, tightness of the chest, wheezing, hypotension, and anaphylaxis. If these symptoms occur, the administration has to be discontinued immediately.

Beriplast contains bovine protein (aprotinin). Even in case of strict local application, there is a risk of anaphylactic reactions, linked to the presence of bovine aprotinin. The risk seems higher in case of previous exposure, even if it was well tolerated. Therefore any use of aprotinin or aprotinin-containing products should be documented in the patients’ records.

In case of shock, standard medical treatment for shock should be implemented.
Special note on local injection:
Administration of Beriplast in the endoscopic treatment of gastrointestinal bleedings can cause tissue damage, which can lead to formation of intramural haematoma. Abdominal pain, nausea, or vomiting within 1 to 3 days after such endoscopic treatment can constitute symptoms of intramural haematoma. In patients with intramural haematoma of the duodenal wall, pancreatitis has been reported in single literature cases. Therefore, differential diagnosis for pancreatitis should be carefully evaluated.

Virus safety
Standard measures to prevent infections resulting from the use of medicinal products prepared from human blood or plasma include selection of donors, screening of individual donations and plasma pools for specific markers of infections and the inclusion of effective manufacturing steps for the inactivation/removal of viruses. Despite this, when medicinal products prepared from human blood or plasma are administered, the possibility of transmitting infective agents cannot be totally excluded. This also applies to unknown or emerging viruses and other pathogens.

The measures taken are considered effective for enveloped viruses such as human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV). The measures taken may be of limited value against non-enveloped viruses such as hepatitis A virus and parvovirus B19.

Parvovirus B19 infection may be serious for pregnant women (fetal infection) and for individuals with immunodeficiency or increased erythropoiesis (e.g. haemolytic anaemia).

It is strongly recommended that every time that Beriplast is administered to a patient, the name and batch number of the product are recorded in order to maintain a link between the patient and the batch of the product.

4.5 Interaction with other medicinal products and other forms of interaction

No formal interaction studies have been performed. Similar to comparable products or thrombin solutions, the product may be denatured after exposure with solutions containing alcohol, iodine or heavy metals (e.g., antiseptic solutions). Such substances should be removed to the greatest possible extent before applying the product.
4.6  Fertility, pregnancy and lactation

**Pregnancy and Breastfeeding**
The safety of fibrin sealant/haemostatics for use in human pregnancy or breastfeeding has not been established in controlled clinical trials. Experimental animal studies are insufficient to assess the safety with respect to reproduction, development of the embryo or foetus, the course of gestation and peri- and postnatal development. Only limited experience regarding the administration of Beriplast in pregnant women is available. Therefore, the product should be administered to pregnant and lactating women only if clearly indicated.

**Fertility**
No fertility data are available.

4.7  Effects on ability to drive and use machines

Not relevant.

4.8  Undesirable effects

The following standard categories of frequency are used:

- **Very common** $\geq 1/10$
- **Common** $\geq 1/100$ and $< 1/10$
- **Uncommon** $\geq 1/1,000$ and $< 1/100$
- **Rare** $\geq 1/10,000$ and $< 1/1,000$
- **Very rare** $< 1/10,000$

**Gastrointestinal disorders**
Administration in the endoscopic treatment of gastrointestinal bleeding can cause tissue damage, which can lead to formation of intramural haematomata (see section 4.4).

**Vascular disorders**
Inadvertent intravascular injection could lead to thromboembolic event and DIC, and there is also a risk of anaphylactic reaction (see section 4.4).

**Immune system disorders**
Hypersensitivity or allergic reactions (which may include angioedema, burning and stinging at the application site, bronchospasm, chills, flushing, generalised urticaria, headache, hives, hypotension, lethargy, nausea, restlessness, tachycardia, tightness of the chest, tingling, vomiting, wheezing) may occur in rare cases in patients treated with fibrin sealants/haemostatics. In isolated cases, these reactions have progressed to severe anaphylaxis. Such reactions may especially be seen, if the preparation is applied repeatedly, or administered to patients known to be hypersensitive to aprotinin (see section 4.4) or other constituents of the product. Antibodies against components of fibrin sealant/haemostatic products may occur rarely.
For safety information with respect to transmissible agents see section 4.4.

**Reporting of suspected adverse reactions**
Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

### 4.9 Overdose

No case of overdose has been reported.

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Local hemostatics, ATC code: B02BC

The fibrin adhesion system initiates the last phase of physiological blood coagulation. Conversion of fibrinogen into fibrin occurs by the splitting of fibrinogen into fibrin monomers and fibrinopeptides. The fibrin monomers aggregate and form a fibrin clot. Factor XIIIa, which is activated from factor XIII by thrombin, crosslinks fibrin. Calcium ions are required for both, the conversion of fibrinogen and the crosslinkage of fibrin. As wound healing progresses, increased fibrinolytic activity is induced by plasmin and decomposition of fibrin to fibrin degradation products is initiated.

### 5.2 Pharmacokinetic properties

Beriplast is intended for epilesional use only. Intravascular administration is contraindicated. As a consequence, intravascular pharmacokinetic studies were not performed in man.

Fibrin sealants/haemostatics are metabolized in the same way as is endogenous fibrin by fibrinolysis and phagocytosis. Beriplast is only applied locally and thus immediately available.

### 5.3 Preclinical safety data

Single dose toxicity data reveal no special hazard for humans, beyond the information included in other parts of the SPC. Due to its nature as well as its special method of application no genotoxicity and cancerogenicity studies have been performed.
6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

<table>
<thead>
<tr>
<th>Combi-Set I</th>
<th>Vial 1: powder</th>
<th>human albumin, L-arginine hydrochloride, L-isoleucine, sodium chloride, sodium citrate dihydrate, sodium L-glutamate monohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vial 2: solvent</td>
<td>sodium chloride, water for injections</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Combi-Set II</th>
<th>Vial 3: powder</th>
<th>sodium chloride, sodium citrate-dihydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vial 4: solvent</td>
<td>water for injections</td>
<td></td>
</tr>
</tbody>
</table>

6.2 Incompatibilities

This medicinal product must not be mixed with other medicinal products except those mentioned in section 6.6.

6.3 Shelf life

2 years

Chemical and physical in-use stability has been demonstrated for 24 hours at room temperature (up to max. +25 °C). However, from a microbiological point of view, unless the method of reconstitution precludes the risk of microbial contamination, the product should be used immediately.

6.4 Special precautions for storage

Store in a refrigerator (2 °C - 8 °C). Do not freeze. Keep the container in the outer carton in order to protect from light.

For storage conditions after reconstitution of the medicinal product, see section 6.3.
6.5 Nature and contents of container

Immediate containers
Injection vials:
Colourless glass,
- Type I acc. to Ph. Eur. in case of Fibrinogen Concentrate 0.5 and 1 ml, Aprotinin Solution, Thrombin and Calcium Chloride Solution
- Type II acc. to Ph. Eur. in case of Fibrinogen Concentrate 3 ml each sealed with rubber stopper and aluminium cap.

Presentations
Pack for Beriplast P 0.5 ml
Combi-Set I for preparing the fibrinogen solution, consisting of vials 1 and 2 linked together via a transfer device:
– Vial 1 containing powder of fibrinogen and coagulation factor XIII
– Vial 2 containing aprotinin solution
Combi-Set II for preparing the thrombin solution, consisting of vials 3 and 4 linked together via a transfer device:
– Vial 3 containing thrombin powder
– Vial 4 containing calcium chloride solution
Application set, consisting of:
– 2 sterile disposable tuberculin syringes
– Pantaject® application kit
– 2 sterile disposable spray-tips
– 4 sterile disposable cannulas

Pack for Beriplast P 1 ml
Combi-Set I for preparing the fibrinogen solution, consisting of vials 1 and 2 linked together via a transfer device:
– Vial 1 containing powder of fibrinogen and coagulation factor XIII
– Vial 2 containing aprotinin solution
Combi-Set II for preparing the thrombin solution, consisting of vials 3 and 4 linked together via a transfer device:
– Vial 3 containing thrombin powder
– Vial 4 containing calcium chloride solution
Application set, consisting of:
– 2 sterile disposable tuberculin syringes
– Pantaject® application kit
– 2 sterile disposable spray-tips
– 4 sterile disposable cannulas
Beriplast P Combi-Set

Pack for Beriplast P 3 ml

**Combi-Set I** for preparing the fibrinogen solution, consisting of vials 1 and 2 linked together via a transfer device:
- Vial 1 containing powder of fibrinogen and coagulation factor XIII
- Vial 2 containing aprotinin solution

**Combi-Set II** for preparing the thrombin solution, consisting of vials 3 and 4 linked together via a transfer device:
- Vial 3 containing thrombin powder
- Vial 4 containing calcium chloride solution

**Application set**, consisting of:
- 2 sterile disposable 3 ml syringes
- Pantaject® application kit
- 3 sterile disposable spray-tips
- 4 sterile disposable cannulas

Not all pack sizes may be marketed.

### 6.6 Special precautions for disposal and other handling

Beriplast must not be used after the expiry date given on the pack and container. The solution should be clear or slightly opalescent. Do not use solutions that are cloudy or have deposits. Reconstituted solutions should be inspected visually for particulate matter and discoloration prior to administration.

**Preparation and withdrawal of the solutions**

(see Figures 1 to 4 in the lid of the outer carton):
- Before reconstitution bring all Beriplast components to room temperature (not exceeding +25 °C).
- Take the cardboard stand (containing Combi-Sets I and II) out of the outer carton and place in a vertical position.
- Do not open the sterile blister packaging and leave the Combi-Sets I and II in the cardboard stand.
- Reconstitute each set separately.
- Apply strong pressure to the top of the upright Combi-Sets in order to transfer the solvents from the solvent vial (2 resp. 4) into the vial with the powder (1 resp. 3).
- The solvent is drawn in by vacuum via the transfer device (see Fig. 1).
- Afterwards leave to stand at room temperature. The process of reconstitution is complete after five to ten minutes at the latest. A clear to slightly opalescent solution is obtained. Air-bubbles may make the viscous solution appear turbid but such turbidity does not interfere with the efficacy or usability of the product.
- Note the date and time of reconstitution in the empty space on the cardboard stand (space on right side).
- Ensure that Combi-Sets I and II are stored in an upright position once reconstituted.
- Prior to use tear open the sterile blister packaging (see Fig. 2) and remove Combi-Set I and II under sterile conditions. Disconnect the empty vials (2 resp. 4) plus transfer devices (see Fig. 3).
Incline Vial 1 (fibrinogen solution/blue marking) and draw up the contents into the blue marked syringe. Completely draw up the contents of Vial 3 (thrombin solution/red marking) into the red marked syringe (see Fig. 4).

Use the reconstituted solutions immediately after withdrawal into the syringes. Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

**Application**
Prior to applying Beriplast the surface area of the wound needs to be dried by standard techniques (e.g. intermittent application of compresses, swabs, use of suction devices).

*Separate application of fibrinogen solution and thrombin solution:*
a) Apply the fibrinogen solution to the tissue site requiring adhesion and immediately overlay with the thrombin-containing solution.
b) The tissues requiring adhesion should be fixed in place for several minutes until provisional adhesion is achieved.

**Joint application** with Pantaject® application kit:
For joint application of fibrinogen solution and thrombin solution, the application kit can be used.

Handling of the application kit for Beriplast (see diagram on the application kit):
Remove the needles from the syringes filled with the fibrinogen solution (blue marking) and thrombin solution (red marking).

(A) Insert the Y-piece (3) in the conical recess of the syringe holder (4).

(B) Firmly connect to the Y-piece (3) the syringes filled with the fibrinogen solution (1/blue marking) and thrombin solution (2/red marking).

(C) Snap both syringes into the syringe holder (4).

(D) Connect the grip plate (5) to the syringe plungers to prevent jamming of the syringe plungers and to ensure smooth forward movement.

(E) Finally firmly screw on the spray tip (6) or the application cannula (7) (both equipped with a Luer-Lock connector).

For covering large wound surfaces the fibrin sealant can be sprayed using the enclosed spray-tips, or used in combination with fleece consisting of e.g. polyglycolic acid or collagen.

Before use in the wound region the system must be checked for blockages. Never push the syringe plungers against a resistance! Any interruption in the application, even of short duration, results in blockage of both either the spray tip or application cannula. In such cases the spray tip or application cannula is unsuitable for further use and must be replaced. For this purpose the 0.5 and 1 ml Beriplast packages contain two spray tips and the 3 ml packages contain three spray tips; each package contains four blunt application cannulas.

By applying an even pressure to the grip plate – like for an injection – the fibrin sealant is sprayed from the spray tip as a fine, even aerosol. The best distance is about 10 cm. A fine film of fibrin sealant forms on the tissue to be coated.
7. MARKETING AUTHORISATION HOLDER

CSL Behring GmbH
Emil-von-Behring-Str. 76
35041 Marburg
Germany

8. MARKETING AUTHORISATION NUMBER

[To be completed nationally]

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

[To be completed nationally]

10. DATE OF REVISION OF THE TEXT

April 2013