bioimplon GmbH
Biotech Innovation Pioneers

# Hypro-Sorb® O

## Natural Atelo-Collagen Type I felt for an effective haemostasis in ophthalmology and neurosurgery


native, triangular and resorbable

## General information

Hypro-Sorb O is pure, native, 99.9% crystalline, bovine Atelo-Collagen Type I, used for haemostasis and drying in the area of the wound in ophthalmology and neurosurgery. Owing to its triangular shape, the product can also be readily applied to areas of the body that are difficult to access.

## Properties of Hypro-Sorb O

- Triangular, haemostatic felt of pure, crystalline Atelo-Collagen Type I of bovine origin
- Highest degree of tissue biocompatibility with excellent wound healing characteristics
- Usable in infected wounds or with medically compromised patients
- Can be cut to size without loss of haemostatic properties
- Resorbs spontaneously within two to four weeks
- Long shelf life – safe and sterile for five years

## Indications

Haemostasis in

- ophthalmology and
- neurosurgery

## Use of Hypro-Sorb O

Drying of the surgical field is among the routine procedures in ophthalmology and neurosurgery. Pieces of absorbent material are used for this purpose. The majority of the drying materials used for drying small wounds is based on cellulose. Hypro-Sorb O is one of the materials designed for this purpose; it is, however, made of pure Atelo-Collagen Type I. While comparable to cellulose regarding its drying capacity, Atelo-Collagen Type I is, in addition, an efficient haemostatic. Thus it helps to dry the surgical field and also stops capillary bleeding, which greatly facilitates the surgeon's work, especially in microsurgery.

## Advantages of Atelo-Collagen Type I -based drying

The routinely used cellulose and collagen are both natural polymeric substances. Cellulose is of plant origin; hence, animal tissues perceive cellulose as a foreign organic substance. By contrast, collagen is a frequent and important component of animal tissues. Collagen is present in the tendons, bones, skin, and in the eye in the cornea, vitreous body and sclera. Collagen of various animal species differs slightly because in the peripheral parts of the macromolecule there are small areas referred to as telopeptides, which act as antigenic determinants. Their removal gives rise to Atelo-Collagen Type I, whose properties are basically identical to those of collagen but which is non-immunogenic. Therefore, it is biologically tolerated by the tissues, and any fragments left in a wound are resorbed without unwanted inflammatory response. The main asset of Atelo-Collagen Type I when used to dry wounds is in its extraordinary haemostatic effect in stopping capillary bleeding. Thus Atelo-Collagen Type I provides both good drying and efficient haemostasis during surgery.

# Haemostasis with Atelo-Collagen Type I

Haemostasis is triggered by a protein called collagen, which is present in the walls of the blood vessels. It is normally isolated from direct contact with the blood by internal endothelium. However, if a blood vessel wall is damaged by an injury or contusion, collagen comes into contact with the blood, whereby haemostasis is induced so as to minimize blood loss.

The activation of haemostasis by Hypro-Sorb O drying triangles occurs in a heterogeneous system consisting of a liquid phase – blood – and a solid phase – Atelo-Collagen Type I. The rate, or reaction kinetics, of such reactions is mainly determined by the interface area, i.e., the surface area of the solid phase which is in contact with the liquid. The larger this interface area is, the faster the process-

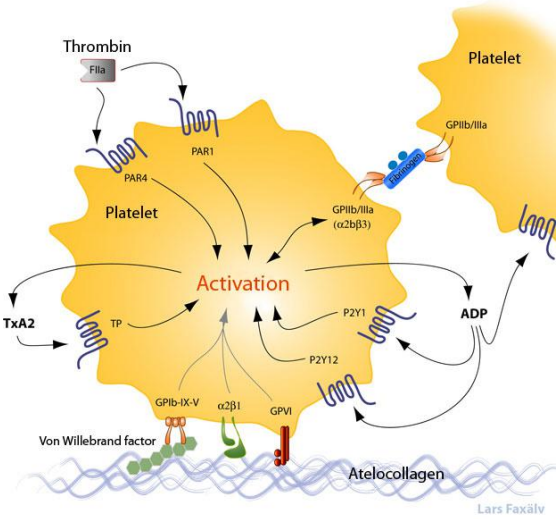
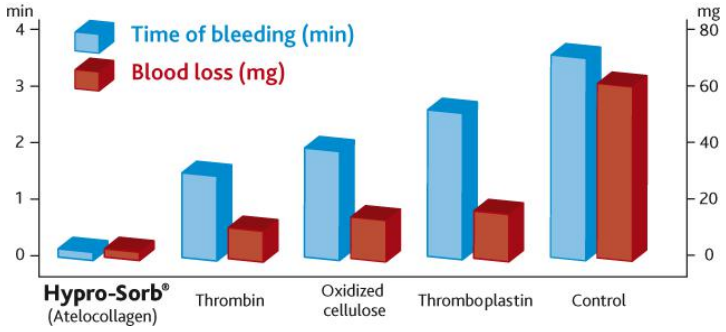



*Image courtesy of Lars Faxälv, www.haemostasis.se.*
*The image has been modified.*

of stopping the bleeding is activated. The interface area is determined by what is called the internal area of the solid phase and also by the moistening ability of the liquid in contact with it. Thus, the porosity and hydrophilic nature of the surface are very important, not only pertaining to the drying process but also regarding haemostasis.

Atelo-Collagen Type I is a protein that is naturally hydrophilic. Enormously large internal surface areas in Hypro-Sorb O drying materials are achieved by lyophilization.

During the initial phase of blood coagulation, fibrinogen is hydrolyzed enzymatically and fibers of fibrin are formed. The fibers form agglomerates under the effect of the surface charge, forming soft coagulate. This is converted to hard coagulate by crosslinking under the effect of transglutaminase FXIIIa, which forms new amidic bonds. Serine proteinase, which catalyzes fibrinogen hydrolysis, is called thrombin. It is released from its precursor, prothrombin, on the action of another proteinase whose activity is controlled by the factor FVIII complex.




*Comparison of times to haemostasis*

# Important information

## Composition:

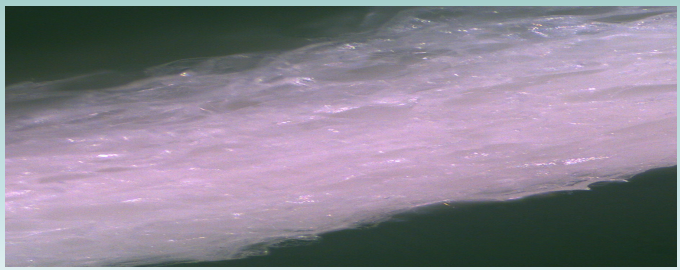
Hypro-Sorb O consists of 99,9% natural, pure, crystalline, resorbable, sterile, bovine Atelo-Collagen Type I (free of antigenic telopeptides).

## Shelf life:

Five years from the date of production.

## Stgorage conditions:

Hypro-Sorb® O must be stored at a temperature between -25°C and +50°C in a dry place. It needs to be protected from direct sunlight.



*pure, crystalline Atelo-Collagen Type I structure*

# Handling instructions

Hypro-Sorb O is applied to the bleeding surface and compressed slightly. Hypro-Sorb O is most efficient when dry. In fact, it can be moistened with blood or saline to facilitate shaping; however, its absorbing capacity during drying is thereby reduced. The use of a sponge or Hypro-Sorb R haemostatic felt in combination with Hypro-Sorb O is advisable when larger volumes of liquids and/or blood are to be absorbed.

# Sizes

| Product name | Cat. no. | Size | Description |
|---|---|---|---|
| Hypro-Sorb O | 007 | Δ 5 x 15 mm, 20 pcs | Triangular haemostatic felt of bovine Atelo-Collagen Type I. |

**Hypro-Sorb® O is a Medical device class III, clinically tested and is certificated by notified body No.1023, EC Certificate No. 090627QS/NB/a, EC Design-Examination Certificate No. 090628CN/NB/a.**

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