

Reliability and precision - our suture materials

ABSORBABLE

Surgical
sutures

Convincing
down to the
smallest detail



SERAG
WIESSNER





High-tech and hand-crafted

decades of experience and state-of-the-art production technology

reliability and precision

wide range of top-quality suture materials

As the oldest German manufacturer of surgical suture material, SERAG-WIESSNER uniquely combines experience and the latest medical know-how. It is 150 years since the company began manufacturing sterile catgut.

The manufacture of surgical sutures is characterised by the contrast between state-of-the-art production technology and a large number of manual production processes. At SERAG-WIESSNER, we manufacture and sterilise needle-suture combinations in our cleanrooms using computer-controlled automated equipment. At the same time, many of the production steps require the sensitive and reliable manual skills of our highly experienced workers. To ensure consistently high quality, we

maintain a certified quality management system in accordance with the DIN EN ISO 13485 international standard.





Raw materials

Suture material can be classified according to whether it is of natural or synthetic origin. Natural suture materials include silk. The other group consists of synthetically produced polymers such as threads made of polyamides, polyolefins, and polyester. Absorbable polymers made from polyglycolic acids also belong to this group.

Absorbability

An important characteristic for classifying sutures is whether or not they are absorbable. Absorbability is the desired and deliberate dissolution of the thread in human or animal tissues. There are both absorbable and non-absorbable materials, although it has to be remembered that even non-absorbable sutures such as silk and polyamide may disintegrate in the tissues after a long period of time. Absorbable synthetic polymers

are mostly broken down by hydrolysis. The main established criterion for distinguishing absorbable sutures is the half-life of the material. This is the time taken for the tensile strength of the thread to be reduced to half of its original value. Another important criterion is the absorption time, which is defined as the interval required for the complete macroscopic dissolution of the thread in the tissues. However, the half-life and the absorption time are also affected by many factors such as suture size, type of tissue, presence of infection in the wound and, last but not least, the patient's general condition. For this reason, data given on these values is always approximate.

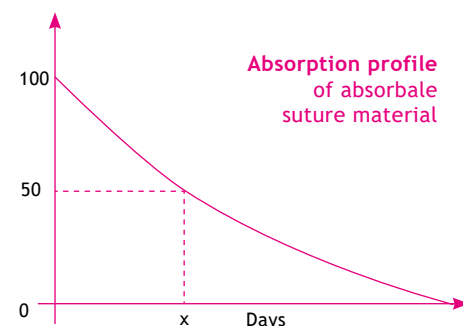
In addition, we offer a wide range of non-absorbable suture materials. Please ask for our brochure on these products.

Absorbability

the most important half-lives and absorption times

Material	Half-life (days)	Absorption time (days)
SERAPID®	at least 5	approx. 42
SERAFIT®	at least 14	approx. 90
SERAFAST®	at least 7	approx. 90
SERASYNTH®	at least 28	approx. 220

Tensile strength in %



x = half-life
The period of time required for the tensile strength to fall to 50% of its original value

Absorption time
Time until the thread has completely dissolved



Thread structure



Monofilament

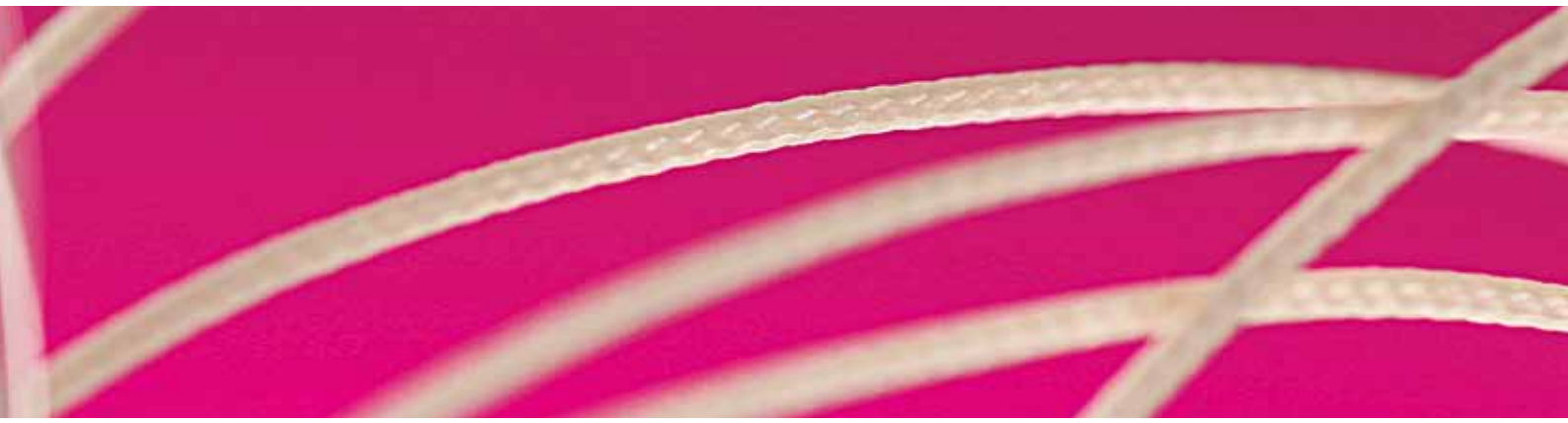
Coated,
braided
multifilament

Monofilament sutures

Monofilament threads of synthetic materials are obtained by a special melt spinning process. In this process, the molten synthetic is extruded through very fine spinning nozzles. Monofilament sutures are preferably used in smaller sizes, since the wiriness that is found in all monofilament threads makes the handling progressively more difficult as the thread increases in thickness. In particular, it is less easy to knot. Monofilament sutures are relatively sensitive to external damage, e.g. when grasping the thread with instruments.

Multifilament sutures

Multifilament or polyfilament threads are made up of many thin individual filaments. These can be twisted or braided. The diameter of all twisted threads varies greatly and their surface tends to be rough. The longitudinal direction of the individual fibres results in relatively high capillarity. The individual filaments in a braided suture lie more or less transversely to its longitudinal axis. Multifilament sutures have a rough surface that affects their passage through the tissues. On the other hand, they have considerably better knot-holding security. Multifilament sutures are usually coated.



Suture sizes

Besides the raw materials and thread structure, the suture size significantly contributes to determining the tensile strength and knotting properties of a surgical suture. Suture sizes are therefore strictly regulated. Within the jurisdiction of the European Pharmacopoeia (EP), the decimal system is used. The diameter is metric and gives the suture size in 0.1 mm. Although the EP system is more rational, the United States Pharmacopoeia (USP) classification is more often used in practice.

Suture classification

EP (metric)	USP	Ø in mm
0,01	12-0	0,001-0,004
0,05	-	0,005-0,009
0,1	11-0	0,010-0,019
0,2	10-0	0,020-0,029
0,3	9-0	0,030-0,039
0,4	8-0	0,040-0,049
0,5	7-0	0,050-0,069
0,7	6-0	0,070-0,099
1	5-0	0,100-0,149
1,5	4-0	0,150-0,199
2	3-0	0,200-0,249
2,5	-	0,250-0,299
3	2-0	0,300-0,349
3,5	0	0,350-0,399
4	1	0,400-0,499
5	2	0,500-0,599
6	3+4	0,600-0,699
7	5	0,700-0,799
-	6	0,800-0,899
-	7	0,900-0,999
-	8	1,000-1,099
-	9	1,100-1,199
-	10	1,200-1,299

Suture sizes and classification



Atraumatic needles

Atraumatic suture material is understood to mean needle-suture combinations in which the thread is firmly attached (swaged) to the needle, thus minimising tissue trauma. We offer a wide range of atraumatic needles for these needle-suture combinations. They are made of 300 series stainless steel, which is characterised by a proven resistance to bending, good penetrating qualities, and confirmed breaking strength (ductility) - all qualities that allow the surgeon to work safely. The designation of our atraumatic needles uses a combination of letters and numbers as recommended by the Technical Committee of the Association of Surgical Suture Manufacturers.



● Round-bodied needle, with standard point



⊕ Round-bodied needle, with trocar point



▼ Reverse cutting needle




▽ Reverse cutting needle with special point



SERAPID® has a pliable braided structure and is characterised in particular by its short absorption time and proven knot tensile strength.

SERAPID®

Material PGA POLYGLYCOLIC ACID

Symbol  undyed, multifilament (braided), coated

Size USP 6/0 to 2
EP 0,7 to 5

Absorption profile at least 50% tensile strength after 5 days
dissolved after approx. 42 days

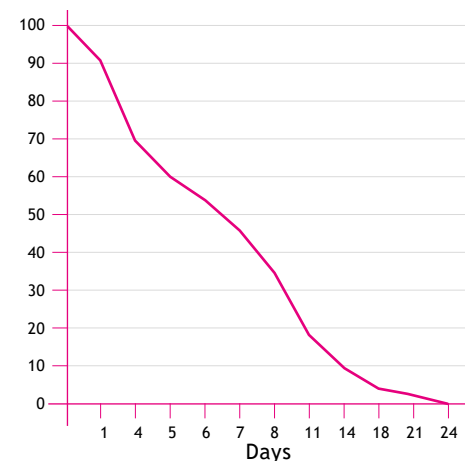
Available combinations Unneeded: Multipacks
Needed: with DS, DSS, FRX, GR, GS, HR, HRT, HRX,
HS, KS, Single sutures / multipacks

Uses ENT / gynaecology / paediatric surgery / oral and maxillofacial
surgery / plastic surgery / urology

proven knot tensile strength

confirmed smooth passage through the tissues

Tensile strength in %

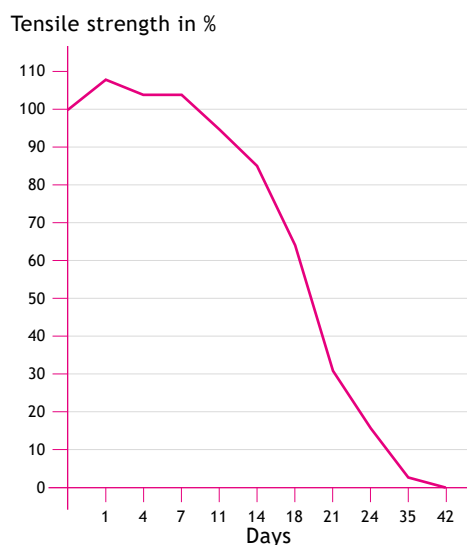


Absorption profile of undyed SERAPID® EP 3, USP 2/0 (in vitro)

SERAFIT®





proven knot-holding security

tested pliability



Absorption profile of violet SERAFIT® EP 2, USP 3/0 (in vitro)




SERAFIT® is a braided absorbable suture that is characterised by its tested pliability and ensures knot-holding security. A special form of SERAFIT® with partial suture stiffening is available for use in minimally invasive surgery (MIS).

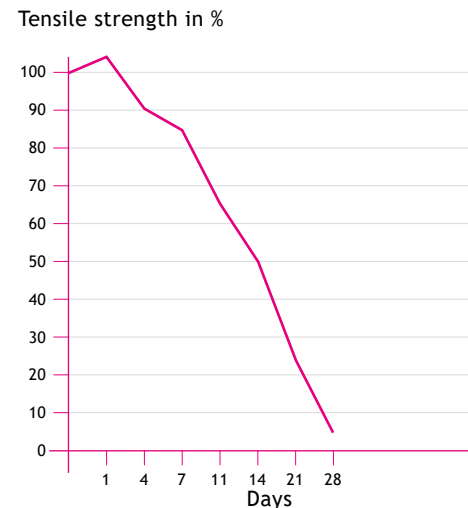
Material	 POLYGLYCOLIC ACID
Symbol	 violet, multifilament (braided), coated or  undyed, multifilament (braided), coated  violet, multifilament (braided), coated, partially stiffened
Size	USP 8/0 to 5 (undyed: 6/0 to 2) EP 0,4 to 7 (undyed: 0,7 to 5)
Absorption profile	at least 50% tensile strength after 14 days dissolved after approx. 90 days
Available combinations	Unneeded: Single sutures / multipacks / flat packs Needed: with DR, DRN, DS, DSL, DSS, FRX, GR, GS, HR, HRT, HRX, HS, KS, LR, VSP, Single sutures / multipacks Special MIS combinations
Uses	Ligatures / dermatology / gastroenterology / gynaecology / MIS / oral and maxillofacial surgery / ophthalmology / urology / veterinary medicine



SERAFAST® is the right choice for indications with short wound-healing times, when it is beneficial to make use of the advantages that monofilament sutures provide.

SERAFAST®

Material	 POLYGLYCOLIC ACID / CAPROLACTONE
Symbol	 undyed, monofilament or  violet, monofilament
Size	USP 5/0 to 2/0 EP 1 to 3
Absorption profile	at least 50% tensile strength after 7 days dissolved after approx. 90 days
Available combinations	Needled: with DS, DSS, GR, GS, HR single sutures
Uses	Dermatology / plastic surgery / urology / gynaecology / skin closure



Absorption profile of undyed
SERAFAST® EP 2, USP 3/0 (in vitro)



SERASYNTH®

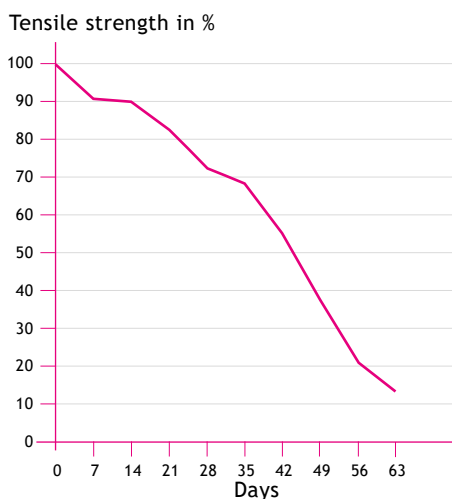
SERASYNTH® adds another monofilament thread to our range of absorbable synthetic suture material. SERASYNTH® is used for adapting soft tissues or as a ligature where long-term absorbable sutures are indicated.

proven smooth passage
through the tissues

proven linear and knot
tensile strength

reliable absorption profile

Material	 POLYDIOXANONE
Symbol	 violet, monofilament
Symbol	USP 7/0 to 2 EP 0,5 to 5

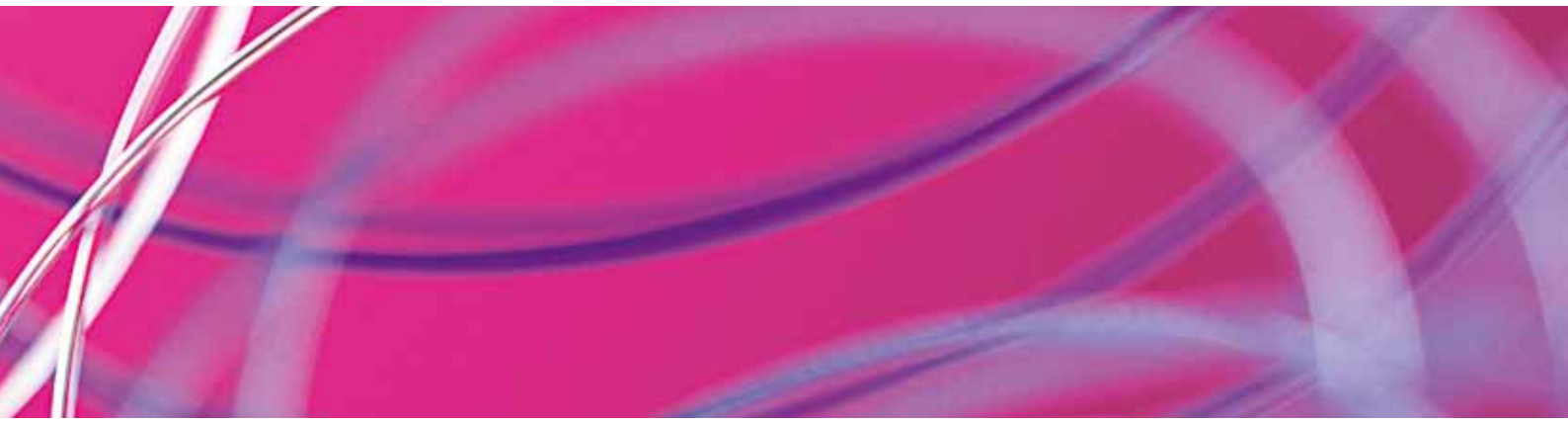


Absorption profile at least 50% tensile strength after 28 days
dissolved after approx. 220 days

Available combinations Unneeded: Multipacks
needed: with DR, DS, DSS, GR, GS, HR, HRT, HRX, HS
Single sutures
Special MIS combinations

Uses Ligatures / dermatology / vascular surgery /
orthopaedics / plastic surgery / urology / MIS

Absorption profile of violet
SERASYNTH® EP 2, USP 3/0 (in vitro)



Supporting documents

SERAPID® LN 190109/02, LN 200319/02, LN 180727/01

SERAFIT® LN 141022/09, LN 2000319/03, LN 200319/04

SERAFAST® LN 200319/07


SERASYNTH® LN 120321/01, LN 200319/06, LN 120321/01 + LN 120321/02


NEEDLES LN 151116/09, LN 141028/02 + 03, LN 181207/01

The risks that may be encountered even with the correct use of the products are given in the Instructions for Use. These are available on the SERAG-WIESSNER website at www.serag-wiessner.de.





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