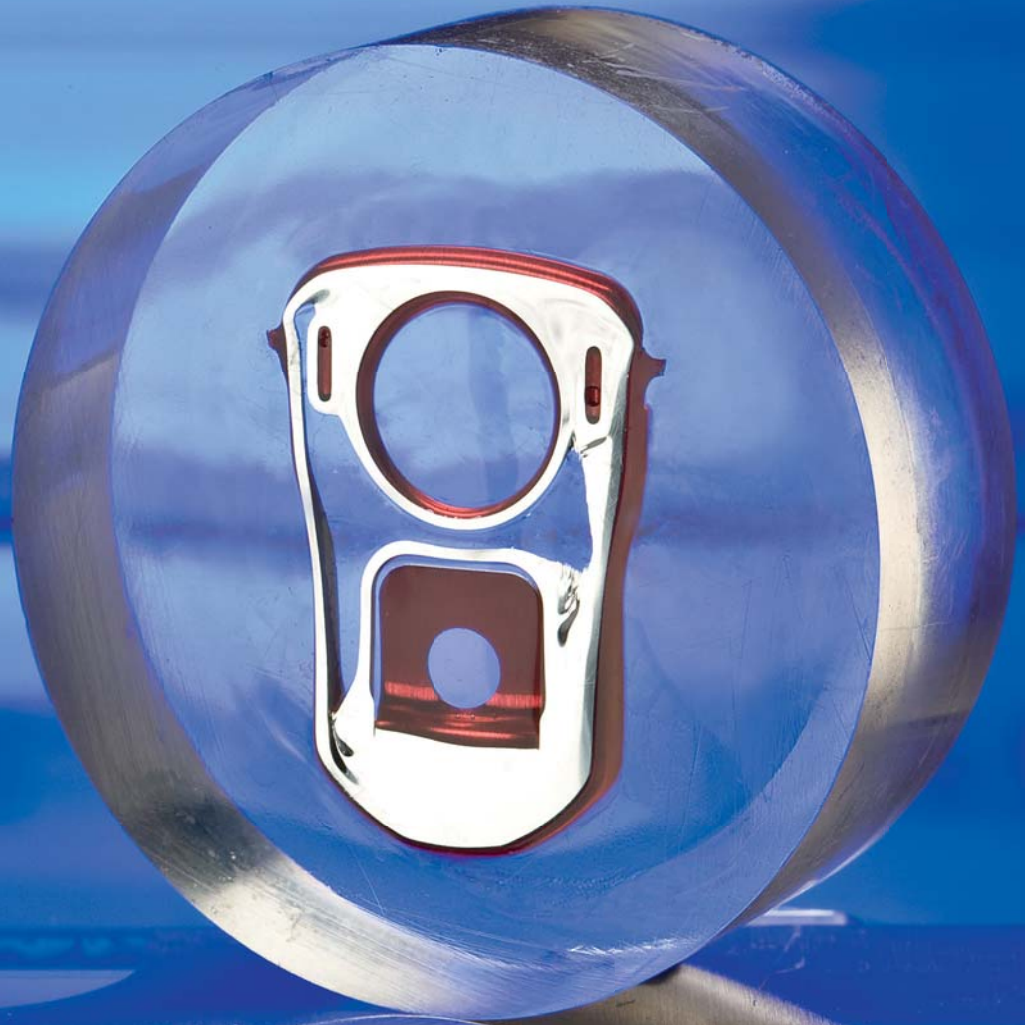


Heraeus

Technovit®



Solutions for materials testing

Opt for perfection ...

Heraeus is a leading developer and manufacturer of high-quality polymer products with many decades of experience. Precise materials testing requires top-quality resins with consistent properties that are easy to handle.

Products from Heraeus Kulzer meet the most stringent requirements of testing specialists. They are used as embedding compounds for materialographic examinations and as auxiliaries in manufacturing and have thus become standard consumables in modern laboratories and production processes.

Technovit – a versatile polymer material

The Technovit brand includes a wide range of different technical polymers developed primarily for materials testing purposes.

Apart from classic materialographic applications, Technovit products are used in industrial production processes, tool manufacturing, prototype production (casts, fixtures) and the restoration sector.

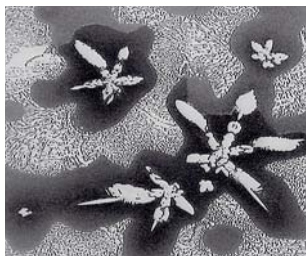
All Technovit products have been developed in the company's R&D labs and are manufactured and quality-tested in Germany in accordance with the stringent ISO standards.

We develop tailor-made solutions.

Apart from our standard compounds, we also use our know-how to develop customised products based on the specifications of our customers.



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Opt for perfection

High-quality polymers with consistent properties are simply a must...

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Detailed as the original

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Provil novo silicones

< 14



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from the device

< 20

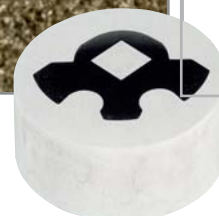


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COLD EMBEDDING RESINS



Technovit 4002 for gap-free embedding, perfect margin fit with no shrinkage and excellent grinding and polishing properties.



Technovit® 4000 and 4002

Cold embedding resins with filler

The main advantages of cold embedding resins with filler are great hardness and very low shrinkage, ensuring excellent edge definition. These embedding products are thus particularly suitable for specimens where the edge areas are to be examined. Due to the opaque colour of the resin, it is possible to examine individual layers under the microscope as incorrect interpretations due to depth focussing errors are effectively eliminated.

Technovit 4000 – THE SHRINKLESS

Technovit 4000 is a fast curing, cold polymerising, three-component resin, based on modified polyester with a fine-powder inorganic filler. It is available in the form of powder, syrup I and syrup II.

Mixing ratio: 2:2:1 (powder : syrup I : syrup II).

Colour: white opaque

Properties and applications

- Extremely low polymerization shrinkage and optimised margin fit
- Outstanding flow characteristics
- Excellent adhesion to metal surfaces, ensuring proper edge definition and protection
- Optimum grinding and polishing properties
- Embedding in opaque resin is particularly suitable for the examination of edges as it prevents depth focussing errors
- Easy to mix
- Short curing times of approx. 12 to 17 minutes
- Also applicable as two-component compound in combination with Technovit 4000/4002 one-component-liquid

Technovit 4002 – THE GAPLESS

Technovit 4002 is based on a modified polyester consisting of a powder and a liquid component.

The two-component polymer has been specially developed for gap-free embedding without shrinkage. The product is suitable for any type of material and a wide range of geometric shapes where top results as regards margin fit, grinding and polishing are required.

Colour: cream white or graphite

Properties and applications

- Gap-free embedding
- No shrinkage during polymerization
- Excellent edge definition
- Unrivalled grinding and polishing properties
- Easy to use
- Low polymerization temperature
- Extremely fine powder component guaranteeing optimum filling
- Thermal stress lower than with Technovit 4000

TIP: Vacuum embedding possible during pot life! Also suitable for the embedding of specimens with porous surfaces, fissures, blind holes or undercuts.

Combine the advantages of two product systems!

Technovit 4000/4002 one-component-liquid can be used with both powders, the Technovit 4000 or Technovit 4002, opening up even more options for customised embedding methods!

Technovit 4000: low shrinkage– fast curing

Technovit 4002: no gaps – high strength

Technovit 4000/4002: high strength, no gaps, easy to mix

**Technovit 4000 delivery units**

Designation	Quantity	Art.-no.
Technovit 4000 combipack 1	750 g/ 500 ml/ 250 ml	64708458
Technovit 4000 combipack 2	1.500 g/ 1.000 g/ 500 ml	64708459
Technovit 4000 powder	1 x 1.500 g	66032003
Technovit 4000 powder	1 x 7.500 g	64711227
Technovit 4000 syrup I	1 x 1.000 ml	66032002
Technovit 4000 syrup I	1 x 5.000 ml	64711228
Technovit 4000 syrup II	1 x 500 ml	64712092
Technovit 4000 syrup II	1 x 2.500 ml	64711229

Technovit 4002 delivery units

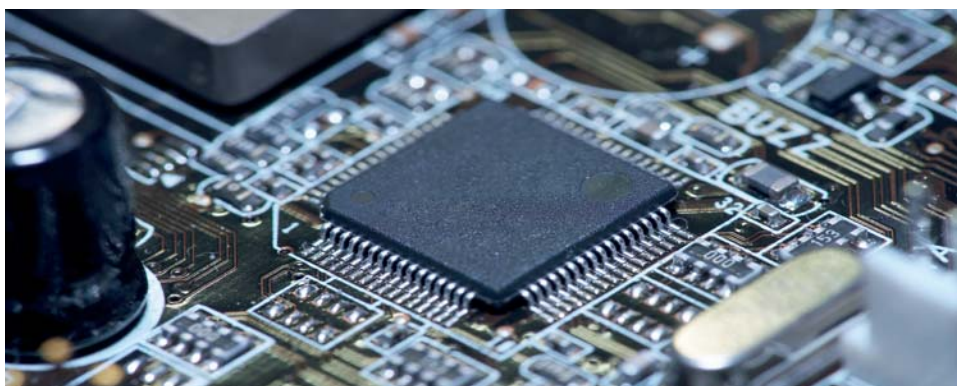
Designation	Quantity	Art.-no.
Technovit 4002 powder, white	1 x 1.000 g	66009368
Technovit 4002 powder, white	2 x 1.000 g	66009369
Technovit 4002 powder, white	1 x 10.000 g	66009370
Technovit 4002 powder, graphite	1 x 1.000 g	66040393
Technovit 4002 powder graphite	1 x 10.000 g	66040394
Technovit 4000/4002 1-C-liquid	1 x 500 ml	66009371
Technovit 4000/4002 1-C-liquid	1 x 1.000 ml	66009372
Technovit 4000/4002 1-C-liquid	1 x 5.000 ml	66009373

NOTE: For best embedding results, blend the components thoroughly, stir for 45 seconds, allow to settle (swell), stir again and pour!

Quantities and mixing ratios (not including specimen)

Material	25 mm*	30 mm*	40 mm*	50 mm*	Mixing ratio	Po.	Liqu.
Technovit 4000	16,4 g	23,3 g	40,5 g	61,0 g	20 g powder with 30 g liquid	40 %	60 %
	6,5 g powder	9,3 g powder	16,2 g powder	24,4 g powder	20g powder with 27,5 ml liquid		
	3,3 g syrup 2	4,7 g syrup 2	8,1 g syrup 2	12,2g syrup 2	first mix syrups 1 and 2!		
	6,6 g syrup 1	9,3 g syrup 1	16,2 g syrup 1	24,4 g syrup 1			
Technovit 4002	16,8 g	24,5 g	43,7 g	71,0 g	25 g powder with 15 g liquid	62,50 %	37,50 %
	10,5 g powder	15,3 g powder	27,3 g powder	44,4 g powder	25 g powder with 14,25 ml liquid		
	6,3 g liquid	9,2 g liquid	16,4 g liquid	26,6 g liquid			

* Heraeus embedding moulds



The high-clear embedding resins of the Technovit range are the ideal compound for the simple preparation of highly delicate specimens.

Technovit® 4004, 4006 and 4006 SE Transparent cold embedding resins

The transparent Technovit embedding polymers are tailor-made to suit the requirements of modern lab technology. They are the preferred product for the visual inspection of specimens through the embedding resin.

Technovit 4004 – THE TRANSPARENT

Transparent two-component embedding resin based on methyl methacrylate. This powder/liquid system has been optimised for quick routine examinations that include a visual inspection.

Properties and applications

- Two-component powder/liquid system
- Fast curing (curing time 5 to 10 minutes)
- Easy application thanks to adjustable mixing ratio



Technovit 4006 – HIGH CLEAR

The clear option. High-clear*, fast curing two-component cold embedding resin (powder/liquid system). The slightly prolonged curing time (9 to 13 minutes) allows for proper curing even at relatively low temperatures. This means that even delicate materials can be easily and properly embedded!

Properties and applications

- Crystal-clear
- Two-component powder/liquid system
- Easy application thanks to adjustable mixing ratio
- Ideal for routine preparations at low thermal stress
- Low-gap embedding thanks to integrated bonding agent and low thermal stress
- Good grinding and polishing properties
- Reduce irritation thanks to new initiator system!

TIP: The transparent two-component embedding resins based on methyl methacrylate have a low boiling point, which tends to result in bubbles formed during curing. To prevent this and to achieve bubble-free, highly transparent embedding, we recommend using the product in conjunction with the Technomat® pressure unit.



* with polymerization in Technomat

Technovit 4006 SE

Featuring most of the outstanding properties of Technovit 4006. Technovit 4006 SE has been specially developed for the production of extremely thin layers and thus enables you to embed even small, low-volume samples in a completely transparent compound with a short curing time.

Properties and applications

- Faster polymerization rate than Technovit 4006
- Harder than Technovit 4006
- Excellent grinding and polishing properties
- Minimum bubble formation even when processed without Technomat
- Cures properly even in very thin layers



Technovit 4004 delivery units

Designation	Quantity	Art.-no.
Technovit 4004 powder	1 x 1.000 g	64708471
Technovit 4004 powder	2 x 1.000 g	64708472
Technovit 4004 powder	1 x 10.000 g	64708473
Technovit 4004 liquid	1 x 500 ml	64708474
Technovit 4004 liquid	1 x 1.000 ml	64708475
Technovit 4004 liquid	1 x 5.000 ml	64708476

Technovit 4006 / 4006 SE delivery units

Designation	Quantity	Art.-no.
Technovit 4006 powder	1 x 1.000 g	66020676
Technovit 4006 powder	2 x 1.000 g	66020679
Technovit 4006 powder	1 x 10.000 g	66020677
Technovit 4006 liquid	1 x 500 ml	66020680
Technovit 4006 liquid	1 x 1.000 ml	66020678
Technovit 4006 liquid	1 x 5.000 ml	66020681
Technovit 4006 SE powder	1 x 1.000 g	66030969
Technovit 4006 SE powder	1 x 10.000 g	66030966
Technovit 4006 SE liquid	1 x 1.000 ml	66030968
Technovit 4006 SE liquid	1 x 5.000 ml	66030967

Quantities and mixing ratios (not including specimen)

Material	25 mm*	30 mm*	40 mm*	50 mm*	Mixing ratio	Po.	Liqu.
Technovit 4004	12,7 g	17,8 g	32,4 g	48,2 g	25 g powder with 15 g liquid	62,50 %	37,50 %
	8,0 g powder	11,0 g powder	20,1 g powder	30,1g powder	25 g powder with 15,8 ml liquid		
	4,7 g liquid	6,8 g liquid	12,3 g liquid	18,1 g liquid			
Technovit 4006/ Technovit 4006 SE	12,9 g	17,9 g	32,6 g	48,4 g	25 g powder with 15 g liquid	62,50 %	37,50 %
	8,1 g powder	11,2 g powder	20,4 g powder	30,3 g powder	25 g powder with 14,25 ml liquid		
	4,8 g liquid	6,7 g liquid	12,2 g liquid	18,1 g liquid			

* Heraeus embedding moulds

SPECIAL COLD EMBEDDING POLYMERS



Easy and uncomplicated!
Embedding with Technovit 4071 is the preferred method for efficient routine procedures. Series of samples can be produced in minimum time.

Technovit® 4071, 5000 and 5071 Special embedding resins

Technovit 4071 – THE UNIVERSAL EMBEDDING RESIN

As Technovit 4071 is particularly easy to use, it is an efficient, cold embedding resin for a nearly unlimited range of applications. As the material is semi-transparent, it allows for a proper initial visual inspection of the specimen. Its good grinding and polishing properties and the adjustable mixing ratio make Technovit 4071 the ideal product for routine embedding.

Colour: Green transparent

Properties and applications

- Easy to use
- Optimised flow characteristic
- Short curing time (5 to 7 minutes)
- Particularly suitable for routine examinations
- Excellent grindable and machinable

Depending on the task and the required viscosity, the mixing ratio can be adjusted between 1:1 and 3:1 (powder:liquid). For polymerization at room temperature, we recommend a mixing ratio of 2:1.



Technovit 5000 – THE CONDUCTIVE

The electrically conductive cold embedding resin. This two-component cold embedding resin based on copper allows for conductive embedding, which is required for examinations in scanning electron microscopes. Technovit 5000 is a good basis for the electrolytic preparation of metallographic samples. Technovit 5000 remains viscous for approx. 1 minute and is fully cured after 7 minutes.

Colour: Copper brown

Properties and applications

- Electrically conductive
- Suitable for SEM examinations
- Short curing time
- Electrolytic specimen preparation



NOTE: To ensure proper conductivity, you must grind the contact surfaces.



Technovit 5071 – THE DISSOLVABLE

Similar to Technovit 4071, this product is particularly easy to use and suitable for mechanical machining. This product has been specially designed for the embedding of specimens where the resin must be removed again after examination, for example for SEM processing, micro probe sampling or electrolytic preparation of the specimen. Technovit 5071 has also excellent adhesive properties for example for the application of strain gauges. Colour: Green transparent

Properties and applications

- Chemically dissolvable (with acetone, dichloromethane, etc.)
- Thermally dissolvable (softening after 30 minutes at 150°C)
- Very easy to use (adjustable mixing ratio 1:1 to 1:3)
- Good adhesive properties

TIP: With temperature-proof specimens, Technovit 5071 can be made soft by heating it to 150°C. Simply shaped specimens can thus be removed from the resin at minimum expense.

Technovit 4071 delivery units

Designation	Quantity	Art.-no.
Technovit 4071 powder	1 x 1.000 g	64708485
Technovit 4071 powder	2 x 1.000 g	64708486
Technovit 4071 powder	1 x 10.000 g	64708487
Technovit 4071 liquid	1 x 500 ml	64708488
Technovit 4071 liquid	1 x 1.000 ml	64708489
Technovit 4071 liquid	4 x 1.000 ml	64708490

Technovit 5000 delivery units

Designation	Quantity	Art.-no.
Technovit 5000 powder	1 x 1.000 g	64708494
Technovit 5000 liquid	1 x 500 ml	64708495

Technovit 5071 delivery units

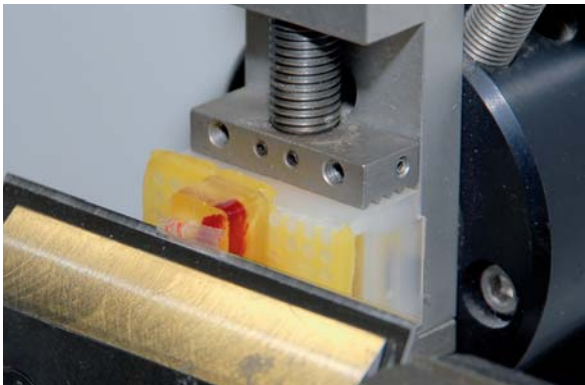
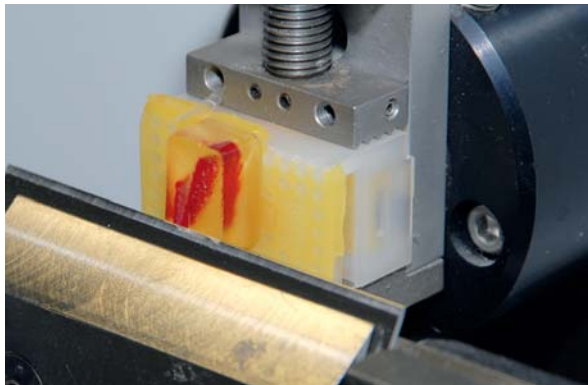
Designation	Quantity	Art.-no.
Technovit 5071 powder	1 x 1.000 g	64708865
Technovit Universal liquid	1 x 500 ml	66022678

Quantities and mixing ratios (not including specimen)

Material	25 mm*	30 mm*	40 mm*	50 mm*	Mixing ratio	Po.	Liqu.
Technovit 4071/ Technovit 5071	12,7 g 8,0 g powder 4,7 g liquid	17,8 g 11,0 g powder 6,8 g liquid	32,4 g 20,1 g powder 12,3 g liquid	48,2 g 30,1g powder 18,1 g liquid	25 g powder with 15 g liquid 25 g powder with 15,8 ml liquid	62,50 %	37,50 %
Technovit 5000					20 g powder with 13 ml liquid		

* Heraeus embedding moulds

SPECIAL COLD EMBEDDING RESIN



Technovit® 7100

The sliceable

Technovit 7100 – THE SLICEABLE

Technovit 7100 is the ideal embedding resin for microtome specimens. The three-component material guarantees optimum infiltration of porous materials such as paper or histological samples. This easy-to-use polymer based on HEMA allows for microtome slicing to 1 µm. Thanks to its special properties, it has become an indispensable embedding resin for delicate polymer specimens, as well as textile, paper and biological samples. Apart from its optimised infiltration properties (preservation of structural details) and good slicing behaviour, the compound is known for to be inert to most polymer materials.

Properties and applications

- Embedding for microtome slicing
- Embedding of complex delicate polymer parts
- Three-component embedding resin based on HEMA
- Embedding of sliceable materials such as paper, fibres and polymers
- Optimised infiltration for the stabilisation of fragile materials
- Low thermal stress (when used in conjunction with Histoform S or Q)

Tips for the embedding with Technovit 7100

- Textile specimens can be properly stabilized by short infiltration with the preparatory liquid.
- Thanks to the extremely low viscosity of the embedding resin, paper specimens can be quickly imbued with the resin, so that additional infiltration is normally not necessary.
- Biological specimens must be fixed and dewatered prior to embedding. In many cases, infiltration under vacuum is required.
- Smooth polymer samples can be embedded directly without any prior treatment, while porous polymers (sponges, etc.) must first be infiltrated to achieve the necessary stability.

Technovit 7100 delivery units

Designation	Quantity	Art.-no.
Technovit 7100 combipack	500 ml/ 1 x 40 ml/ 5 x 1 g	64709003
PE embedding mould, ø 25 mm	3 pcs.	64708955
Insert for ø 25 embedding mould	3 pcs.	66009903
Histoform S	1 pcs.	64708991
Histoform Q	1 pcs.	64708992
Blade holder, 17 cm	1 pcs.	64708996
Histoknife, 30 pcs.	1 pack	64708999
Histoknife, 100 pcs.	1 pack	64708998



Technotherm® 2000, 3000 and 4000

Hot mounting resin

Technotherm 2000 – THE UNIVERSAL

Technotherm 2000 is a filled glass-fibre-reinforced resin with optimised filling properties for gap-free hot mounting. Thanks to its light grey colour, it ensures good contrast to most specimen surfaces.

Technotherm 3000 – THE CONDUCTIVE

Technotherm 3000 with graphite filler is the electrically conductive product of the Technotherm range. Technotherm 3000 is used where high electrical conductivity is indispensable (e.g. for scanning electron microscopy). Color: black

Technotherm does not contain any hazardous substances and is thus safe to handle, process, store and transport.

Technotherm 4000 – THE TRANSPARENT

Technotherm 4000 is a high-clear hot mounting resin. Supplied in fine powder form, the product melts quickly to a highly fluid compound.

Delivery units

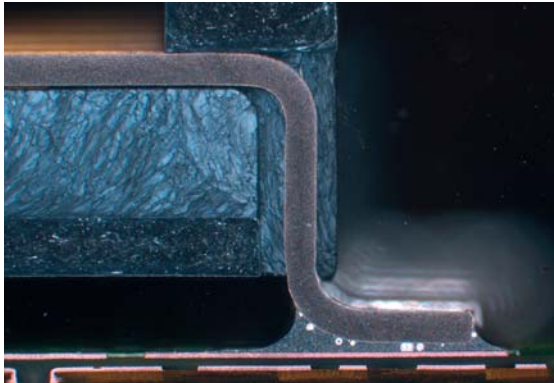
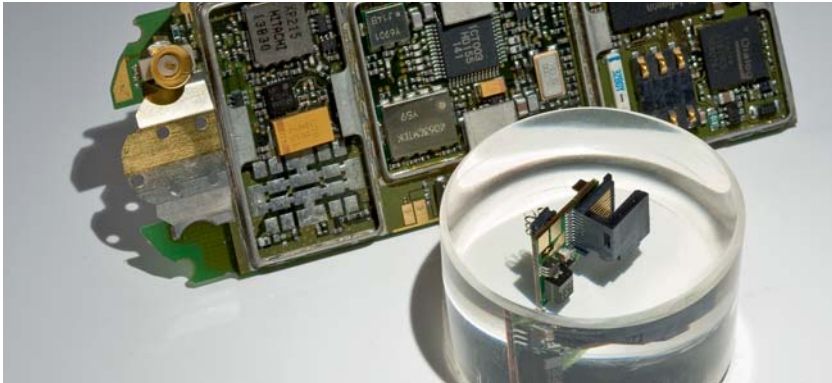
Designation	Quantity	Prod. no.
Technotherm 2000	1 x 1.000 g	66003628
Technotherm 2000	1 x 10.000 g	66003629
Technotherm 3000	1 x 1.000 g	66003630
Technotherm 3000	1 x 10.000 g	66003631
Technotherm 4000	1 x 1.300 g	66009411
Technotherm 4000	1 x 10.000 g	66040390

Application

Technotherm hot mounting resins can be used with the following parameters in all conventional embedding presses:

Product	Temperature	Pressure	Heating time	Other properties
Technotherm 2000	160 - 180 °C	80 - 90 bar in	11 - 15 min.	glass-fibre filled, colour: white grey
Technotherm 3000	160 - 180 °C	80 - 90 bar in	11 - 15 min.	conductive, colour: black
Technotherm 4000	160 - 180 °C	50 - 60 bar in	20 min.	fine powder, colour: transparent

EPOXY RESIN SYSTEM



Technovit® EPOX

Transparent embedding without thermal stress!

Technovit EPOX is an epoxy resin system consisting of the „Technovit Epox Resin“ component and two different hardener components, alternatively: for shorter curing times „Technovit Epox Hardener fast“ or longer curing times „Technovit Epox Hardener regular“. By choosing the right hardener component, the curing time can be customised to suit the individual application. The pot life of approx. 1 hour ensures proper infiltration of porous materials, especially when applied under vacuum.

Material properties

The system can be used for all types of embedding tasks and is particularly recommended for porous materials, such as sprayed and corrosion layers that are to be embedded under vacuum. Vacuum impregnation guarantees that the epoxy resin penetrates all cavities and cures thoroughly. As a result, the specimen is stabilised from the inside. For optimum results, adhere to the recommended mixing ratios. The Technovit EPOX components are mixed at a ratio of 2:1 (resin:hardener) and then poured.

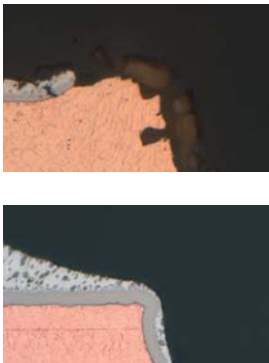
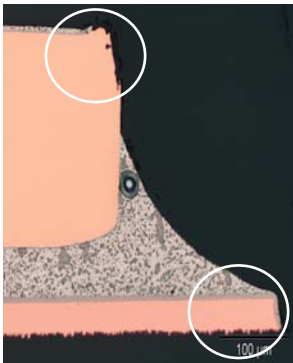
They cure within approx. 10 to 18 hours, depending on the applied curing component. The curing times can be shortened or prolonged by storing the specimen in an incubator, a cold water bath or a refrigerator.

Special properties

- Suitable for processing under vacuum
- Transparent resin with good adherence to specimen material
- UV stable
- Adjustable curing times
- Gap-free embedding

Technovit EPOX delivery units

Designation	Quantity	Art.-no.
Technovit EPOX Resin	1 x 1.000 g	66040437
Technovit EPOX Hardener regular	1 x 500 g	66040438
Technovit EPOX Hardener fast	1 x 500 g	66040439



Copper conductor with nickel-gold plating and zinc-lead solder
Left:

Gap-free embedding of flux residue in Technovit EPOX
Cu conductor (etched) with Ni-Au surface and Sn-Pb solder

Top right:

Detail: Gap-free embedding of flux residue in Technovit EPOX
Deformation edge caused in production by soldering on Ni-Au surface

Bottom right:

Detail: Cu conductor (etched) with Ni-Au surface and Sn-Pb solder

**Centre:**

Gap-free embedding of SMD jack of mobile phone in dark field

Right:

Cu contact pin of electronic component, soldered with Sb-Pb

Technovit EPOX Resin & Technovit EPOX Hardener Fast

Embedding mould	Quantity not including specimen	Ambient temperature	Max. curing temperature	Time to max. temperature	Time to end measurable temperature
25 mm	12 g (8 g Resin/4 g Hardener)	20 °C	30 °C	120 min.	approx. 18 h.
30 mm	18 g (12 g Resin/6 g Hardener)	20 °C	35 °C	110 min.	approx. 18 h.
40 mm	30 g (20 g Resin/10 g Hardener)	20 °C	45 °C	105 min.	approx. 18 h.
50 mm	45 g (30 g Resin/15 g Hardener)	20 °C	65 °C	100 min.	approx. 18 h.
40 mm	30 g (20 g Resin/10 g Hardener)	23 °C	48 °C	105 min.	approx. 18 h.
40 mm	30 g (20 g Resin/10 g Hardener)	50 °C	100 °C	40 min.	
50 mm	45 g (30 g Resin/15 g Hardener)	50 °C	135 °C	31 min.	approx. 2 h
50 mm	45 g (30 g Resin/15 g Hardener)	40 °C	122 °C	45 min.	approx. 3 h
50 mm	45 g (30 g Resin/15 g Hardener)	35 °C	110 °C	48 min.	approx. 3 h

Technovit EPOX Resin & Technovit EPOX Hardener Regular

Embedding mould	Quantity not including specimen	Ambient temperature	Max. curing temperature	Time to max. temperature	Time to end measurable temperature
25 mm	12 g (8 g Resin/4 g Hardener)	20 °C	37 °C	90 min.	approx. 10 h.
30 mm	18 g (12 g Resin/6 g Hardener)	20 °C	57 °C	80 min.	approx. 10 h.
40 mm	30 g (20 g Resin/10 g Hardener)	20 °C	110 °C	70 min.	approx. 10 h.
50 mm	45 g (30 g Resin/15 g Hardener)	20 °C	144 °C	60 min.	approx. 10 h.
40 mm	30 g (20 g Resin/10 g Hardener)	23 °C	120 °C	60 min.	approx. 9 h.
40 mm	30 g (20 g Resin/10 g Hardener)	50 °C	140 °C	40 min.	

Shore D hardness of Technovit EPOX

	Curing at	Technovit EPOX Regular	Technovit EPOX Fast
Mixing ratio		100 g / 50 g	100 g / 50 g
Shore D (20 h)	Room temperature	71	73
Shore D (2d)	Room temperature	78	79
Shore D (7d)	Room temperature	79	80
Shore D (14d)	Room temperature	80	81
Shore D (21d)	Room temperature	80	81
Shore D (20h)	50 °C	79	80

TIP: For specimens that are temperature-sensitive use „Hardener Regular“!



Surface testing – suitable products for all impression sampling methods. Precision impression taking made easy!

Precision impressions

Each sample as detailed as the original

Impression taking is an important method for the indirect inspection of surfaces. To achieve the high quality required in modern labs, the products used in the process must ensure highly accurate impressions that truly represent the surface structure to be examined. Depending on the processing method and the level of accuracy required, we recommend using Technovit 3040 or a silicone-based product of the Provil novo series. With an impression accuracy of $< 0.1 \mu\text{m}$, each impression is as detailed as the original!

Designated use is the taking of impressions for the inspection and measurement of surface structures where high precision is required.

Precision impressions are used in many fields and industries including:

- Wear assessment
- In-situ metallography
- Mould taking for restoration and mineralogical examination
- Reconstruction of damage incidents
- Forensic examinations
- Optimisation of processing technologies

Reasons why impressions are taken:

- Sample is too large or too heavy for lab inspection
- Testing must be non-destructive
- Area to be examined is not accessible with measuring instruments
- Wear documentation
- Measuring of initial samples and prototypes

TIP: The liquid, light curing Technovit 2200 products are the preferred option for high-accuracy impression (see pages 20-22, light curing resins).



Technovit® 3040

Indirect surface inspection

The two-component polymer consists of a powder and a liquid component. Depending on the requirements, the resin can be mixed at ratios between 1:1 and 3:1 (powder:liquid). This allows for the casting of shapes and the taking of impressions in areas that are difficult to access, and for the application of the resin on vertical or overhead surfaces. For the production of impressions on vertical or exposed overhead surfaces, pour Technovit 3040 onto a PE foil and press the resin against the area to be captured.

At a standard mixing ratio of 2:1, the resin can be poured for approx. 2 minutes and remains subsequently kneadable for about 30 seconds. The curing time is approx. 5 minutes.

Available in black and yellow.

Properties and applications

- Impression accuracy 1 µm
- Excellent dimensional stability
- Easy to remove from substrate
- Mixing ratio adjustable depending on application
- Impressions can be examined with feeler gauges or non-contact measuring methods

Practical tips

- To ensure best possible dimensional accuracy, keep the surface of the impression as small as possible.
- Modelling a „handle“ makes it easy to remove the resin from the captured surface.
- Impressions should be at least 5 mm thick to prevent inadvertent distortion during removal from the surface.
- This product is not suitable to capture undercuts!

Technovit 3040 delivery units

Designation	Quantity	Art.-no.
Technovit 3040 powder, yellow	1 x 1.000 g	64708806
Technovit 3040 powder, yellow	2 x 1.000 g	64708807
Technovit 3040 powder, yellow	1 x 10.000 g	64708808
Technovit 3040 powder, black	1 x 1.000 g	64708813
Technovit 3040 powder, black	2 x 1.000 g	64708814
Technovit 3040 powder, black	1 x 10.000 g	64708815
Technovit Universal liquid	1 x 500 ml	66022678
Technovit Universal liquid	1 x 5.000 ml	66022679

Quantities and mixing ratios (Thickness approx. 5 mm)

Material	Surface area		Quantity	Powder	Liquid	Comment
Technovit 3040	10 x 10 cm	100 cm²	60 g	37,5 g	22,5 g	Quantity required for 1 cm²: approx. 0.6 g
	5 x 10 cm	50 cm²	30 g	18,8 g	11,8 g	
	8 x 5 cm	40 cm²	24 g	15 g	9 g	



Provil novo putty, soft and light

Surface impression silicone – easy to use and safe!

Provil NOVO light

Provil novo light is a low-viscosity silicone particularly suitable for the casting of complex geometric shapes.

The application system consists of a dispensing gun, double cartridge and mixing cannula guarantees uniform mixing ratios and thus proper and safe use.

With the dispensing gun, the silicone is pressed from the two chambers of the double cartridge through the mixing cannula where it forms a homogeneous compound which is then directly applied to the specimen. To fill small cavities (bore holes, etc.), the system includes special mixing cannula attachments.

Applications and properties

- Excellent impression accuracy ($< 0.1 \mu\text{m}$) – suitable for structures of etched surfaces (max. 500:1)
- Provil novo produces exact 3D reproductions of the treated surface
- Optimum residual deformation allows for the accurate representation of objects with complicated geometries including undercuts.
- No errors during processing with easy-to-use self-mixing cartridge system
- Cost-efficient method – no need for costly equipment, fast application
- non-hazardous substance without any health or safety risks or transport problems – easy to use and suitable for a wide range of areas

- Curing without temperature increase, preventing any negative impact on the surface structure of the object
- Wide range of application and examination options

The product offers particular advantages in connection with in-situ examinations, for example where the wear on machine parts or tools that are difficult to assess must be measured and documented. With Provil NOVO light, this can be done without the need for costly equipment.



Silicone Provil novo putty and Provil novo putty soft – THE KNEADABLE

The addition-crosslinking silicones consist of a base and a catalytic component and can be kneaded by hand at a mixing ratio of 1:1. To produce an impression, simply apply the compound by hand on the surface to be examined. After about 4.5 to 5 minutes, the silicone is sufficiently cured to be removed. The main difference between the two products is their final hardness (see technical data).

PRECISION IMPRESSIONS



The compounds are typically used for impressions in connection with measurements in mould making and tool manufacture.

They can be applied without the need for special training.

Provil novo putty and Provil novo putty soft are used for impressions

- where large surfaces must be casted
- or where the putty needs to be applied overhead so that other methods are unsuitable
- Provil novo can be removed without leaving any residue on the specimen.

Properties

- Easy application procedures preventing errors
- Colour-coded putties and scoops eliminate mixing errors
- Ready in seconds after mixing.

TIP: For perfect results, use a combination of Provil novo light and putty. Minimum shrinkage, great accuracy to detail.



Provil novo delivery units

Designation	Quantity	Art.-no.
Provil novo putty regular 450 ml base 450 ml cat.	1 x 900 ml	66004371
Provil novo putty regular soft 450 ml base 450 ml cat.	1 x 900 ml	66004372
Provil novo light regular	2 x 50 ml	66009333
Mixing cannulas	1x 48 pcs.	66009334
Cannula tips	1 x 96 pcs.	66009335
Dispensing gun	1 x 1 pcs.	66009337

Technical data

Product	Provil novo putty	Provil novo putty soft	Provil novo light
Mixing time	45 sec.	45 sec.	----
Total working time from start of mixing	2 min.	2 min.	2 min.
Curing time from start of mixing	4: 45 min.	4: 45 min.	4:30 min.
Deformation under pressure	0,8 - 5,0 %	0,8 - 5,0 %	2,0 - 5,0 %
Recovery after deformation	99,70 %	99,70 %	99,80 %
Shore A hardness test (from start of mixing)	after 10 min. : 70 1 h : 71 24 h : 71	after 10 min. : 57 1 h : 57 24 h : 60	after 10 min. : 52 1 min. : 52 24 min. : 52

LIGHT CURING RESIN



Main fields of application of Technovit 2000 LC:

- semiconductor technology
- microelectronics
- optoelectronics
- microsystem technology

Technovit® 2000 LC – System

Light curing embedding resins

This system consists of a light curing embedding polymer, a covering varnish, a fixing paste, a Technotray CU unit and special embedding moulds. All components of the system are designed for optimum results. With the Technovit 2000 LC system, targeted pouring and positioning are made easy.

The product is particularly recommended for the preparation and examination of delicate materials and micro components. Technovit 2000 LC is generally suitable for the embedding of any material that might be negatively affected by high temperatures.

Technovit 2000 LC liquid

The one-component liquid allows for high-clear embedding under blue light at a low polymerization temperature.

The product is cured in semi-transparent PE embedding moulds in the Technotray-CU-Unit at a maximum temperature of 90 °C. The temperature can be significantly reduced (to approx. 50 °C) by working with several layers and using a special radiation scheme. The material reaches its final hardness after cooling to room temperatures and can then be mechanically processed.

Special properties

- Curing under blue light – no need for harmful UV light
- All resin can be used up as the compound does not need to be specially mixed
- Extended pot life, as polymerization only occurs under blue light
- Low polymerization temperature of approx. 90 °C; by using a suitable radiation method, the temperature can be reduced to approx. 50 °C or less
- Transparent compound free of bubbles
- Resistant to alcohol and acids
- Suitable for SEM examination
- Odour-free

Technovit 2000 LC covering varnish

Technovit 2000 LC covering varnish is applied to prevent the formation of a dispersion layer on the reverse side of the specimen. The covering layer is applied in a single layer measuring several millimetres onto the embedded sample halfway through the polymerization time. It

provides a completely clear, hard and dry surface when polymerization is completed.

Technovit 2000 LC fixing paste

Technovit 2000 LC fixing paste is a light curing compound used to position the sample in the embedding mould. The paste can be kneaded by hand and has excellent grinding and polishing properties once cured. Thanks to its great hardness (due to the filler), the paste provides excellent protection to edges.

Technotray-CU-Unit

The Technotray-CU unit is a blue light polymerization device specially developed for the processing of Technovit 2000 LC. The sample chamber has been designed in such a way that the intensity of the light is the same on all sides of the sample, thus ensuring homogenous and optimised polymerization. The chamber of the Technotray CU unit is large enough to process several specimens together as it caters for the following embedding moulds:

- Ø 50 mm = 2 moulds
- Ø 30 mm = 5 moulds
- Ø 40 mm = 4 moulds
- Ø 25 mm = 6 moulds

Delivery units

Designation	Quantity	Art.-no.
Technovit 2000 LC liquid	1 x 1.000 ml	64708496
Technovit 2000 LC liquid	10 x 1.000 ml	64711226
Technovit 2000 LC covering varnish	1 x 100 ml	64712762
Technovit 2000 LC fixing paste	1 x 4 g	66005103
Technotray CU, 230 V*	1 x 1 pcs.	64709050

LIGHT CURING RESIN



Technovit 2000 LC - radiation scheme

Temperature limit: max. 50 °C (30 mm embedding mould)

on	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on
4	6	1	6	1	6	1	6	1	7	1	7	1	7	1	7	1	7	1	7	7

Temperature limit: max. 60 °C (30 mm embedding mould)

on	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on
4	6	1	6	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	7

Temperature limit: max. 70 °C (30 mm embedding mould)

on	off	on	off	on	off	on	off	on	off	on	off	on	off	on
6	5	1	5	1	5	1	5	1	5	1	5	1	5	8

Depending on the duration of the radiation scheme, the compound might become slightly opaque.

*Times of on/off intervals in minutes

Technovit® 2000 Inside Cure Brings „light into dark“

Technovit 2000 Inside Cure is an additional component to extend the application of the light-curing Technovit 2000 LC.

Technovit 2000 LC is due to its versatility established in the market for many years.

The only disadvantage of this system was that the product cures only in areas with direct exposure to light. This gap is now filled with the „Technovit 2000 Inside Cure“.

Technovit 2000 Inside Cure is a special additive in order to harden Technovit 2000 LC in porous samples, shady places or lighting-inaccessible places (internal threads, pipe sections, capacitors, etc.).

By mixing the „Inside Cure“ with the light-curing embedding resin Technovit 2000 LC a complete curing is achieved even in areas where no direct exposure is possible.

Simply admit the complete bottle „Inside Cure“ in the original bottle „Technovit 2000 LC“, shake - that's it. All usual application parameters remain unchanged.

Advantages:

- Wider range of application – usable for all kind of specimen
- Better penetration (e. g. for porous materials)
- Same procedure as used for the standard workwise of Technovit 2000 LC – no changes of processes, documentation etc.
- No mixing errors



LIGHT CURING RESIN



In-situ metallography:
With products from the Technovit 2200 range, you can take non-destructive impressions on site for subsequent processing in the lab and examination under the microscope or by SEM.



Technovit® 2200-Series

Light curing polymers for surface impressions

The Technovit 2200 series consists of a number of light curing products specially developed for quality assurance tasks and materials testing that offers much more than simple embedding. The products are the ideal solution for difficult tasks in the field of materialography, doing away with costly equipment and time-consuming application.

Applications

Due to their material properties, the products of the series can be used for:

- Filling of micro fissures and bores
- Fixation of minute (electronic) parts
- Embedding of small components
- Stabilisation of corrosion layers
- Stabilisation for subsequent separation
- Application of protective layers prior to embedding and preparation

In-situ metallography:

- Structural impressions
- Roughness measurements
- Shaping
- Documentation – The impression can be filed for documentation purposes, as it gives a much clearer picture than a photograph.

Thanks to the user-friendly application method, results are always perfect. The light curing compound is applied directly with a spatula, brush or syringe to the part or section to be examined. Hardening is completed after 20 to 60 seconds under a special blue light. The application method is highly reliable and works also at extreme temperatures without any negative effect on the result.

The product series includes the following individual components:

- Technovit 2200
Low-viscosity transparent liquid (in bottle)

- Technovit 2210
Medium-viscosity cream-coloured paste (in syringe)
- Technovit 2220
High-viscosity fluid, blue or clear (in jar)

Technovit 2200

- Subsequent infiltration of minute cavities (fissures, gaps, etc.)
- Stabilisation of porous layers or delicate assemblies prior to separation

Technovit 2210

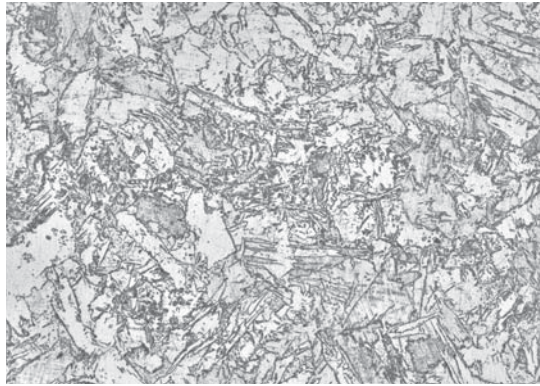
Covering of small delicate specimens prior to embedding

- Embedding aid for fragile samples
- Protection of delicate surface prior to embedding – also in combination with hot mounting resins

Technovit 2220

for structural impressions:

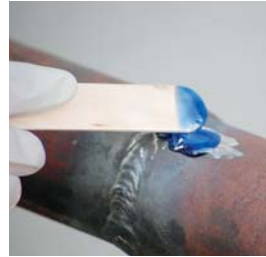
- No folding
- Excellent representation of tiny details even at 1000:1 magnification
- Easy to use
- Not affected by temperature – curing times remain the same at all temperatures between 0 and 50 °C, for consistent high impression quality
- No need for sputter coating or vapour treatment for examination in SEM!



Step by step in practice

1.

Grind, polish, etch, apply Technovit 2220, distribute it in a thin layer using a foil, cover and polymerise



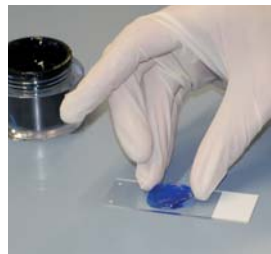
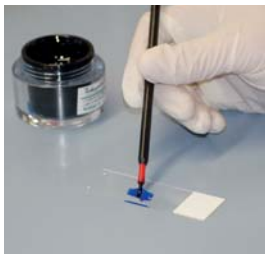
2.

Carefully remove cured Technovit 2220



3.

To fix the sample on the slide, apply a little Technovit 2220 on the slide, position the impression (CAUTION: impression must face up) and produce a „sandwich“ by placing a second slide firmly on the sample, pressing it down. Then cure the sample under blue light.



LIGHT CURING RESIN

The products can be cured with a Pekalux unit or a Technovit Blue LED. For thicker layers (> 4 mm), cure the specimen in individual layers. In such cases, the dispersion layer of the polymerized surface is used as a bonding interface. Each layer must be cured separately. All products are fully compatible with each other. The sample can then be processed mechanically as usual by grinding and polishing.

PEKALUX

Easy to use, mains-powered light curing device providing good polymerization results. The compound is polymerized by harmless blue light. The polymerization time can be preset at the handpiece of the Pekalux unit. The device is switched automatically when the set time has lapsed.

Technovit Blue LED – in-situ metallography

In many cases, the products of the Technovit 2200 series are not used in the lab but on site. Technovit Blue LED is an ideal alternative to stationary light units, especially for tasks where you need to work away from a power socket. The hand-held, portable LED polymerization lamp is powered by conventional batteries and can be used anywhere. The focussing device allows for both point polymerization and the treatment of larger surfaces.



Technovit 2200-series



Pekalux lamp

Delivery units

Designation	Quantity	Art.-no.
Technovit 2200 liquid	4 x 15 ml	66020775
Technovit 2210 liquid	2 x 1 ml	66020779
Technovit 2220, blue	1 x 15 g	66020780
Technovit 2220, transparent	1 x 15 g	66043721
Plasmacoat instrument	1 x 1 pcs.	66014385
Brush attachments	1 x 100 pcs.	66008672
Brush holder	1 x 5 pcs.	66008673
Cannula attachments (for Technovit 2210)	1 x 5 pcs.	66035691
Pekalux 230 V*	1 x 1 pcs.	66005228
Halogen lamp 75 W, D 35	1 x 1 pcs.	57521440
Technovit Blue LED	1 x 1 pcs.	66043553

*other voltages are available on request!

PRODUCT	Technovit 2200	Technovit 2210	Technovit 2220
Colour	milky-transparent	cream	blue or transparent
Container	Glass bottle	Syringe	Jar
Viscosity	low	medium	medium
Polymerization	light curing (blue light)	light curing (blue light)	light curing (blue light)
Bending strength	90-100 N/mm ²	>100 N/mm ²	104.00 Mpa
Flexural modulus	3,500-4,500 N/mm ²	5,000-6,000 N/mm ²	2,321 Mpa
CT hardness	180-200 N/mm ²	180-200 N/mm ²	120-150 N/mm ²
Curing depth	4 mm (Pekalux, 20 sec.)	4 mm (Pekalux, 20 sec.)	7 mm (Pekalux, 40 sec.)
7 mm (Technovit Blue LED, 40 sec.)	5 mm (Technovit Blue LED, 40 sec.)	7 mm (Technovit Blue LED, 60 sec.)	



Accessories

Embedding moulds

Polyethylene moulds in various sizes for the embedding of materialographic samples have become well-established in practical applications. Thanks to their smooth surface and great strength, samples can be easily removed while the moulds can be used again and again. The durable product is available in sizes of 15, 25, 30, 40 and 50 mm for the efficient processing of samples in automated or manual grinding and polishing units.

Embedding aids

For materialographic embedding, samples must be secured in the correct position in the embedding moulds. Polystyrene embedding aids offer a cost-effective and simple method to position and align material samples of any shape in the moulds. Available with different support widths (1, 2 and 3 mm), they are suitable for a many different applications.

Application

- Fitting all embedding moulds from a diameter of 30 mm
- Efficient embedding of sheet metal samples, printed circuit boards and similarly shaped parts
- Fixture of irregularly shaped parts such as screws, rivets, welds, etc. (especially for longitudinal sections)

TIP: Small, irregularly shaped samples can be easily secured with the light curing products of the Technovit 2200 series.

Mixing cup & spatula

Tools for the clean and easy mixing of all components of powder/liquid systems. The coating of the cup and wood spatula are resistant against all liquid components used in embedding resins and are not reacting with the polymer material.

Technomat

The Technomat is a compact pressure unit for pressurisation with up to 2.0 bar. The Technomat has been specially designed for the processing of fast curing polymers. Polymerization in the Technomat produces bubble-free, high-quality test samples. The device is particularly recommended for the embedding of specimens in clear, fast curing Technovit products such as Technovit 4004, 4006 and 4006 SE, as bubble-free curing guarantees optimum transparency of the polymer.

Delivery units

Designation	Quantity	Art.-no.
PE embedding mould - ø 15 mm	3 pcs.	64713126
PE embedding mould - ø 25 mm	3 pcs.	64708955
PE embedding mould - ø 30 mm	3 pcs.	64708956
PE embedding mould - ø 40 mm	3 pcs.	64708957
PE embedding mould - ø 50 mm	3 pcs.	64713127
Embedding aid, narrow, 1 mm	100 pcs.	64708952
Embedding aid, medium, 2 mm	100 pcs.	64708953
Embedding aid, wide, 3 mm	100 pcs.	64708954
Dosing scoop for powder component	2 pcs.	66021107
Mixing cup	10 pcs.	66021102
Spatula	10 pcs.	66021106
Technomat pressure unit	1 pcs.	64709046

TECHNICAL DATA

Technical data

	Technovit 2000 LC	Technovit 3040	Technovit 4000	Technovit 4002	Technovit 4004	Technovit 4006
Colour	transparent	yellow or black	white	white or graphite	transparent	high clear
Application porous materials	Gap-free specimen embedding	Impression taking for surface testing	Gap-free specimen embedding	Gap-free + non-shrinkage specimen embedding	Bubble-free specimen embedding in pressure unit	Bubble-free specimen embedding in pressure unit
Components	Liquid	Powder/Liquid	Powder/Syrup I+II	Powder/Liquid	Powder/Liquid	Powder/Liquid
Mixing ratio	---	---	2 : 2 : 1	5 : 3	2 : 1	2 : 1
Working time	unlimited	2	4	5	2 - 3	4
Curing time at 22 °C (min.)	6-10	8-10	10-13	12-17	9-12	9-13
Max. temperature for curing in block	20 g = 95 °C 30 g = 101 °C	110 °C	122 °C	99 °C	110 °C	99 °C
Ball indentation hard- ness in N/mm ² (DIN 53456)	110 MPA	135	103	169	137	155
Temperature stability	max. 80 °C	95 °C	130 °C	130 °C	100 °C	125 °C
Solubility	not soluble	swellable only	not soluble	not soluble	swellable only	swellable only
Density = spec. weight g/cm ³ DIN53479	1,19	1,18	1,565	1,63	1,14	1,14
DIN13907 impact strength in KJ/m ²	---	7,1	1,5	---	6,4	5,8
Bending str. in N/mm ²	---	96	50	---	95	105
Compression str. in N/mm ²	---	110	280	---	100-120	120-140
DIN 53495 water absorption in vol. %	---	0,43	2,7	---	0,38	0,3
Linear shrinkage in %	2,2	1,9	2,7	---	2,25/2,08/1,80	2,25/2,08/1,80
Volumetric shrinkage in %	6,5	5,7	6,2	0,46	1:1=6,75 / 1,8:1=5,8 / 2,3:1=5,4	1:1=6,75 / 1,8:1=5,8 / 2,3:1=5,4
Refraction index (monomer, polymer)	Monomer = 1,4828 Polymer = 1,5270	1,419	---	---	M = 1,420 P = 1,434	M = 1,422 P = 1,436
Storage temperature	25 °C	25 °C	25 °C	25 °C	25 °C	25 °C
Shelf life (in years)	3	3	3	3	3	3
Linear thermal expansion coefficient	65-95 [ppm]	111 x 10 ⁻⁶	37-62 x 10 ⁻⁶	---	111 x 10 ⁻⁶	108 x 10 ⁻⁷
Modulus of elasticity	approx. 2000 - 3000	approx. 2000 - 2300	approx. 2000 - 2200	---	approx. 2000 - 2300	approx. 2200 - 2500

TECHNICAL DATA

	Technovit 4006 SE	Technovit 4071	Technovit 5000	Technovit 5071	Technovit 7100	Technovit EPOX	
	high clear semi transparent	green-	brown semi transparent	green-	yellow transparent	high clear	
	Bubble-free, specimen embedding	Specimen embedding	Conductive material embedding for specimen microscopy	Removable embedding for scanning elect.	Sliceable material for thin sectionning - microtome cuts -	Specimen embedding for porous materials	Specimen embedding for porous materials
	Powder/Liquid	Powder/Liquid	Powder/Liquid	Powder/Liquid Hardener 1/Hardener 2	Base Solution/ Hardener regular	Base Solution/ Hardener fast	Base Solution/
	2 : 1	2 : 1	20 g pow-. / 13 ml liq.	2 : 1		2 : 1 by weight	2 : 1 by weight
	4	1 - 2	1	2	5 - 7	approx. 20 min.	approx. 20 min.
	11-15	5-7	7-12	8-10	60-75.	18 h	10 h
	99 °C	108 °C	125 °C	112 °C	38 °C Form S 45 °C Form Q	144 °C	65 °C
	160	144	--	138	79	80	
	125 °C	105 °C	100 °C	100 °C			
	swellable only	swellable only	swellable only	in Acetone			
	1,14	1,19	2,85	1,19	1,07	1,00	1,01
	4,2	6,1	5,0 N/mm ²	6,3			
	120	94	85	93	50 - 60		
	120 - 150	100 - 120	280	100	90		
	0,3	0,47	approx. 2	0,33	0,6		
	1,8	1,93	2,3	2,3	2,8	0,90	0,80
	5,4	5,8	7,1	7	8,4	1,3	1,1
	M = 1,425 P = 1,441	1,439	1,458 P = 1,434	M = 1,420			
	25 °C	25 °C	25 °C	25 °C	25 °C	25 °C	25 °C
	3	3	3 2 liquid	3 powder	3	2	2
	108 x 10 ⁻⁷	119 x 10 ⁻⁶	---	141 x 10 ⁻⁶			
	approx. 2400 - 2500	approx. 2500 - 2600	---	approx. 2000 - 2300	---	---	---

Stability of resins

Stability when in contact various chemical substances

Test-medium	Technovit 3040/4004/4006/5071	Technovit 4000/4002	Technovit 4071
Acetone	not stable	short-term stability	short-term stability
Formic acid – 10%ig	limited stability	short-term stability	stable
Benzene	long-term stability	limited stability	long-term stability
Butyl acetate	not stable	not stable	short-term stability
Cyclohexane	long-term stability	stable	long-term stability
Dekalin	long-term stability	stable	long-term stability
Diesel	long-term stability	stable	long-term stability
Dimethylformamide – DMF	limited stability	limited stability	limited stability
1,4-Dioxane	short-term stability	short-term stability	limited stability
Acetic acid conc.	short-term stability	short-term stability	short-term stability
Acetic acid 10%	limited stability	limited stability	limited stability
Acetic acid 5%	limited stability	limited stability	limited stability
Ethanol	stable	stable	stable
Ethyl acetate	not stable	not stable	short-term stability
Hydrofluoric acid 40%ig	short-term stability	short-term stability	limited stability
Fruit juice	long-term stability	long-term stability	long-term stability
Glycerine	long-term stability	long-term stability	long-term stability
Glycol	long-term stability	long-term stability	long-term stability
Heating oil	long-term stability	stable	long-term stability
Heptane	long-term stability	stable	long-term stability
Hexane	long-term stability	stable	long-term stability
Potassium hydroxide 50%	long-term stability	long-term stability	long-term stability
Potassium hydroxide 10%	long-term stability	long-term stability	long-term stability
Methanol	stable	stable	stable
Methyl ethyl ketone – MEK	not stable	not stable	short-term stability
Methylene chloride	not stable	not stable	short-term stability
Methylmethacrylat – MMA	not stable	not stable	short-term stability
Paraffin oil	long-term stability	long-term stability	long-term stability
Perchloroethylene – PER	not stable	not stable	short-term stability
Petroleum	long-term stability	long-term stability	long-term stability
Phosphoric acid, conc.	long-term stability	long-term stability	long-term stability
Phosphoric acid 10%	long-term stability	long-term stability	dauerbständig
Isopropanol	limited stability	limited stability	limited stability
Propanol	limited stability	limited stability	limited stability
Hydrochloric acid, conc.	long-term stability	long-term stability	long-term stability
Hydrochloric acid 5%	long-term stability	long-term stability	long-term stability
Sulphuric acid, conc.	short-term stability	short-term stability	short-term stability
Silicon oil	stable	stable	stable
Cooking oil/fat	long-term stability	long-term stability	long-term stability
Styrene	not stable	not stable	short-term stability
Tetrahydrofuran – THF	not stable	not stable	short-term stability
Toluol	stable	limited stability	stable
Tetralin	long-term stability	stable	long-term stability
Trichlorethylen – TRI	not stable	not stable	short-term stability
Hydrogen peroxide 30%	long-term stability	long-term stability	long-term stability
Brandy	stable	stable	stable
Tartaric acid	short-term stability	short-term stability	short-term stability
Citric acid 10%	long-term stability	long-term stability	long-term stability

Application tips – processing of polymers

- Always mix multi-component polymers until a homogeneous compound is achieved. Correct mixing is indispensable for optimum embedding.
- During mixing, avoid beating the dough as this introduces air into the resin, which might become trapped forming bubbles in the cured compound.
- If required, mixing ratios may be adjusted slightly. This might however result in deviating temperature and curing time curves.
- The greater the amount of powder/liquid mixture, the higher the temperature produced during the polymerisation process.
- To embed large samples or cover and fill large areas, apply multiple layers to prevent excessive heat and shrinkage (polymerization = exothermal reaction).
- Allow the layer to cool to room temperature before applying the next one (heat acts as a catalyst -> accelerated curing results in bubbles).
- High temperatures accelerate the curing process, while low temperature slow it down.
- Ensure that the sample is clean and free of grease. Dirt on samples can cause problems during embedding.
- If possible, fully enclose the specimen in the embedding resin so that it can be properly fixed during preparation.
- To prevent air bubbles in the upper area of the specimen, we recommend pouring a base layer before positioning the sample in the embedding mould. This is particularly useful for the embedding of sheet metal spot welds and similar items.
- With multi-component polymers, remove the specimen before the resin has fully cooled. Otherwise, it might be difficult to separate the sample from the compound.
- Use the smallest embedding mould that fits the specimen to keep the polymerization temperature low.
- Centre the sample in the mould to ensure that it is fully encapsulated by the embedding compound.

Technotherm, Technomat, Technotray and Technovit are registered trade names of Heraeus Kulzer GmbH.

We wish to thank Siemens, IWT and IMQ for their kind support and the pictures showing practical applications of our products.

Heraeus Kulzer GmbH
Technical Division
Philipp-Reis-Strasse 8/13
61273 Wehrheim, Germany
Phone +49(0)6081 959-0
Fax +49(0)6081 959-398
technovit-hkg@heraeus.de
www.technovit.de