Technovit® & Co.

High-quality resins

Technovit® & Co.
Resins for Materialography

KULZER

MITSUI CHEMICALS GROUP

High-quality resins with reliable properties and simple handling. These are the requirements for precise material testing. Kulzer has been a leader for many decades in the development and manufacture of resin products at the highest quality level.

The resins from Kulzer meet the highest standards. They are used as mounting agents for materialographic examinations or as an aid in materialography and for production processes and are therefore an integral part of the everyday activities of modern laboratories and in manufacturing processes.

Technovit, the resin with the many faces
The umbrella brand name „Technovit“ is representative for a broad range of resin products for a diverse range of technologies. The main emphasis is on the application for materials testing.

Gap-free mounting, transparency, time saving and simple handling as well as maximum impression accuracy and form stability are the properties that are demanded especially in the various areas of "materialography“.
Kulzer meets these requirements with its complete program. Besides the classic materialographic application, these products can also be used for industrial production processes, tool making, prototype construction *(casts, fixtures)* or in the restoration sector.

All Technovit products originate from own research and development laboratories.

Tailor made solutions
In addition to our standard program we will be pleased to provide you with our know-how for customized products.

Technovit® – resins, which set standards in quality and workmanship.

Contents

Technovit® 4000 and Technovit® 4002 IQ

Opaque mounting resins – high hardness and perfect margin fit

In addition to the high hardness, filled cold mounting resins offer an extremely low shrinkage. Excellent edge definitions can be achieved. This makes it the optimum mounting agent for all specimens which need to be examined in the peripheral regions.

The opaque appearance is positive, only one level is focussed, misinterpretations through depth information are excluded.

Order information Technovit 4000

64708458	Technovit 4000 Combipack 1	750 g Powder 500 ml Syrup I / 250 ml Syrup II
64708459	Technovit 4000 Combipack 2	1.500 g Powder 1.000 ml Syrup I / 500 ml Syrup II
66032003	Technovit 4000 Powder	1 x 1,500 g
64711227	Technovit 4000 Powder	1 x 7,500 g
66032002	Technovit 4000 Syrup I	1 x 1,000 ml
64711228	Technovit 4000 Syrup I	1 x 5,000 ml
64712092	Technovit 4000 Syrup II	1 x 500 ml
64711229	Technovit 4000 Syrup II	1 x 2,500 ml

Technovit® 4000

The Low-Shrinkage

3-component cold mounting resin

Technovit 4000 is a fast curing, cold polymerizing 3-component resin based on modified polyester and superfine inorganic filler in the form of Powder, Syrup I and Syrup II.

- for optimum edge protection and margin definitions
- ideal also for mounting specimens with porous surface, small fissures, blind holes or undercuts; Vacuum mounting is possible during pot life

Properties and application

- very low polymerization shrinkage and optimum margin fit
- excellent flow characteristics
- very good adhesion to metal surfaces, therefore optimum edge protection and margin definition
- excellent grinding and polishing properties
- short curing time of approx. 6 – 13 minutes
- mixing ratio is 1:2:2 *(Syrup II : Syrup I : Powder)*
- color: white opaque

Quantities and mixing ratios Technovit 4000 (without specimen)

25 mm*	30 mm*	40 mm*	50 mm*	Mixing ratio	Powder	Liquid
15 g	25 g	40 g	60 g	20 g Powder with 30 g Liquid	40 %	60 %
6 g Syrup 1	10 g Syrup 1	16 g Syrup 1	24 g Syrup 1	20 g Powder with 28 ml Liquid		
3 g Syrup 2	5 g Syrup 2	8 g Syrup 2	12 g Syrup 2	first mix Syrup 1 and 2		
6 g Powder	10 g Powder	16 g Powder	24 g Powder			

* Kulzer mounting moulds. The stated mixing ratios are base values and can be varied slightly, depending on the application needs.

Technovit® 4002 IQ

The Gap-Free

2-component resin especially for gap-free and shrink-proof mounting

The application areas cover the full material range with the most diverse geometric shapes where top quality as regards margin fit, grinding and polishing are required.

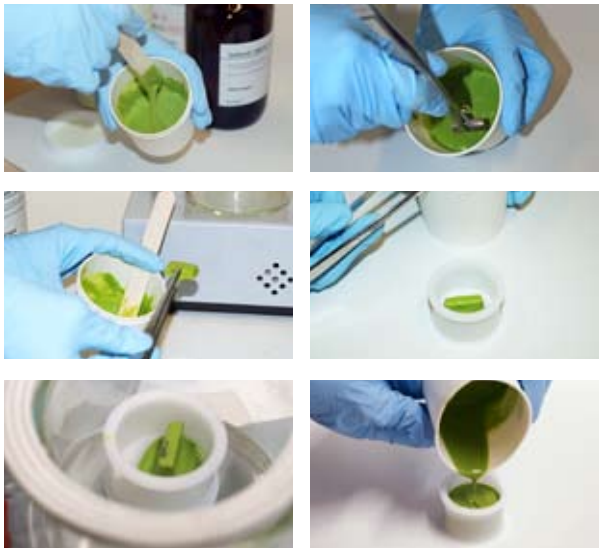
Two powder components for selection

Technovit 4002 IQ is based on a modified polyester, comprised of selectively a faster or a slower powder component *(different curing and pot times)* and a liquid. Both powder versions can be moistened easily, creating a homogenous mass without air inclusions.

For an even greater application range

- **Technovit 4002 IQ white**
  (slow powder, approx. 12 – 17 min.) offers adequate pot time, e.g. to infiltrate porous surfaces.
- **Technovit 4002 IQ green**
  (faster powder approx. 9–15 min.) serves more rational specimen preparation and enables time saving.

FROM PRACTICE
Vacuum impregnation of porous specimens



1-Mix Technovit 4002 IQ. 2-Dip in porous specimen. 3-Remove specimen. 4-Position in mounting mould. 5-Draw vacuum in the desiccator. 6-Fully fill specimen with Technovit 4002 IQ.

Properties and application

- gap-free mounting
- no polymerization shrinkage
- excellent edge definition
- excellent grinding and polishing properties
- simple handling
- lower thermal load compared to other customary mounting resins
- extremely fine powder components – very good mould filling behaviour
- various curing times selectable

Order information Technovit 4002 IQ

66064414	Technovit 4002 IQ Powder white	1 x 1,300 g
66064415	Technovit 4002 IQ Powder white	1 x 13,000 g
66064416	Technovit 4002 IQ Powder green	1 x 1,300 g
66064417	Technovit 4002 IQ Powder green	1 x 13,000 g
66064411	Technovit 4002 IQ Liquid	1 x 500 ml
66064412	Technovit 4002 IQ Liquid	1 x 1,000 ml
66064413	Technovit 4002 IQ Liquid	1 x 5,000 ml

Quantities and mixing ratios Technovit 4002 IQ (without specimen)

25 mm*	30 mm*	40 mm*	50 mm*	Mixing ratio	Powder	Liquid
17 g	25 g	44 g	71 g	25 g Powder with 20 g Liquid	approx. 55.5 %	approx. 44.5 %
9 g Powder	14 g Powder	24 g Powder	39 g Powder	25 g Powder with 19 ml Liquid		
8 g Liquid	11 g Liquid	20 g Liquid	32 g Liquid			

* Kulzer mounting moulds. The stated mixing ratios are base values and can be varied slightly, depending on the application needs.

Technovit® 4004

We offer the perspective: Transparent mounting resins when visual control is necessary

The transparent Technovit cold mounting resins are matched to the requirements in modern laboratories. They are used everywhere where a visual control of the specimen through the mounting resin is necessary.

Transparent 2-component mounting resins based on MMA have a low boiling point, which leads to blistering during curing. The boiling point can be increased by using the Technomat pressure pot *(see page 15)*. This is how bubble-free, highly transparent mountings are achieved.

Technovit® 4004

The Transparent

Transparent for routine mountings

The powder-liquid system is optimal for fast routine examinations, which require visual control.

Properties and application

- 2-component powder-liquid system
- fast curing time of 9–12 min.
- simple application through variable mixing ratio

All Technovit resins are resistant to the most common caustics in metallography.

Order information Technovit 4004

64708471	Technovit 4004 Powder	1 x 1,000 g
64708472	Technovit 4004 Powder	2 x 1,000 g
64708473	Technovit 4004 Powder	1 x 10,000 g
64708474	Technovit 4004 Liquid	1 x 500 ml
64708475	Technovit 4004 Liquid	1 x 1,000 ml
64708476	Technovit 4004 Liquid	1 x 5,000 ml

FROM PRACTICE: prevent "floating" of the specimen

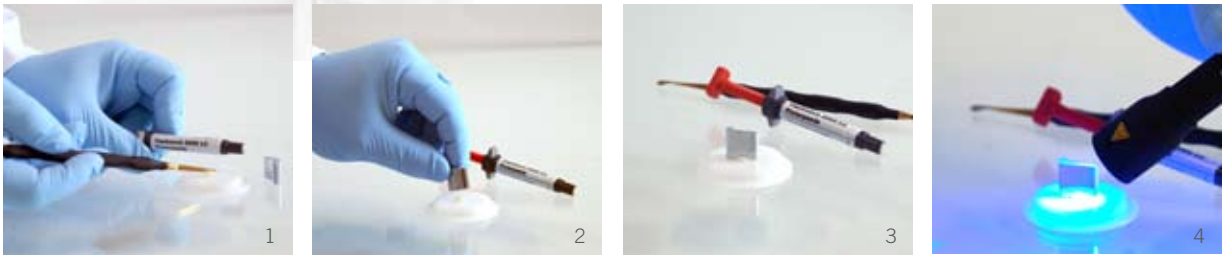


Fig. 1: Place Technovit fixing paste (page 15) on the bottom of the mounting mould. Fig. 2+3: Position specimen. Fig. 4: Cure fixing paste with the Technovit Blue LED. Embed specimen as usual.

Quantities and mixing ratios Technovit 4004 (without specimen)

25 mm*	30 mm*	40 mm*	50 mm*	Mixing ratio	Powder	Liquid
13 g	18 g	32 g	48 g	25 g Powder with 15 g Liquid	approx. 62.5 %	approx. 37.5 %
8 g Powder	11 g Powder	20 g Powder	30 g Powder	25 g Powder with 16 ml Liquid		
5 g Liquid	7 g Liquid	12 g Liquid	18 g Liquid			

* Kulzer mounting moulds. The stated mixing ratios are base values and can be varied slightly, depending on the application needs.

Technovit® 4006 – Technovit® 4006 SE
Transparent and low temperature

Technovit® 4006
High Clear

The transparent version for sensitive specimens
The highly transparent 2-component cold mounting resin enables less thermal load through longer curing times. This makes target preparations on sensitive materials simple and uncomplicated!

Properties and application
- 2-component powder-liquid system
- simplest application through variable mixing ratio
- low-gap mounting through integrated bonding agent and lower thermal load
- good grinding and polishing properties
- new initiator system – less irritating!
- ideal for routine target preparations with lower thermal load

Technovit® 4006 SE
High Clear

For pouring very thin layers
This version offers nearly all positive properties of the Technovit 4006. Technovit 4006 SE is also suitable for pouring very thin layers and offers the possibility of mounting small specimens with low volume highly transparent in a short time.

Properties and application
- faster polymerization rate than Technovit 4006
- harder than Technovit 4006
- excellent grinding and polishing properties
- lower bubble formation even without use of the Technomat pressure pot
- cures properly even in thin layers

Order information Technovit 4006/4006 SE

66020676	Technovit 4006 Powder	1 x 1,000 g
66020679	Technovit 4006 Powder	2 x 1,000 g
66020677	Technovit 4006 Powder	1 x 10,000 g
66020680	Technovit 4006 Liquid	1 x 500 ml
66020678	Technovit 4006 Liquid	1 x 1,000 ml
66020681	Technovit 4006 Liquid	1 x 5,000 ml
66030969	Technovit 4006 SE Powder	1 x 1,000 g
66030966	Technovit 4006 SE Powder	1 x 10,000 g
66030968	Technovit 4006 SE Liquid	1 x 1,000 ml
66030967	Technovit 4006 SE Liquid	1 x 5,000 ml

When visual control is not enough:
Technovit 4006 SE.

Quantities and mixing ratios Technovit 4006/4006 SE (without specimen)

25 mm*	30 mm*	40 mm*	50 mm*	Mixing ratio	Powder	Liquid
13 g	18 g	32 g	48 g	25 g Powder with 15 g Liquid	63 %	37 %
8 g Powder	11 g Powder	20 g Powder	30 g Powder	25 g Powder with 14 ml Liquid		
5 g Liquid	7 g Liquid	12 g Liquid	18 g Liquid			

* Kulzer mounting moulds. The stated mixing ratios are base values and can be varied slightly, depending on the application needs.

Technovit® 4071
The Universal

Uncomplicated – ideal for all routine mountings
The highly linked Technovit 4071 offers the best grinding properties with simultaneous simple processing.
The semi-transparency and short curing time make it indispensable for routine mountings. Series of specimens can be produced in the shortest time.

Properties and application
- simple handling, best for routine work
- optimal flow characteristic
- short curing time *(5 – 7 min.)*
- excellently grindable and machinable
- fast routine mounting resin for the full range of materials
- color: green-transparent

Order information Technovit 4071

64708485	Technovit 4071 Powder	1 x 1,000 g
64708486	Technovit 4071 Powder	2 x 1,000 g
64708487	Technovit 4071 Powder	1 x 10,000 g
64708488	Technovit 4071 Liquid	1 x 500 ml
64708489	Technovit 4071 Liquid	1 x 1,000 ml
64708490	Technovit 4071 Liquid	4 x 1,000 ml

Technovit® 5000
The Electrically Conductive

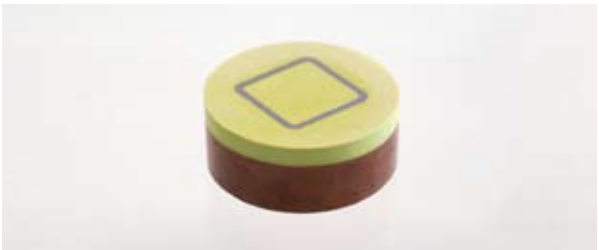
Ideal for all SEM examinations
This 2-component cold mounting resin on copper basis allows for conductive mounting, which is required for SEM examinations. Technovit 5000 is also a good basis for the electrolytic preparation of metallographic samples. Technovit 5000 remains viscous for approx. 1 minute and is *(through light tapping of the mould)* fully cured after 7 minutes.

Properties and application
- electrically conductive
- electrolytic specimen preparation
- color: copper brown

Order information Technovit 5000

64708494	Technovit 5000 Powder	1 x 1,000 g
64708495	Technovit 5000 Liquid	1 x 500 ml

FROM PRACTICE: Sandwich Technology
Absolutely gap-free and electrically conductive. Simply combine Technovit 4002 IQ with Technovit 5000.



Quantities and mixing ratios
Technovit 5000 (without specimen)

Mixing ratio	Powder	Liquid
20 g Powder with 13 g Liquid	63 %	37 %
25 g Powder with 16 ml Liquid		

* Kulzer mounting moulds. The stated mixing ratios are base values and can be varied slightly, depending on the application needs.

Technovit® 5071
The Dissolvable

For specimens which have to be removed again
Technovit 5071 offers simplest application with very good mechanical machining. It is very suitable for mounting specimens which must be removed again subsequently to, e.g. examine them under the scanning electron microscope or prepare them electrolytically. Due to its good mechanical properties Technovit 5071 is also good as an adhesive which may have to be removed, if necessary. Technovit 5071 enables gentle removal of sensitive specimens and thus allows all-round visibility during the SEM examination.

Properties and application
- chemically dissolvable
  (with acetone, dichloromethane, or similar)
- thermal softening
  (softens after 30 minutes at 150 °C)
- simplest application
  (variable mixing ratio 1:1 to 3:1)
- good adhesive properties
- color: green-transparent

Technovit 5071 – gentle removal of sensitive specimens.

Order information Technovit 5071

64708865	Technovit 5071 Powder	1 x 1,000 g
66022478	Technovit Universal Liquid	1 x 500 ml

Chemically soluble
Dissolution speed for a specimen block *(approx. 27 g resin)* in 100 ml acetone at room temperature approx. 11 hours, at 50 °C approx. 4 hours.

Thermally soluble
If the specimens are heat-resistant, Technovit 5071 can be softened by heating the specimen block to 150 °C. Simple geometric shapes can thus be removed again without any great effort.



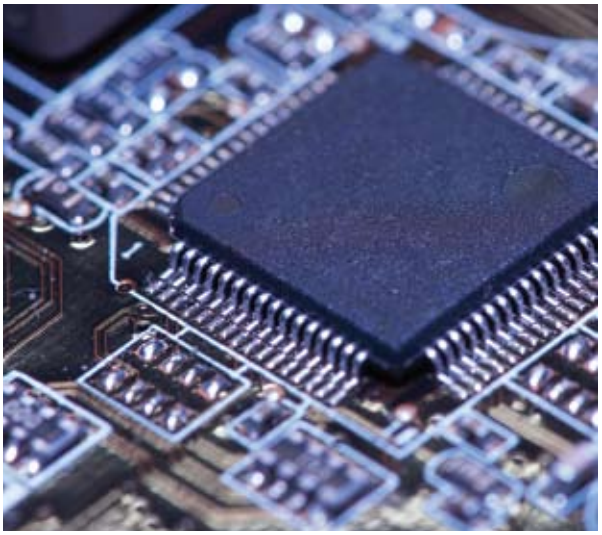

Quantities and mixing ratios Technovit 4071 / 5071 (without specimen)

25 mm*	30 mm*	40 mm*	50 mm*	Mixing ratio	Powder	Liquid
13 g	18 g	32 g	48 g	25 g Powder with 15 g Liquid	approx. 63 %	approx. 37 %
8 g Powder	11 g Powder	20 g Powder	30 g Powder	25 g Powder with 16 ml Liquid		
5 g Liquid	7 g Liquid	12 g Liquid	18 g Liquid			

* Kulzer mounting moulds. The stated mixing ratios are base values and can be varied slightly, depending on the application needs.

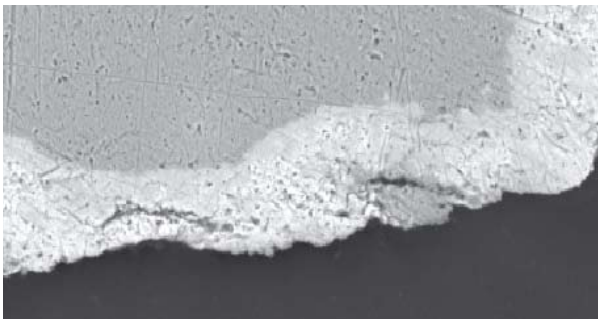
Technovit® EPOX
Resin for porous materials

For transparent mounting without thermal load.



The system can be used for all types of material, however especially for porous materials, e.g. porous spray coatings or corrosion layers which are preferably embedded under vacuum. The vacuum impregnation effects the penetration of the mounting medium into even the finest cavities and stabilises porous materials optimally for further processing.

Technovit EPOX – an epoxy resin system
Technovit EPOX is an epoxy resin system consisting of the "Technovit Epox Resin" component and either a fast hardener "Technovit Epox Hardener fast" or slower hardener "Technovit Epox Hardener regular". By choosing the right hardener, the curing time, pot life and temperature stress can be influenced. The pot life of approx. 1 hour favours e.g. infiltration of porous materials – especially when applied under vacuum.



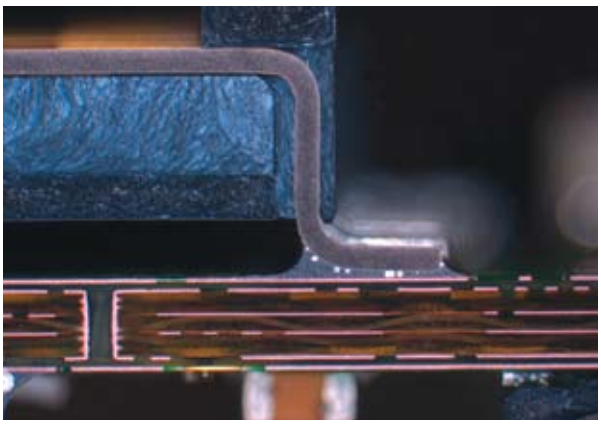
For optimum results, adhere to the precise, recommended mixing ratios. The Technovit EPOX components are mixed at a ratio of 2 parts "resin" to 1 part "hardener" and then poured.

They cure within approx. 10 to 18 hours, depending on the applied curing component. The curing times can be influenced by storing the specimen in a heating cabinet or a refrigerator.

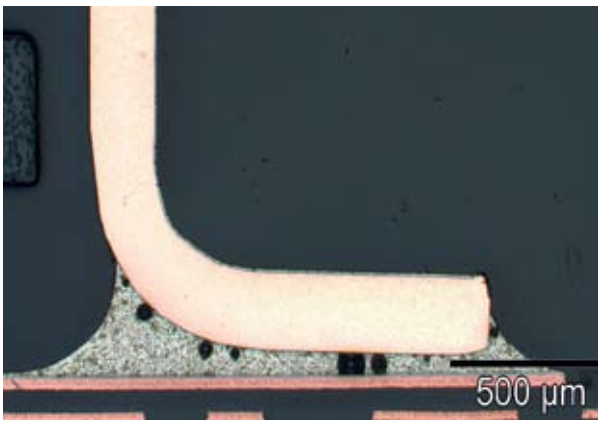
Quantities and mixing ratios Technovit EPOX (without specimen)

Mounting mould	Quantity without specimen	Ambient temperature	Max. curing temperature	Time to max. temperature	Time to end of measurable temp.
Techovit EPOX Resin & Technovit EPOX Hardener regular					
25 mm*	12 g (8 g Resin / 4 g Hardener)	20 °C	30 °C	120 min.	approx. 18 hours
30 mm*	18 g (12 g Resin / 6 g Hardener)	20 °C	35 °C	110 min.	approx. 18 hours
40 mm*	30 g (20 g Resin / 10 g Hardener)	20 °C	45 °C	105 min.	approx. 18 hours
50 mm*	45 g (30 g Resin / 15 g Hardener)	20 °C	65 °C	100 min.	approx. 18 hours
40 mm*	30 g (20 g Resin / 10 g Hardener)	23 °C	48 °C	105 min.	approx. 18 hours
40 mm*	30 g (20 g Resin / 10 g Hardener)	50 °C	100 °C	40 min.	approx. 3 hours
Techovit EPOX Resin & Technovit EPOX Hardener fast					
25 mm*	12 g (8 g Resin / 4 g Hardener)	20 °C	37 °C	90 min.	approx. 10 hours
30 mm*	18 g (12 g Resin / 6 g Hardener)	20 °C	57 °C	80 min.	approx. 10 hours
40 mm*	30 g (20 g Resin / 10 g Hardener)	20 °C	110 °C	70 min.	approx. 10 hours
50 mm*	45 g (30 g Resin / 15 g Hardener)	20 °C	144 °C	60 min.	approx. 10 hours
40 mm*	30 g (20 g Resin / 10 g Hardener)	23 °C	120 °C	60 min.	approx. 9 hours
40 mm*	30 g (20 g Resin / 10 g Hardener)	50 °C	140 °C	40 min.	approx. 2 hours

* Kulzer mounting moulds. The stated mixing ratios are base values and can be varied slightly, depending on the application needs.



Gap-free mounting of an SMD plug from the electronics of a mobile phone in the dark field



Enlarged detail of the CU contact pin of the component in the bright field

The curing time is decreased and the practice-oriented final hardness increased by increasing the start temperature.

Properties and application

- suitable for processing under vacuum
- high transparency, good adherence to specimen material
- UV color stable
- variable curing times, individually influenceable
- gap-free

Shore D Hardness Technovit EPOX –
Mixing ratio: 100 g Resin / 50 g Hardener

Product	Curing at	Technovit EPOX Regular	Technovit EPOX Fast
Shore D (20 h)	room temperature	71	73
Shore D (2 d)	room temperature	78	79
Shore D (7 d)	room temperature	79	80
Shore D (14 d)	room temperature	80	81
Shore D (21 d)	room temperature	80	81
Shore D (20 h)	50°	79	80

The stated mixing ratios are base values and can be varied slightly, depending on the application needs.

Order information Technovit EPOX

64709003	Technovit EPOX Resin	1 x 1,000 g
66040438	Technovit EPOX Hardener Regular	1 x 500 g
66040439	Technovit EPOX Hardener Fast	1 x 500 g

By using “Hardener Fast” the curing time is almost halved.

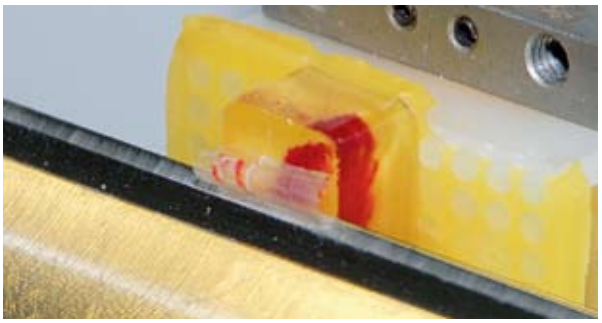
Technovit® 7100
The Sliceable

Thin sections up to 1 µm and the maintenance of structural details – the application areas of Technovit 7100 are mountings and sections of resins, films, paper, textiles, organic preparations and fibres.

Sections of embedded materials
When sections of embedded materials need to be performed, Technovit 7100 is always THE material of your choice. Originally developed to be used in histology, Technovit 7100 has also proven its efficiency in industrial use for many years due to its universal application possibilities.

Properties and application
- mounting to make sections and thin sections
- mounting of complex shaped fine resin parts
- 3-component mounting material on HEMA basis
- optimum infiltration and therefore stabilisation of fragile materials
- guarantees optimum infiltration of porous materials
- no temperature stress

Ideal for microtomy.



Thin sections up to 1 µm
This unique, easy-to-use 3-component resin based on HEMA allows for thin slicing up to 1 µm. This property has made Technovit 7100 an indispensable mounting resin for difficult resin specimens, textiles, paper, fibres, polymers and their combinations.

Infiltration – preservation of structural details
In addition to its optimised infiltration *(preservation of structural details)* and good slicing properties, the high tolerance towards most polymer materials must be noted.

- smooth resin specimens can be embedded directly, while porous materials *(sponges, textile specimens and others)* are infiltrated for stabilization
- paper can be imbued with the inviscid mounting solution Technovit 7100 in a very short time, so that additional infiltration is normally not necessary

Accessories and Supplement

Technovit Histoblade and blade holder
Technovit Histoblade is especially suitable for cutting specimens up to a slicing thickness of 1µm which are embedded in Technovit 7100.

Histoblade: 60 x 19 x 1 mm
Blade holder: 170 x 34 x 10 mm

Mounting moulds and insert for mould
Polyethylene mounting mould 25 mm diameter and matching insert *(enables reducing the slicing resistance and therefore makes slicing easier)*.

Order information Technovit 7100

64709003	Technovit 7100 Combipack	500 ml Liquid 40 g Hardener II / 5 x 1 g Hardener I
66045730	Technovit Histoblade	1 x 50 pieces
64708996	Blade holder 17 cm	1 pieces
64708955	PE-Mounting mould 25 mm	1 Pk. (3 pieces)
66009903	Insert	1 Pk. (3 pieces)

Technomat® Pressure Pot
With high pressure to bubble-free specimen

Technomat – tailored to fast curing resins
The Technomat is a space-saving, compact pressure unit. The pressurisation is 2.0 bar. As a result of the polymerization in the Technomat, bubble-free and therefore high-quality test specimens are created. The device is particularly recommended for the mounting of specimens in clear, fast curing Technovit products such as Technovit 4004, 4006 and 4006 SE, as bubble-free curing guarantees optimum transparency. The physical and chemical properties of the resin remain fully intact.

Technical data

TECHNOMAT PRESSURE POT	
Pressurisation	2.0 bar
Safety valve	2.8 – 3.3 bar
Pressure connection	3 – 10 bar
Dimensions	L x W x H: 340 x 340 x 255 mm
Weight	approx. 4 kg

Order information Technomat pressure pot

64709046 Technomat pressure pot, 1 pcs.	1 pcs.

Order information accessories

66021107	Dosing spoon for powder components	2 pcs.
66021102	Mixing cup (brimfull-volume = 200 ml)	10 pcs.
66032206	Wooden spatula	10 pcs.
66064604	Cover LAM protective film	100 pcs.
64713126	PE-Mounting mould Ø 15 mm, H 23 mm	3 pcs.
64708955	PE-Mounting mould Ø 25 mm, H 23 mm	3 pcs.
64708956	PE-Mounting mould Ø 30 mm, H 23 mm	3 pcs.
64708957	PE-Mounting mould Ø 40 mm, H 23 mm	3 pcs.
64713127	PE-Mounting mould Ø 50 mm, H 23 mm	3 pcs.
66015844	Silicone mounting mould 100 x 50 x 22 mm	1 pcs.
64708952	Mounting aid narrow, 1 mm	100 pcs.
64708953	Mounting aid medium, 2 mm	100 pcs.
64708954	Mounting aid wide, 3 mm	100 pcs.

Accessories Mounting
The Little Helpers

Spoon, Spatula and mixing cup
Tools for the removal and mixing of all powder-liquid systems. The coating of the cups is resistant against all liquid components used in mounting resins and remains neutral vis-à-vis the resin material.

Mounting moulds
Polyethylene moulds in various sizes for the mounting of materialographic specimens have become well-established in practice. The smooth surface and great strength ensure easy removal and a long service life. The standardised sizes of 15, 25, 30, 40 and 50 mm enable efficient processing of specimens in automated or manual grinding and polishing units.

Cover LAM
Protective foil to cover the prepared specimen. The Cover LAM protects your finished specimen against contamination and tarnishing.

Mounting aids
For materialographic mounting, it is necessary to fix the specimens precisely in the mounting mould. Polystyrene mounting aids offer a simple and cost-effective method to position and align material samples of the most various shapes in the moulds. Different interspaces *(1, 2 and 3 mm)* allow a broad application field.

Properties and application
- effective mounting of e.g. sheet metal sections, PCBs or similar shaped parts
- fixation of irregular shaped parts *(especially for longitudinal sections)* such as e.g. screws, rivets, welded joints

Technovit® 2000 LC
For delicate, temperature-sensitive specimens

Technovit® 2000 LC is an easy to use 1-component resin. Polymerization takes place under blue light in the Technotray POWER light polymerization unit. Targeted pouring and positioning is no problem. The system is used for the examination, resp. preparation of delicate, temperature sensitive materials and micro components.

Technovit® 2000 LC – Liquid
The Light Curing

Light curing 1-component mounting resin
The liquid allows for high-transparent mounting under blue light. Polymerization *(time: 20 min.)* is conducted in semi-transparent PE mounting moulds in the Technotray POWER unit at a max. temperature of 90 °C.

The polymerization 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 temperature, after that the specimen can then be mechanically processed.

Properties and application
- curing under blue light – no need for harmful UV light
- all resin is used up – no mixing residues
- variable 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
- resistant to alcohol and acids
- suitable for SEM examination
- free of bubbles – highly transparent

Technovit® 2000 – Inside Cure
Brings “Light into darkness”

Special additive for shady places
Technovit 2000 Inside Cure is a special additive which guarantees polymerization of the Technovit 2000 LC in shady places or inside the specimen *(porous materials, internal pipe sections, etc.)*.

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

Properties and application
- wider range of application as it is suitable for all kinds of specimens
- ideal for infiltration of porous specimens *(better penetration effect because of low viscosity and arbitrary pot time)*
- same procedure as used for the standard product – no change of work processes, documentation, etc.
- error-free mixing
- tip the complete bottle of “Inside Cure” into the bottle “Technovit 2000 LC Liquid“, shake – finished; all application parameters remain unchanged

To avoid a dispersion layer: Technovit 2000 LC covering varnish

Closing smallest microcracks and gaps with Technovit 2220 blue

Technovit® 2000 LC is ideal for target preparations in microelectronics and mounting of polymers.

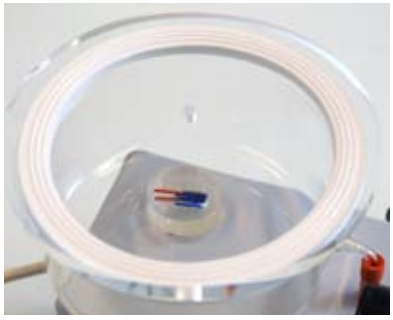
Technovit 2000 LC covering varnish
Technovit 2000 LC covering varnish is applied to prevent the formation of a dispersion layer on the reverse side of the specimen and provides a completely clear, hard and dry surface when polymerization is completed. It is applied in a single layer measuring several millimeters onto the mounted sample halfway through the polymerization time. Specimen identification can also be fixed securely in this manner.

Technovit 2000 LC fixing paste
The light curing Technovit 2000 LC fixing paste is used to position the specimens in the mounting mould. It can be kneaded like modeling clay and has excellent grinding and polishing properties once cured. Thanks to its great hardness, the paste provides excellent protection to edges.

Technovit 2000 LC
Radiation scheme with the Technotray POWER:
- 3 lamps below, 1 lamp above
- 40 mm mounting mould (full)

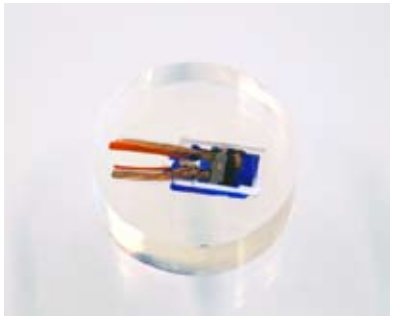
TEMPERATURE MAXIMUM 60 °C		TEMPERATURE MAXIMUM 50 °C	
LAMP ON	LAMP OFF	LAMP ON	LAMP OFF
4 minutes		2 minutes	
	10 minutes		10 minutes
30 seconds		30 seconds	
	10 minutes		10 minutes
30 seconds		30 seconds	
	10 minutes		10 minutes
30 seconds		30 seconds	
	10 minutes		10 minutes
30 seconds		30 seconds	
	10 minutes		10 minutes
20 minutes		30 seconds	
			10 minutes
		2 minutes	
			10 minutes
		20 minutes	

Apply Technovit 2220 (blue) to the specimen



Draw vacuum, Technovit 2220 penetrates into any existing gaps

Then light-cure Technovit 2220 and prepare specimen



Finished, gap-free specimen

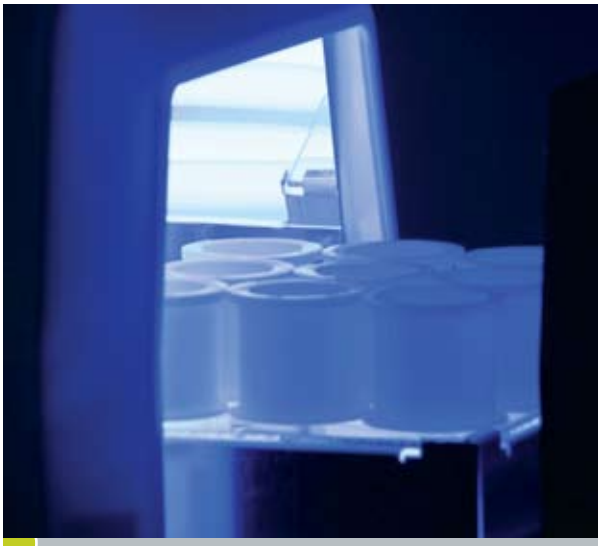
Order information Technovit 2000 LC

64708496	Technovit 2000 LC Liquid	1 x 1,000 ml
66053974	Technovit 2000 Inside Cure	1 x 40 ml
64712762	Technovit 2000 LC Covering varnish	1 x 100 ml
66005103	Technovit 2000 LC Fixing paste	1 x 4 g

Technotray® POWER

Powerful performance and generous specimen chamber

The Technotray POWER is a blue light polymerization unit especially tailored to the polymerization of light-curing Kulzer resins (Technovit 2000 LC).



Homogenously illuminated specimen chamber with room for up to 9 specimens. Autostart and Timer

Technotray POWER – Light polymerization unit
Fitted with high-quality aluminium reflectors and internal dimensions of: W x D x H: 170 x 160 x 120 mm the unit has a generous and homogenously illuminated polymerization chamber which has room for up to 9 mounting moulds *(mounting mould Ø 30 mm)*.

Light output
The blue light lamps guarantee reliable polymerization with light-curing Technovit resins in layers up to 30 mm. With maximum 6 blue light lamps à 9 watt, the Technotray POWER is an efficient light polymerization device, which guarantees fast, intense and homogenous polymerization.

Polymerisation temperature
- Ø 40 mm mould without specimen fully poured: max. 120 °C
- Ø 40 mm mould poured in layers *(2 mm)*: radiation 5 min: 70 – 90 °C

TECHNICAL DATA TECHNOTRAY POWER	
Supply voltage	230 Volt, 50 Hz
Output	max. approx. 60 watt
Light	6 fluorescent tubes à 9 watt
Lamp type	blue light fluorescent tubes
Time switch with 3 time settings	5 minutes, 10 minutes as well as continous operation
Interior space dimensions	W x D x H 170 x 160 x 120 mm
Autostart	when sliding in the drawer
Interior space	high-quality aluminium reflectors
Service life of the lamps	approx. 1.000 operating hours resp. approx. 20.000 switching operations
Housing color	white/grey
Dimensions housing	L x W x H 270 x 240 x 170 mm
Weight	approx. 3 kg

Order information Technotray POWER

66060914	Technotray POWER, 230 V unit, as well as included loose: 6 fluorescent tubes, mains cable, information for use	
66066474	Glass pane for Technotray Power	1 pcs.
66015894	Lamp, 9 watt for Technotray Power	1 pcs.

Technotherm
Hot mounting resins – simply safe

To produce metallographic specimens according to standardised methods. It can be used for all materials which are neither pressure nor heat sensitive.

All Technotherm hot mounting resins are free of Phenol.

Technotherm® 2000
Universal, glass-filled hot mounting resin

Technotherm 2000 is a glass fibre-filled hot mounting resin with optimal mould filling properties and minimal gap formation. The white-grey color offers optimal contrast to most specimen surfaces.
Color: cream-colored

Setting parameters

Curing takes place at	
Temperature	160 – 180 °C
Pressure	80 – 90 bar
Time	10 – 15 min.

Technotherm® 4000
Transparent, quick melting hot mounting resin

Technotherm 4000 is a highly transparent hot mounting resin. Supplied in fine powder form, the product melts quickly, giving Technotherm 4000 an excellent fluidity.
Color: transparent

Setting parameters

Curing takes place at	
Temperature	90 – 180 °C
Pressure	50 – 60 bar
Time	10 – 15 min.

Technotherm® 3000
Electrically conductive hot mounting resin

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)*. Voltage losses are almost excluded *(less than 0.5%)* when examining samples in the SEM with Technotherm 3000.
Color: black

Setting parameters

Curing takes place at	
Temperature	160 – 180 °C
Pressure	80 – 90 bar
Time	10 – 15 min.

Technotherm resins are no hazardous substances, and their use, processing, storage and transport does not pose any risks.

Order information Technotherm

66003628	Technotherm 2000	1 x 1,000 g
66003629	Technotherm 2000	1 x 10,000 g
66003630	Technotherm 3000	1 x 1,000 g
66003631	Technotherm 3000	1 x 10,000 g
66009411	Technotherm 4000	1 x 1,300 g
66040390	Technotherm 4000	1 x 10,000 g

Precision impressions

Each impression as detailed as the original

Analysis of scratch marks on a key

Figure right shows the 200-times magnification

Figure right shows the 200-times magnification of the impression with Provil novo

Identification of microcracks with ambulatory metallography

Impression taking is an important method for the inspection of surfaces. To achieve a high-quality result, auxiliary materials are necessary, which represent the surface structure to be examined with high precision. Depending on requirements or processing method, either the 2-component resin Technovit 3040, the Provil novo silicones or the light-curing resins of the Technovit 2200 series are used. With an impression accuracy of < 0.1 µm, each impression is as detailed as the original!

Precision impressions are used in the most varied fields and application areas. The purpose is the preparation of impressions, whose reproduction requires high precision.

Steeled for all problem cases

- when the specimen is too large or too heavy for a laboratory test
- when the specimen must be tested in a non-destructive manner
- when the area to be examined is hard to access with measuring instruments
- for documentation of wear
- for measuring of initial specimens and prototypes
- for documentation of cracks

Properties and application

- wear measurements
- ambulatory metallography
- impressions for restorations and mineralogy
- reconstruction in the cases of damage
- forensic examinations
- optimisation of processing technologies

For every impression technique, the matching product – this is how precision impressions become simple, easy and safe.

Technovit® 3040
Indirect surface inspection

The flexibility when mixing the components guarantees both the pouring in a mould and the impression at hard to access places, verticals, as well as working overhead.

Technovit® 3040
For dimensionally stable impressions

The 2-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)*. 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. Colors: black and yellow.

Properties and application
- impression accuracy 1 µm
- dimensionally stable and easy to remove
- variable mixing ratio is possible
- stabilisation for mechanical processing
- impressions can be evaluated with feeler gauges or non-contact measuring methods

From practice
- to ensure dimensional accuracy, keep the surface of the impression as small as possible *(work in several layers for larger volumes)*
- modelling a “handle” makes it easy to remove the impression from the original
- impressions should be at least 5 mm thick to prevent inadvertent distortion during removal from the surface
- undercuts are unsuitable for impressions!
- for the production of impressions on vertical or exposed overhead surfaces, pour Technovit 3040 onto a PE foil and press it onto the surface from which the impression is to be taken

Technovit 3040 – the classic for indirect surface inspection.

Order information Technovit 3040

64708806	Technovit 3040 Powder yellow	1 x 1,000 g
64708807	Technovit 3040 Powder yellow	2 x 1,000 g
64708808	Technovit 3040 Powder yellow	1 x 10,000 g
64708813	Technovit 3040 Powder black	1 x 1,000 g
64708814	Technovit 3040 Powder black	2 x 1,000 g
64708815	Technovit 3040 Powder black	1 x 10,000 g
66022678	Technovit Universal Liquid	1 x 500 ml
66022679	Technovit Universal Liquid	1 x 5,000 ml

Quantities and mixing ratios Technovit mounting resins (without specimen)

Area	Quantity	Powder	Liquid	Comment
10 x 10 cm = 100 cm²	60 g	38 g	22 g	For one square centimetre
5 x 10 cm = 50 cm²	30 g	19 g	11 g	approx. 0.6 g material is required
8 x 5 cm = 40 cm²	24 g	15 g	9 g	

The stated mixing ratios are base values and can be varied slightly, depending on the application needs.

Provil® novo Impression silicones
Surface impressions – simple, easy and safe!

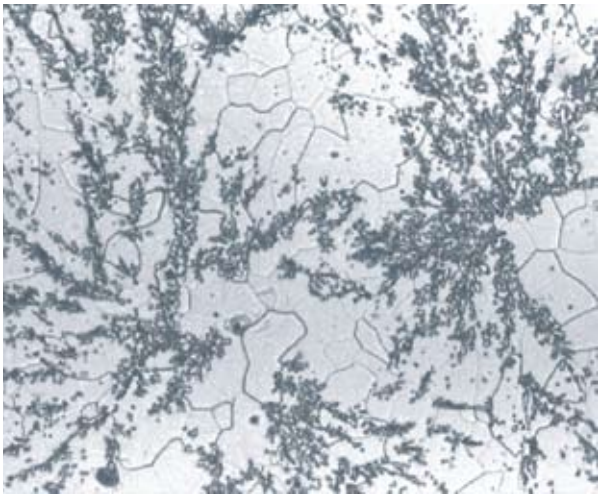
Provil® novo light regular
Self-mixing 2-component silicone

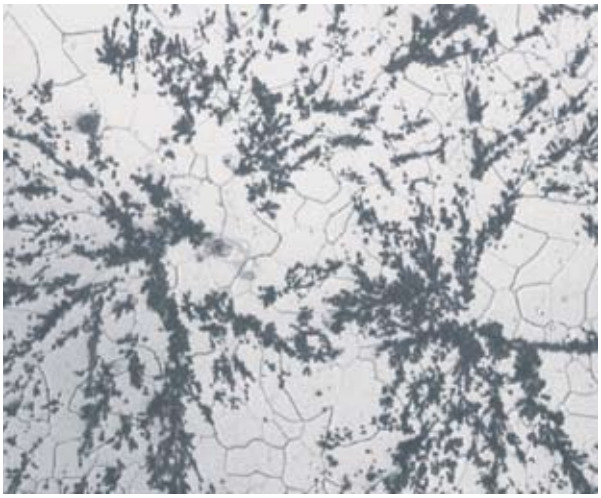
Provil novo light is a silicone with excellent flow properties and therefore best suited for making impressions of difficult geometric shapes. The application system consisting of a dispensing gun, double cartridge and mixing cannulas, guarantees an always consistent mixing ratio and thus safe and error-free use.

With the dispensing gun, the silicone is pressed uniformly from the two chambers of the double cartridge through the mixing cannula and is then directly applied to the specimen. To fill small cavities *(boreholes, etc.)*, the system includes special mixing cannula attachments.

Properties and application

- maximum impression accuracy *(< 0.1 µm)* – therefore, e.g. structures of etched surfaces can be represented *(max. 500:1)*
- Provil novo produces exact 3D reproductions of the moulded surfaces
- optimum resetting process allows accurate representation of complicated geometric objects with undercuts
- error-free working, simplest application through self-mixing cartridge system
- cost-efficient method, no investment in equipment, low time expenditure
- no hazardous material, no health or safety risk – trouble-free use for all areas, no transport problems
- no temperature development during curing; therefore, no negative impact on the surface structure of the objects
- wide range of evaluation and application options





Original and impression of a mould. Ferritic grey cast iron with rosette-shaped arrangement of the graphite. Etched with 3% nitric acid.

Exact 3D-Replicas

The advantages are used to, e.g. measure and document traces of wear on hard to access places and geometries on tools and machine parts – without having to purchase cost-intensive equipment.

Order information Provil novo light regular

66009333	Provil novo light regular	2 x 50 ml
66009334	Mixing cannulas	1 x 48 pcs.
66009335	Mixing cannula attachments	1 x 96 pcs.
66009337	Mixing gun	1 x 1 pcs.

Provil® novo putty and 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, resp. demoulded. The main difference between the two products is their final hardness *(see technical data)*. A typical application is the impression taking for measuring in the mould and toolmaking industry. There is no need for special prior knowledge for the application.

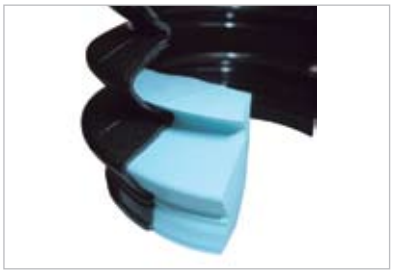
Perfect results with the combination of Provil novo light and putty: lowest shrinkage, highest detail precision.

Properties and application

- when larger areas have to be casted
- at hard to access places or when working overhead
- to stabilise impressions made with the flexible Provil novo light *(double impression technique)*
- error-free working through simplest application
- avoidance of mixing errors through color-coded pastes and spoons
- through simplest mixing ready in only a few seconds
- impressions can be evaluated with feeler gauges or non-contact measuring methods
- Provil novo can be easily removed from the specimen without leaving any residue

Order information Provil novo putty

66004371	Provil novo putty regular	450 ml base, 450 ml cat.
66004372	Provil novo putty soft	450 ml base, 450 ml cat.



Technical data Silicone impression materials

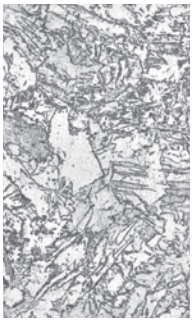
Product	Provil novo putty	Provil novo putty soft	Provil novo light
Mixing time	45 sec.	45 sec.	--
Total processing time measured from start of mixing	2 min.	2 min.	2 min.
Setting time measured from start of mixing	4:45 min.	4:45 min.	4:45 min.
Deformation under pressure	0.8-5.0 %	0.8-5.0 %	0.8-5.0 %
Recovery from deformation	99.70 %	99.70 %	99.80 %
Hardness test Shore-A, measured from start of mixing, after	10 min.: 70 1 hour: 71 24 hour: 71	10 min.: 57 1 hour: 57 24 hour: 60	0 min.: 52 1 hour: 52 24 hour: 52

Technovit® 2200 Series
Non-destructive structural impressions for surface analyses

The Technovit 2200 series represents a product line of light curing products for quality assurance tasks and materials testing that go far beyond classical methods. With these products, special "problem cases" in the field of materialography can be solved simply.

Ambulatory metallography with Technovit 2220





The simple application method guarantees perfect results. The light curing compounds are applied directly to the relevant part *(spatula, brush or syringe)* and harden within 20 to 60 seconds through exposure to special blue light lamps.

The application method is highly reliable and works also at very low and very high temperatures without any loss in quality.

Compatible with all light sources
All products of the Technovit 2200 series can be cured either with a Pekalux POWER LED or a Technovit Blue LED. If thicker layers *(bigger than 4 mm)* are required, curing should be done 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 specimen can then be further processed mechanically as usual by grinding and polishing.

Properties and application
- filling of microcracks and boreholes in grinding specimens
- fixation of smallest *(electronic)* components
- coating of small parts
- stabilisation of corrosion layers
- stabilisation for mechanical processing
- applying protective layers prior to mounting and preparation
- structural impressions
- roughness measurements
- determination of contours
- documentation – the structural impression serves as document, more meaningful than a photo
- no impairment through temperature influences

Technovit® 2200
Covering sensitive specimens

- low-viscous transparent liquid *(bottle)*
- for subsequent infiltration of minute cavities *(fissures, gaps, etc.)*
- to stabilise porous layers or sensitive assemblies prior to separation

Technovit® 2210
For fixation

- medium-viscous paste, cream-colored
- as mounting aid for fragile specimens
- as edge protection of sensitive surface prior to mounting – also in combination with warm mounting resins

Technovit® 2220
For structural impressions

- Viscous liquid died blue or colorless *(tin)*
- no creasing
- very good representation of the finest details even at magnification higher than 1000:1 still accurate in every detail
- simple application
- temperature independent consistent impression quality and curing time even with low *(0 °C)*, resp. high *(40 – 50 °C)* temperatures
- no need for vapour treatment or sputter coating for examination in the light microscope!

Order information Technovit 2200 Series

66020775	Technovit 2200 Liquid	4 x 15 ml
66020779	Technovit 2210 Liquid	2 x 1 ml
66020780	Technovit 2220, blue	1 x 15 g
66043721	Technovit 2220, transparent	1 x 15 g

Pekalux® POWER LED
Light polymerization unit

The Pekalux POWER LED is a powerful and very handy, easy to use, light polymerization unit. Blue light is used for the polymerization.

The Pekalux POWER LED is matched to the light curing products of the Technovit 2200 Series.

Fixed micro-components or those covered with light curing Technovit are cured quickly and safely with the Pekalux POWER LED.

Application
Polymerization time is set directly on the handpiece of the Pekalux POWER LED. There are 4 irradiation modes available. After expiry of the set time, the unit switches off automatically.

TECHNICAL DATA PEKALUX POWER LED	
Light source	Power LED
Wavelength range	430 – 490 nm
Light output	max. 3,000 mW/cm² (+/- 10%)
Battery	3.7 V Lithium-Ionen
Dimensions	Handpiece: 225 x 115 x 41,5 cm Charger: 155 x 82 x 125 cm
Weight	Handpiece: 136 g Charger: 144 g
Operating voltage	5 V / 1.5 A
Mains voltage	100 – 240 V / 50 – 60 Hz / 400mA

Technovit® BLUE LED
Licht polymerization lamp

Many application methods of the Technovit 2200 series cannot be solved in the lab but on site. To be able to work independent of mains power, the Technovit Blue LED is an ideal alternative to stationary light units. This 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. This means that structural impressions can be made in an instant and without great effort directly on the component in a non-destructives manner.

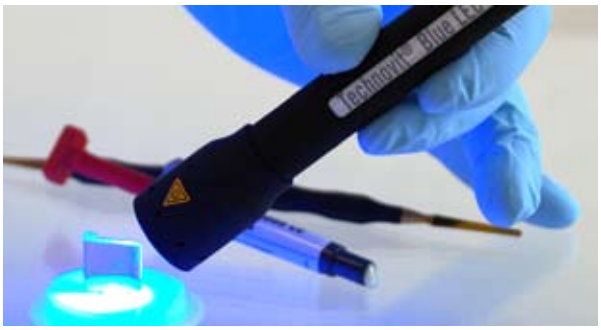
The lamp housing is made of anodized aluminium.
A high-output LED with a wave length of approx. 460 nm *(blue light)* is used for irradiation

Application
Position the Technovit Blue LED at a distance of max. 1 cm above the applied Technovit products and switch the lamp on. Depending on the product, the polymerization time can be 40 – 60 sec. Keep the light cone as small as possible to avoid irradiation loss.

TECHNICAL DATA TECHNOVIT BLUE LED	
Voltage supply	2 AA batteries (each 1.5 V), recommended LR6 (alkaline)
LED-voltage / power	approx. 3.3 V / 350 mA
Light output / Wavelength	approx. 300 mW / 460 nm, +- 20 nm
Lifetime of the LED	approx. 1,000 h
Dimensions housing / Operating temperature range	ø 26 x 170 mm / ca. 70 g + 10 °C bis + 35 °C
Temperature range for storage / transport	- 10 °C bis + 40 °C
Humidity / Barometric pressure	35 – 95 % rel. humidity (no condensation) / 500 – 1060 hPa

Order information light units and accessories

66014385	Plasmacoat instrument	1 x 1 pcs.
66008672	Brush attachments	1 x 100 pcs.
66008673	Brush holder	1 x 5 pcs.
66022679	Cannula attachments	1 x 5 pcs. (f. Technovit 2210)
66063092	Pekalux POWER LED incl. handpiece, light conductor glare protection, power supply unit, battery	1 pcs.
66043553	Technovit Blue LED	1 pcs.
64712818	Covering film	200 pcs.



FROM PRACTICE:
Taking an impression with Technovit 2220 "step by step"

Ambulatory Metallography
With the Technovit 2200-Series non-destructive structural impressions can be made directly from the component which are then processed in the laboratory and evaluated under the light microscope or scanning electron microscope.

1. Grind slightly, polish, etch, apply Technovit 2220, spread thinly with a film, cover and polymerize.
2. Carefully remove cured Technovit 2220.
3. To fix the specimen, apply Technovit 2200 on the slide, position the impression, *(CAUTION: place impression so that it faces up)*, and using a second slide, press this "sandwich" down plane-parallel and cure with blue light.

Technical data light curing impression materials

Product	Technovit 2200	Technovit 2210	Technovit 2220
Color	opaque-transparent	cream-colored	blue or transparent
Delivery form	glass bottle	syringe	jar
Viscosity	low	medium	medium
Polymerization type	light-curing (blue light)	light-curing (blue light)	light-curing (blue light)
Bending strength	90 – 100 N/mm²	> 100 N/mm²	104.00 Mpa
Bending module	3,500 – 4,500 N/mm²	5,000 – 6,000 N/mm²	2,321 Mpa
Hardness HZ	180 – 200 N/mm²	180 – 200 N/mm²	120 – 150 N/mm²
Curing depth	4 mm with Pekalux POWER LED, 20 sec. 7 mm with Technovit Blue LED, 40 sec.	4 mm with Pekalux POWER LED, 20 sec. 5 mm with Technovit Blue LED, 40 sec.	7 mm with Pekalux POWER LED, 40 sec. 7 mm with Technovit Blue LED, 60 sec.

Resistance of the resins to common substances

Test-Medium	Technovit 3040/4004/4006/5071	Technovit 4000/4002 IQ	Technovit 4071
Acetone	--	•	•
Formic acid – 10%	•	•	+
Benzene	+	•	+
Butyl acetate	--	--	•
Cyclohexane	+	+	+
Decalin	+	+	+
Diesel	+	+	+
Dimethylformamide – DMF	•	•	•
1.4-Dioxane	•	•	•
Acetic acid conc.	•	•	•
Acetic acid 10%	•	•	•
Acetic acid 5%ig	•	•	•
Ethanol	+	+	+
Ethyl acetate	--	--	•
Hydrofluoric acid 40%	•	•	•
Fruit juice	+	+	+
Glycerine	+	+	+
Glycol	+	+	+
Heating oil	+	+	+
Heptane	+	+	+
Hexane	+	+	+
Potassium hydroxide 50%ig	+	+	+
Potassium hydroxide 10%ig	+	+	+
Methanol	+	+	+
Methyl ethyl ketone – MEK	--	--	•
Methylene chloride	--	--	•
Methyl methacrylate – MMA	--	--	•
Paraffinöl	+	+	+
Perchlorethylen – PER	--	--	•
Paraffin oil	+	+	+
Phosphoric acid (conc.)	+	+	+
Phosphoric acid 10%	+	+	+
Isopropanol	•	•	•
Propanol	•	•	•
Hydrochloric acid conc.	+	+	+
Hydrochloric acid 5%	+	+	+
Sulphuric acid conc.	•	•	•
Silicone oil	+	+	+
Cooking oil/fat	+	+	+
Styrene	--	--	•
Tetrahydrofuran – THF	--	--	•
Toluene	+	•	+
Tetralin	+	+	+
Trichloroethylene – TRI	--	--	•
Hydrogen peroxide 30%	+	+	+
Brandy	+	+	+
Tartaric acid	•	•	•
Citric acid 10%	+	+	+

+ stable/ long-term stability • limited stability/ short-term stability -- not stable

Application tips
Processing of resins

- Always mix multi-component polymers homogenously – the correct mixing is the basis for optimum mounting.
- During mixing, avoid beating the dough as this introduces air into the resin, which might become trapped, forming bubbles.
- If required, mixing ratios may be adjusted slightly, however, this change may result in deviating temperature and curing time curve.
- The greater the volume of the powder/liquid mixture is, the higher the temperature produced during the polymerization process.

Technical data cold mounting resins

Product	Technovit 2000 LC	Technovit 3040	Technovit 4000	Technovit 4002 IQ	Technovit 4004	Technovit 4006
Color	transparent	yellow or black	white	white or green	transparent	highly transparent
Intended purpose	specimen mounting, bubble-free	impression taking for surface inspection	specimen mounting, low gap	specimen mounting, low gap	specimen mounting in pressure pot, bubble-free	specimen mounting in pressure pot, bubble-free
Components	Liquid	Powder/Liquid	Powder/Syrup I + II	Powder/Liquid	Powder/Liquid	Powder/Liquid
Mixing ratio	--	2:1	2:2:1	5:4	2:1	2:1
Processing width (min)	unlimited	2	4	3 (green); 5 (white)	2 – 3	4
Curing time at 22 °C (min)	6 – 10	8 – 10	6 – 13	9 – 15 (green) 12 – 17 (white)	9 – 12	9 – 13
Maximum temperature for curing in block	20 g = 95 °C	110 °C 30 g = 101 °C	122 °C	99 °C	110 °C	99 °C
Ball indentation hardness N/mm² (DIN 53456)		110 MPA	135		103	169
Temperature stability	max. 80 °C	95 °C 130 °C	130 °C	100 °C	125 °C	125 °C
Solubility	not soluble	only swellable	not soluble	not soluble	only swellable	only swellable
Density = spec. weight g/cm³ DIN53479	1.19	1.18	1.565	1.63	1.14	1.14
Impact strength DIN13907 KJ/m²	--	7.1	1.5	--	6.4	5.8
Bending strength N/mm²	--	96	50	--	95	105
Compression strength N/mm²	--	110	280	--	100 – 200	120 – 140
Water absorption Vol-% DIN 53495		0.43		2.7	--	0.38
Linear shrinkage (%)	2.2	1.9	2.7	--	2.25/2.08/1.80	2.25/2.08/1.80
Volumetric shrinkage (%)	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)	M = 1.4828 P = 1.5270	M = 1.419 --	-- --	M = 1.420 --	M = 1.422 P = 1.434	M = 1.425 P = 1.436
Storage temperature	25 °C	25 °C	25 °C	25 °C	25 °C	25 °C
Shelf life (years)	3	3	3	3	3	3
Lin. thermal expansion coefficient	65-95 [ppm]	111 x 10^{-6}	37-62 x 10^{-6}	--	110 x 10^{-6}	108 x 10^{-7}
Modulus of elasticity Megapascal (MPa)	approx. 2000 – 3000	2000 – 2300	2000 – 2200	--	2000 – 2300	2200 – 2500

- To embed large specimens or fill larger areas, it is necessary to apply multiple layers. This is the only way to prevent excessive heat and keep shrinkage in the optimum range *(Polymerization = exothermal reaction).*
- Between work steps, it is necessary to allow the preceding layer to cool down completely *(heat acts as a catalyst, too fast curing results in formation of bubbles).*
- Higher temperatures accelerate the curing process, while low temperature slow it down.
- Specimens must always be clean and free of grease, contamination of the specimens can lead to faults during mounting.
- Always fully enclose the specimen in the mounting resin to guarantee that the specimen can be properly fixed during preparation.
- To prevent air bubbles in the lower area of the specimen, we recommend pouring a base layer before positioning the specimen in the mounting mould. This is particularly useful for the mounting of e.g. sheet metal spot welds and similar items.
- With multi-component resins, the specimen should be removed as long as the resin is still warm. This makes it easier to remove the specimen.
- As far as possible use small mounting moulds to keep the polymerization temperature low.
- Centre the specimen to ensure that it is fully encapsulated by the mounting compound.

	Technovit 4006 SE	Technovit 4071	Technovit 5000	Technovit 5071	Technovit 7100	Technovit Epox	
	highly transparent	green/semi-transparent	brown	green/semi-transparent	yellow transparent	highly transparent	
	specimen mounting, bubble-free	specimen mounting	specimen mounting, electroconductive	dissolvable	microtome section for electron microscopy	specimen mounting of porous materials	
	Powder/Liquid	Powder/Liquid	Powder/Liquid	Powder/Liquid	base solution Hardener 2	base solution Hardener regular	base solution Hardener fast
	2:1	2:1	20 g Powder 13 ml Liquid	2:1		2:1 according to weight	2:1 according to 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	144 °C 45 °C Form Q	65 °C
	137	155	160	144	--	138	79 08
	105 °C	100 °C	100 °C				
	only swellable	only swellable	only swellable	in acetone			
	1.14	1.19	2.85	1.19	1.07	1.00	1.01
	4.2	6.1	5.0 N/mm²	6.3			
	120	94	85	93	50 – 60		
	120 – 150	100 – 120	280	100	90		
	0.3	0.3	0.47	ca. 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 = 1.439 P = 1.441	M = 1.458	M = 1.420 P = 1.434				
	25 °C	25 °C	25 °C	25 °C	25 °C	25 °C	
	3	3	3	3 Po./2 Li.	3	2	2
	108 x 10^{-7}	119 x 10^{-6}	--	141 x 10^{-6}			
	2400 – 2500	2500 – 2600	--	2000 – 2300			

Technovit® & Co.

Hochwertige Kunststoffe

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