Struers
Ensuring Certainty

On-site Materialographic Preparation and Examination

TransPol-5

Portable field microscopes

PSM-5

PSM-10

MoviPol-5

Battery-powered, portable materialographic equipment

Grinder/polisher
Electropolisher
Microscopes with digital camera option

Fast, perfect replication

Replica foils for any surface
Replica compound for 3D replicas

Non-destructive testing

Many applications demand a materialographic preparation and examination without damaging the subject of inspection. This is where non-destructive testing, NDT, is employed.

The usual NDT preparation steps such as grinding, polishing and etching are performed on the part to be examined in a limited area where no damage can be done, for subsequent analysis of the surface.

Non-destructive preparation enables the necessary inspection to be carried out on site, and is particularly suitable for quality checks in power stations, oil platforms, bridges, aircraft etc.

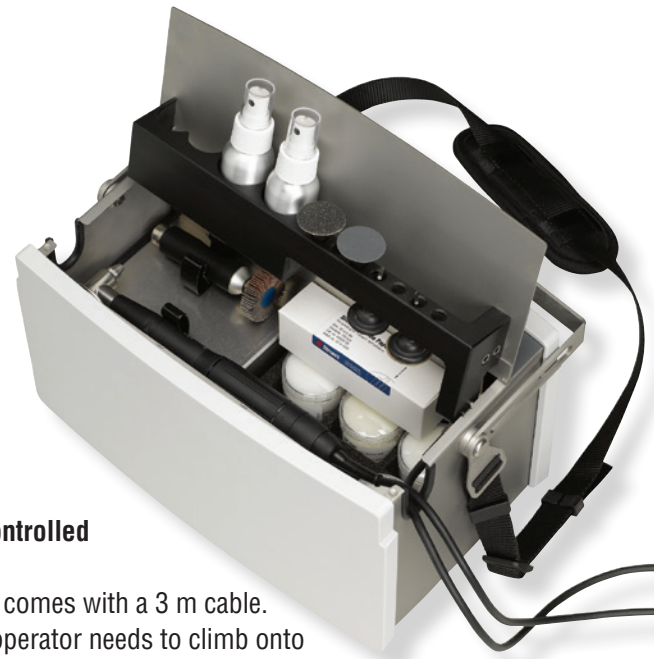
Electrolytic preparation is a particularly fast and efficient method of non-destructive metallographic preparation. It can be applied directly to critical surfaces and is widely used for metal safety inspection, especially for critical parts of larger units, e.g. welds and other joints. The method effectively reveals changes in the microstructure of the metal and so prevents possible damage because of cracks and leaks.

Struers manufactures a complete range of consumables and portable equipment for materialographic non-destructive preparation: from grinding through mechanical and electrolytic polishing/etching and microscopes for inspecting the result.
These tools are supplemented by a wide range of replication products.

The entire range of Struers non-destructive preparation products have been designed for field work. The equipment is thus as compact and as light as possible.
It is easy to transport and can be used literally under any conditions.

Replica methods make it possible to perform the microscopic examination in the laboratory - under perfect working conditions.

TransPol-5



Remote-controlled operation
TransPol-5 comes with a 3 m cable.
When the operator needs to climb onto e.g. a ladder, the carrying case can stay on the ground, while the grinding/polishing unit is remote-controlled from the elevated position.

Portable grinding and polishing equipment for rugged use

TransPol-5 is a portable, metallographic grinding/ polishing machine built to withstand rugged field conditions.

Access to inspection sites is often restricted. The very compact 32 mm grinding and polishing discs of the Struers grinding/polishing machine, means that e.g. welds in even the most inaccessible places can be dealt with.

High performance motor
The powerful motor ensures sufficient power working even with the coarsest paper.
The motor has variable speed (0-20,000 rpm) for optimum results.

Battery or mains powered
An exchangeable battery pack offers up to 1½ hours of continuous battery operation. The battery pack is shared with the MoviPol-5 electropolisher.
Battery pack and charger are included.

All accessories included
All necessary accessories are included, and are easily stored in the hold of the carrying case. Here, there is also plenty of storage space for all consumables needed for the preparation.
The portable grinder/polisher comes with both an angled and a straight handle, and exchangeable rubber discs, for support of the grinding paper and polishing cloth discs.

Consumables
A wide range of grinding and polishing consumables are available for TransPol-5; grinding and polishing discs as well as flapper wheels (see back of brochure for details).

TransPol-5 and MoviPol-5 ensure perfectly prepared surfaces in the field

MoviPol-5

Electrolytic polishing and etching in the field

MoviPol-5 is a portable electrolytic metal polishing and etching machine. It is compact and robust and can be used anywhere.

Ultrafast results

In less than one minute, a surface is obtained, which is ready for analysis, either on-site or by means of replica for laboratory examination.

Automatic polishing and etching

Activating the polishing pistol starts an electrolytic reaction. After completion of the polishing step, MoviPol-5 automatically proceeds to the etching process.

Complete Freedom

MoviPol-5 is equipped with a rechargeable battery pack offering up to 1½ hours of uninterrupted battery operation. This makes MoviPol-5 ideal for field work. For extended hours in the field, both battery pack and electrolyte cartridge are replaced in seconds.
For lab work, MoviPol-5 can be connected to the mains via the battery charger (included).

The high-performance battery pack is shared with TransPol-5.*

Built-in LED light ensures optimum visual control

Built-in process light

Frequently, electropolishing is carried out in poorly lit environments. The built-in LED light ensures optimum visual control of the polishing/etching process.

Method database

MoviPol comes with a method database for popular materials. This means that the customer does not have to start from scratch, but has something to start on. The method database ensures uniform results and repeatability.
Totally, up to 20 methods can be stored in the database.

Electrolyte cartridge system

Refilling of electrolyte can be a messy affair. This is why we have introduced the exchangeable electrolyte cartridge. Instead of refilling a container, the entire cartridge is replaced in seconds – without spilling a drop. In this fashion, refilling can be done in the comfort of the lab, without wasting any precious field time.

Exchangeable electrolyte cartridge

Peristaltic pump for work in any position

Movipol-5's peristaltic pump ensures a steady flow of electrolyte even when working e.g. under up.

Safety features

A non-return valve ensures that the electrolyte flows only during actual operation.
A tilt-sensor warns the operator if the Movipol-5 is tilted more than 45 degrees, meaning risk of spilling electrolyte.
MoviPol-5 is made in compliance with the international safety standard EN60204.

** Battery pack must be inserted for mains usage.*

PSM-5 / PSM-10

Microscopes for field inspection of prepared surfaces and replicas

PSM-5/-10 and the digital camera are all supplied in transport cases

Portable field microscopes
The PSM-5 and PSM-10 are compact and portable microscopes for use in the field.

PSM-5 provides up to 400x magnification, and PSM-10 up to 600x.
Both are ideal for examination of prepared surfaces provided by TransPol-5 and Movipol-5.

A replica is recommended for a more detailed analysis in the lab. The microscopes are used for preliminary examination of the replica.

Battery-powered LED light
The powerful LED light is battery-fuelled and so has no need for external power supply.
Both models are supplied with a 10x eyepiece and a 10x objective lens, combined providing a 100x magnification.

Objective lenses
20x and 40x objective lenses are available for both microscopes. Extreme magnification is achieved with a 60x objective lens, available exclusively for the PSM-10.

Digital camera
A high resolution camera with CMOS color sensor with 10" touchscreen tablet for large live images with easy focusing and interactive software for image capturing offering automatic scale bar – Measurements.

Measuring eyepiece and Plate micrometer
For calibrated measurements, a Measuring eyepiece and a Plate micrometer are optionally available.

Magnetic Cross table
The magnetic cross table option is ideal for inspection of tubes and other convex surfaces. Activating the magnetic clamp, the microscope is easily attached to any ferrous workpiece. This option is available for PSM-10 only.

Tripod base for curved surfaces
The standard, low tripod base of PSM-10 can be replaced by a tall tripod base, when the microscope is used on curved surfaces.

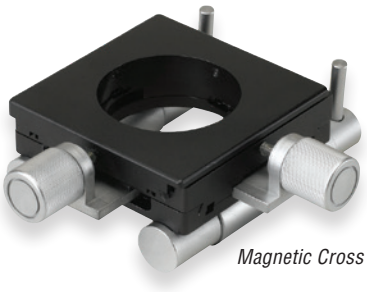
Round base
Round base for PSM-10. For use on flat surfaces.

Aluminium transport case
Both microscopes and Camera option are supplied in aluminium transport cases.

Objective lenses

Camera with adapter and tablet

Round base



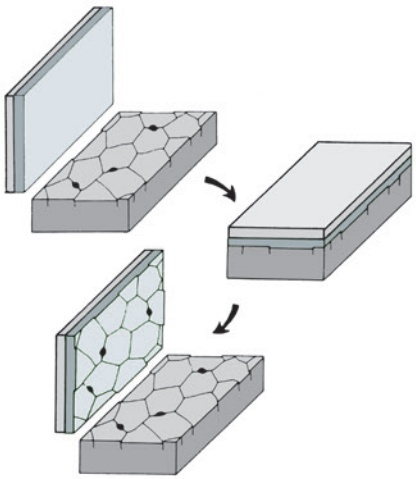
Magnetic Cross Table

Transcopy

Transcopy Replica Foil
Transcopy Replica Foil is used to make a replica of any polished and etched surface. The foil is particularly useful when micrographs of an on-site prepared structure is required, or analysis using a portable microscope is insufficient.

Transcopy Replica Foil creates a permanent replication of microstructures, cracks and defects for future analysis and comparison in the laboratory.

Function
Transcopy Replica Foil consists of reflecting plastic film with a self-adhesive back. A replica is made by applying Transcopy fluid to the film and pressing it firmly onto the prepared and etched surface. A slightly over-etched structure results in a higher contrast of the replica. After 4-5 minutes the foil is removed from the surface. By removing the cover paper, the replica can be adhered to a plain plate and then examined under an optical microscope.



RepliSet

3D replication compound
The RepliSet system is designed to produce an exact 3D copy of a surface. It is used for NDT and field applications allowing the structure or irregularities on critical components to be examined and measured under laboratory conditions.

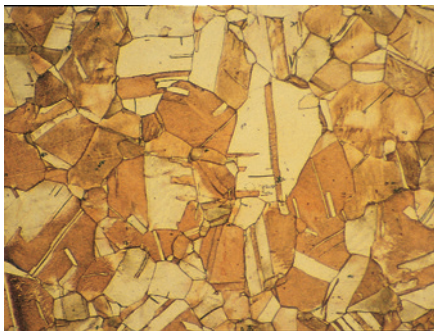
RepliSet is a specially formulated, fast curing two-part silicone rubber with a good releasing ability for flexible high-resolution 3D replicas, which behave like a metallic surface when examined in an optical microscope.
RepliSet compounds are supplied in cartridges and are dispensed using a hand-operated dispensing gun. The application system offers superior and fast results, regardless of the conditions.

RepliFix can be used separately for moulding of surface shapes for low tech applications, or as support for a Repliset replica. A backing slide bonds to the RepliSet or RepliFix replica, and serves to maintain the original profile and a flat back to the replica.

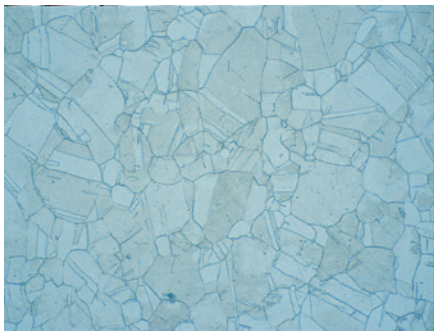
A replica can be taken from all metallic materials and most other solid materials like ceramics, plastics and glass. There are no size, shape or thickness limitations on the replicas that can be made and it is even possible to take replicas from othervise inaccessible surfaces. The RepliSet system can produce replicas, which at the same time are dimensionally correct, with ultra fine detail reproduction and with a flat back.

Further to examination by optical microscopes, 3D examination can be carried out using non-contact measuring instruments such as laser measuring equipment or measuring projectors with 2D or 3D facilities. A replica of a cavity, for instance inner holes, can be examined using measurement and profile projectors. The replicas are suitable for 3D examination by SEM.

For field use of the 50 ml RepliSet system, an aluminium transport case is optionally available.

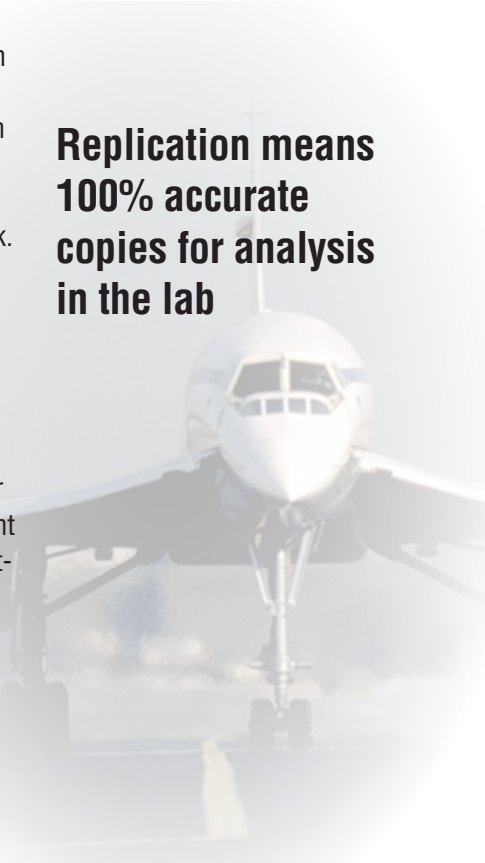


Pure copper. Sample etched with cupric chloride and ammonia. Magnification 100x.
Sample



Replica

Replication means 100% accurate copies for analysis in the lab



TransPol-5

Technical Data

Voltages		30V or 100-240V / 50-60Hz
Speed		0-20,000 rpm
Dimensions (without shoulder strap)	Width	358 mm / 14"
	Heigh	202 mm / 7.9"
	Depth	240 mm / 9.4"
Total weight excl. accessories, excl. charger		6.8 kg / 15 lbs

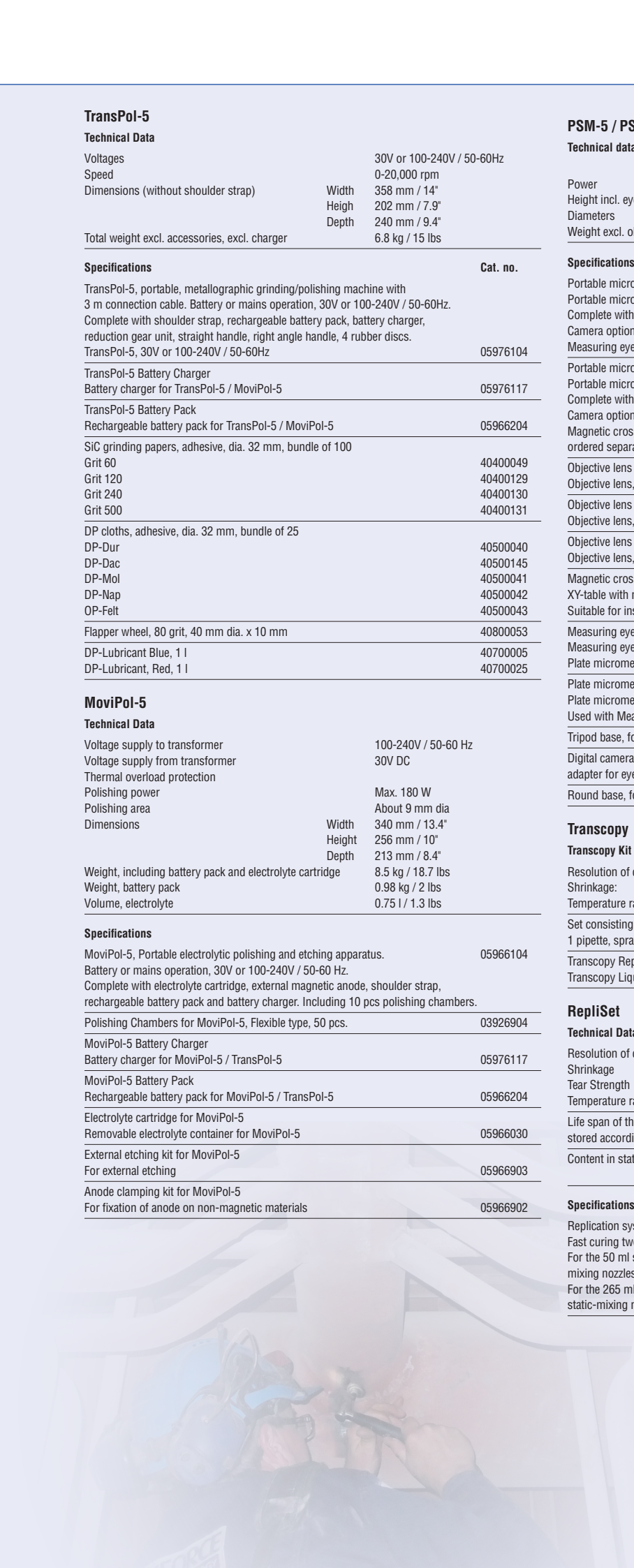
Specifications	Cat. no.
TransPol-5, portable, metallographic grinding/polishing machine with 3 m connection cable. Battery or mains operation, 30V or 100-240V / 50-60Hz. Complete with shoulder strap, rechargeable battery pack, battery charger, reduction gear unit, straight handle, right angle handle, 4 rubber discs.	
TransPol-5, 30V or 100-240V / 50-60Hz	05976104
TransPol-5 Battery Charger	
Battery charger for TransPol-5 / MoviPol-5	05976117
TransPol-5 Battery Pack	
Rechargeable battery pack for TransPol-5 / MoviPol-5	05966204
SiC grinding papers, adhesive, dia. 32 mm, bundle of 100	
Grit 60	40400049
Grit 120	40400129
Grit 240	40400130
Grit 500	40400131
DP cloths, adhesive, dia. 32 mm, bundle of 25	
DP-Dur	40500040
DP-Dac	40500145
DP-Mol	40500041
DP-Nap	40500042
OP-Felt	40500043
Flapper wheel, 80 grit, 40 mm dia. x 10 mm	40800053
DP-Lubricant Blue, 1 l	40700005
DP-Lubricant, Red, 1 l	40700025

MoviPol-5

Technical Data

Voltage supply to transformer		100-240V / 50-60 Hz
Voltage supply from transformer		30V DC
Thermal overload protection		
Polishing power		Max. 180 W
Polishing area		About 9 mm dia
Dimensions	Width	340 mm / 13.4"
	Height	256 mm / 10"
	Depth	213 mm / 8.4"
Weight, including battery pack and electrolyte cartridge		8.5 kg / 18.7 lbs
Weight, battery pack		0.98 kg / 2 lbs
Volume, electrolyte		0.75 l / 1.3 lbs

Specifications	
MoviPol-5, Portable electrolytic polishing and etching apparatus. Battery or mains operation, 30V or 100-240V / 50-60 Hz. Complete with electrolyte cartridge, external magnetic anode, shoulder strap, rechargeable battery pack and battery charger. Including 10 pcs polishing chambers.	05966104
Polishing Chambers for MoviPol-5, Flexible type, 50 pcs.	03926904
MoviPol-5 Battery Charger	
Battery charger for MoviPol-5 / TransPol-5	05976117
MoviPol-5 Battery Pack	
Rechargeable battery pack for MoviPol-5 / TransPol-5	05966204
Electrolyte cartridge for MoviPol-5	
Removable electrolyte container for MoviPol-5	05966030
External etching kit for MoviPol-5	
For external etching	05966903
Anode clamping kit for MoviPol-5	
For fixation of anode on non-magnetic materials	05966902



PSM-5 / PSM-10

Technical data

	PSM-5	PSM-10
Power	Battery, 3V (CR2025)	Battery, 3V (CR2025)
Height incl. eyepiece	210 mm / 8.2"	220 mm / 8.7"
Diameters	25-63 mm / 0.98-2.5"	25-70 mm / 0.98-2.8"
Weight excl. objective lens	473 g / 1 lbs	1100 g / 2.4 lbs

Specifications	Cat. no
Portable microscope PSM-5 Portable microscope with battery-powered LED illumination. Complete with 10x eyepiece and 10x objective lens. Camera option, Camera connection kit, 20x/40x objective lenses, Measuring eyepiece and Plate micrometer are ordered separately.	04286102
Portable microscope PSM-10 Portable microscope with battery-powered LED illumination. Complete with 10x eyepiece and 10x objective lens. Camera option, Camera connection kit, 20x/40x/60x objective lenses, Magnetic cross table, Measuring eyepiece and Plate micrometer are ordered separately.	04286103
Objective lens 20x, for PSM-5/-10 Objective lens, 20x magnification. For use with PSM-5/-10.	04286910
Objective lens 40x, for PSM-5/-10 Objective lens, 40x magnification. For use with PSM-5/-10.	04286911
Objective lens 60x, for PSM-10 Objective lens, 60x magnification. For use with PSM-10.	04286912
Magnetic cross table, for PSM-10 XY-table with magnetic clamping for PSM-10. Suitable for inspection of ferrous tubes.	04286913
Measuring eyepiece, for PSM-5/-10 Measuring eyepiece with micrometer scale for PSM-5/-10. Plate micrometer (04286915) is used for initial calibration.	04286914
Plate micrometer, for PSM-5/-10 Plate micrometer with micrometer scale for PSM-5/-10. Used with Measuring eyepiece (04286914) for initial calibration.	04286915
Tripod base, for PSM-10. For curved surfaces.	04286918
Digital camera with C-mount, for use with PSM-2/-5/-10, Includes adapter for eyepiece, touchscreen tablet and transport case.	04286921
Round base, for PSM-10. For use on flat surfaces.	04286920

Transcopy

Transcopy Kit

Resolution of cured replica:	Better than 1 µm
Shrinkage:	Negligible
Temperature range of the surface to be examined:	10-60°C.

Set consisting of 40 ml Transcopy Liquid, 50 replica foils 20 x 30 mm (0.8" x 1.2"), 1 pipette, spray nozzle and 50 microscope slides 25 x 75 mm (1" x 3")	40900090
Transcopy Replica Foils, 50 pcs.	40900091
Transcopy Liquid, 40 ml	40900092

RepliSet

Technical Data

Resolution of cured replica	Down to 0.1 micron
Shrinkage	Negligible
Tear Strength	15-20 kN/m^2
Temperature range for the surface to be examined	-10ºC to +180ºC

Life span of the finished replicas is practically indefinite provided they are stored according to the instructions.	
Content in static-mixing nozzle	1.1 ml in nozzle for 50 ml cartridge 9.3 ml in nozzle for 265 ml cartridge

Specifications

Replication system for non-destructive testing of a microstructure or a 3D structure. Fast curing two-part silicon rubber compound for flexible high-resolution 3D replicas. For the 50 ml system, the hand-operated dispensing gun (40900066) and the static mixing nozzles (40900088) are used in combination with the 50 ml cartridges. For the 265 ml system, the hand-operated dispensing gun (40900065) and the static-mixing nozzles (40900056) are used in combination with the 265 ml cartridges

Struers
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Specifications

	Cat. no.
RepliSet-F1	
Particularly useful for replicating horizontal or sloping surfaces in low temperature conditions or where rapid results are required. Fluid rapid curing compound with working life of 0.5-1 min. and curing time of 4 min. at 25°C	
1 cartridge of 50 ml	40900069
5 cartridges of 50 ml	40900047
2 cartridges of 265 ml	40900051
RepliSet-F5	
General purpose material. Particularly useful for replicating horizontal or sloping surfaces in normal or high temperature conditions. Fluid fast curing compound with working life of 5 min. and curing time of 18 min. at 25°C	
1 cartridge of 50 ml	40900068
5 cartridges of 50 ml	40900046
2 cartridges of 265 ml	40900050
RepliSet-T1	
Particularly useful for replicating vertical or overhead surfaces in low temperature conditions or where rapid results are required. Thixotropic rapid curing compound with working life of 0.5-1 min. and curing time of 4 min. at 25°C	
1 cartridge of 50 ml	40900071
5 cartridges of 50 ml	40900049
2 cartridges of 265 ml	40900053
RepliSet-T3	
General purpose material. Particularly useful for replicating vertical or overhead surfaces in normal or high temperature conditions. Thixotropic fast curing compound with working life of 3 min. and curing time of 10 min. at 25° C	
1 cartridge of 50 ml	40900070
5 cartridges of 50 ml	40900048
2 cartridges of 265 ml	40900052
RepliSet-GF1	
Replication system especially for comparatory macroscopy and metrology. Particularly useful for replicating horizontal or sloping surfaces and filling holes. Fluid rapid curing compound with working life of 0.5 - 1 min. and curing time of 4 min. at 25°C.	
1 cartridge of 50 ml	40900078
5 cartridges of 50 ml	40900076
RepliSet-GT1	
Replication system especially for comparator macroscopy and metrology. Particularly useful for replicating vertical or overhead surfaces. Thixotropic rapid curing compound with working life of 0.5 - 1 min. and curing time of 4 min. at 25°C.	
1 cartridge of 50 ml	40900079
5 cartridges of 50 ml	40900077

RepliFix

Specially formulated hand mixed fast curing two-part silicone rubber. Bonds to RepliSet. Particularly useful in combination with RepliSet for producing a rigid backing. It can be used directly for moulding of surface shape for profile measurement

RepliFix-2	
For low temperature conditions or where rapid results are required. Working life of 2-3 min. and curing time of 10 min. at 25°C. Net 500 g	40900084
RepliFix-20	
For high temperature conditions or for taking replicas of complicated geometry or large areas. Working life of 20 min. and curing time of 60 min. at 25°C. Net 500 g	40900086

Accessories

Hand-operated dispensing gun	
For 50 ml cartridges of RepliSet	40900066
For 265 ml cartridges of RepliSet	40900065
Static-mixing nozzles	
For 50 ml cartridges. 35 pcs.	40900088
For 265 ml cartridges. 10 pcs.	40900056
Nozzle Tips	
For replicating flat surfaces. Fishtail spreaders, 10 mm width. To be mounted on 50 ml static mixing nozzle (40900088). 30 pcs.	40900089
For replicating small holes. Luer needle, 1 mm dia., 30 mm long. To be mounted on 50 ml static-mixing nozzle (40900088). 10 pcs.	40900060
For replicating larger holes. Flexible hose, 6 mm dia., 100 mm long. To be mounted on 50 ml static-mixing nozzle (40900088) 10 pcs.	40900061
Backing Slides	
A flexible plastic slide, which bonds to the replica and ensures a flat back to the replica. For levelling of replicas to assist microscopic examination, as dimensional support for metrology and for well-ordered labelling, transport and storage of RepliSet replicas 26 x 76 x 1 mm, 50 pcs.	40900087
Backing paper	
For RepliSet replication system. Bonds to the replica and facilitates labelling, handling and the levelling of replicas to assist microscopic examination. 60 x 70 mm. 100 pcs.	40900062
A4 (210 x 297 mm), for cutting up to the required size. 10 pcs.	40900063
Case for RepliSet 50 ml system	
Aluminium case with room for all necessities for field applications. The contents of the RepliSet Case is ordered separately	40900067

Struers' products are subject to constant product development.
Therefore, we reserve the right to introduce changes in our products without notice.

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