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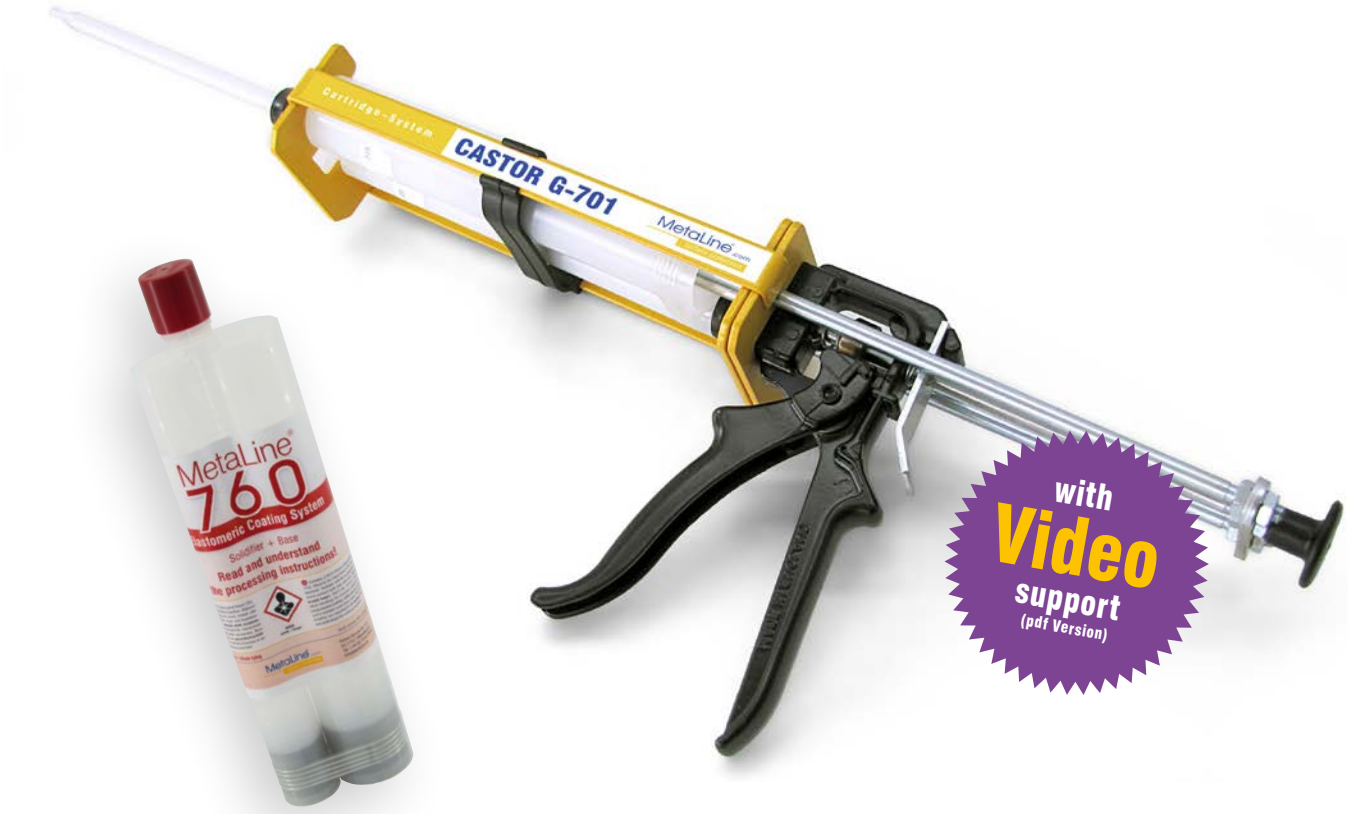

Processing Instructions
Cartridge-Cast-System
CASTOR G-701

Careful surface preparation and correct processing are essential for achieving a good coating quality! Follow these processing instructions step by step and pay attention to all safety regulations

protect repair save cover improve

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Hello and welcome!

On the following pages I will explain to you step by step the use of the MetaLine Cartridge-Cast-System and the CASTOR G-701.

Please carefully read these instructions.
Carry out the individual work steps as described.

Do not start with processing until you have properly read and understood all the instructions. Please do not hesitate to contact me if you have any further queries.

This symbol provides additional video support.
For this video support, you need the ›› Acrobat Reader available free of charge or the ›› Internet Explorer as from Version 10.

Your MetaLine trainer, André Ruda and his team

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Mo-Fr 8-12 AM and 1-4 PM

Contents

Cartridge-Cast-System:

- **MetaLine CASTOR G-701** and **Double-Cast-Cartridges (760/785/795) (Figure 1)**
- **MetaLine Cast nozzle (Figure 1a)** and **Flow regulator (Figure 1b)**

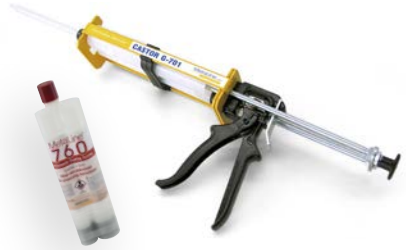


Figure 1 MetaLine Castor G-701 with Double-Cast-Cartridges, 230 g

Microwave oven

- For reliably **heating the double cartridges** (see Chapter 7), a standard microwave oven with approx. 850-1200 W including a rotary plate diameter of about 27 cm and minimum internal dimensions of H/W/D: 15 cm / 30 cm / 29 cm is required

Surface preparation

- **Sandblasting tool SP1 (Figure 3)**
- Compressed air (approx. 5 bar, at least 300 liters/minute, free of water and oil)
- **Roughing tools** for rubber **(Figure 3a)**
- **MetaLine 995 Cleaner/Thinner (Figure 4)** for cleaning and degreasing
- **MetaLine 924 Borderline Corrosion Protection (Figure 5)** optional, see Chapter 3

Figure 1a
Cast nozzle

Figure 1b
Flow-Restrictor

Priming

- **MetaLine 900 Universal Primer (Figure 6)** see Chapter 4
- **MetaLine 910 Rubber Primer (Figure 7)** optional, see Chapter 4
- **MetaLine 920 Elastomeric Primer (Figure 8)** optional, see Chapter 4

Health protection

- **Fresh air mask,** respiratory equipment, eye and face protection **(Figure 2)**
- Protective gloves
- Ventilation / paint mist extraction system
- Enclosed workwear / overalls

Figure 2 Fresh air mask, respiratory equipment, eye and face protection

Auxiliary materials / Miscellaneous

- **Textile tape and adhesive foil tape (Figure 2a)** for masking
- Cutter with interchangeable blades
- Electronic kitchen scales (weighing range up to 2 kg; accuracy: 1 gram)
- Screwdriver
- Mixing spatula and mixing jars (solvent resistant)
- Short-haired brushes in different sizes
- Drilling machine / cordless drill

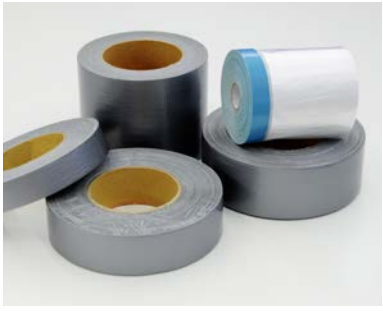


Figure 2a Textile tape and adhesive foil tape

available from the MetaLine online shop

Procedure for different surfaces

Apply MetaLine Series 700 only on thoroughly roughened, unpainted, clean, degreased and dry surfaces.
Sharp edges or bends have to be rounded to a radius of at least 3 mm.
If this is not achieved, the adhesive strength will be reduced.

Metals

It is essential to blast all surfaces (Degree of Purity Sa 2.5 – Roughness Depth (Rz = min. 75 µm; Rmax = min. 125 µm). Use **sharp-edged blasting material** (slag, steel grit, aluminum oxide) with a particle size between 1.0 and 2.0 mm for this. Glass bead blasting or needle scaling are insufficient and will reduce adhesion noticeably! Coating surfaces with reduced load-bearing capacity can be prepared alternatively by grinding or sanding. Carry out final cleaning with **MetaLine 995 Cleaner/Thinner.** (see Cleaning / Degreasing)

Figure 3 Sandblasting tool SP1
(MetaLine online shop)

Surfaces previously exposed **to oil, seawater, salt or chemical substances** have to be treated as follows **(chemical neutralization)**:

1. **Sandblasting** (preliminary cleaning)
2. **hot water high-pressure cleaning** (chloride neutralization at 140 °C and 150 bar water pressure)
3. **Flame treatment** (capillary drying by means of a gas flame)
4. **Sandblasting** (roughening)
5. **Vacuum cleaning** (dust cleaning)
6. **Degreasing** (final cleaning with MetaLine 995 Cleaner/Thinner)

Plastic materials

Sand blast the surfaces (roughening) and subsequently clean them with MetaLine 995 Cleaner/Thinner and let them dry (see Cleaning / Degreasing, Page 5).

Non-polar plastic materials

PE, PP, POM and similar non-polar plastic materials need to be thermally shock-treated before priming (Corona procedure). After blasting and cleaning with **MetaLine 995 Cleaner/Thinner**, they have to be flame-scarfed abruptly – however, melting has to be avoided! **Immediately apply MetaLine 900 Universal Primer without any delay.** Pay attention to all safety regulations since MetaLine 900 is a highly flammable material!

Rubber / polyurethane / elastomers

Thoroughly roughen the materials with a wire brush or preferably with a drilling machine or cordless drill fitted with **carbide-tipped roughing tools (Figure 3a)**. It must be ensured that the surface does not become sticky (no overheating – work at a very low speed). Carry out final cleaning with **MetaLine 995 Cleaner/Thinner** (see Cleaning / Degreasing, Page 5).

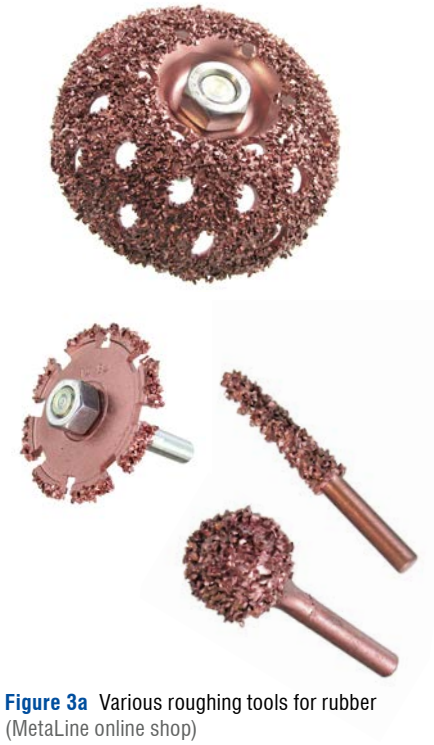


Figure 3a Various roughing tools for rubber
(MetaLine online shop)

Wood

Carefully remove all paint layers and roughen the wood by means of sandpaper (grain size 40 – 60). Smooth sharp edges. Vacuum clean with care and remove residual dust. Let the wood dry sufficiently to avoid blisters forming on the coating.

DO NOT clean the wood with MetaLine 995 Cleaner/Thinner!

Used concrete

Remove paint coats, etc. Absorb ingrained residues, oil or grease with oil binder. Carry out steam cleaning by adding detergent. Roughen the concrete mechanically, and subsequently flush with clear water (to remove detergent residues). Let the concrete dry (max. 3 % residual moisture content).

DO NOT clean the concrete with MetaLine 995 Cleaner/Thinner!

The coating thickness of MetaLine Series 700 on concrete must be at least 1.5 mm!

New concrete

Let the concrete set for at least 28 days. Perform a moisture measurement (max. 3 % residual moisture content). Remove loose parts and concrete mud. Roughen the concrete mechanically and subsequently remove any adhering dust.

DO NOT clean the concrete with MetaLine 995 Cleaner/Thinner!
Remove oil (mold oil) with a high-pressure cleaner and detergent.

Cleaning / degreasing

Clean all surfaces after roughening and vacuum cleaning with **MetaLine 995 Cleaner/Thinner** (wash/brush off/rinse surfaces).

Ensure sufficient extraction and drying of surfaces.

If non-sandblasted surfaces have to be treated **in exceptional cases**, it is not sufficient to wash/brush off the surfaces. In this case, you have to wipe the relevant surface **several times** with a white cloth saturated with MetaLine 995 Cleaner/Thinner until the cloth remains clean!

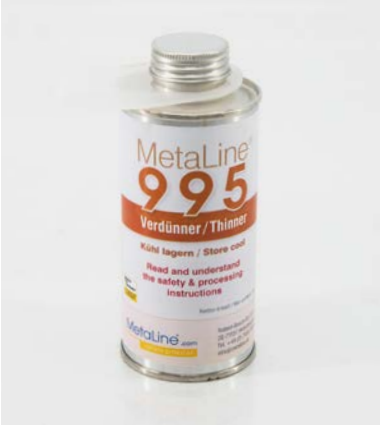


Figure 4 MetaLine 995 Cleaner/Thinner

Humidity and temperature

Basically, a dry surface is required to ensure optimum adhesion. Condensation of moisture (dew formation) before or during applying a coating system presents an enormous risk and has to be avoided by all means. Dew formation is caused by different air and workpiece temperatures and high humidity! Protect against sunbeams. The processing temperature has to be between 15 and 40 °C

Please, pay attention to the following basic rules:
– do not process under surface temperature of at least 15 °C
– do not process in atmospheres with a humidity of over 90 % or when mist or condensate formation occurs

Dew point problems

As from a humidity of 65 %, surface and air temperature have to be controlled in order to exclude condensation of humidity! Basically, the (normally invisible) condensate forms on **surfaces being relatively cooler** than the air temperature.

Air temperature

Relative humidity in %	10 °C / 50 °F	15 °C / 59 °F	20 °C / 68 °F	25 °C / 77 °F	30 °C / 86 °F	35 °C / 95 °F
	Minimum surface temperature					
90 %	N. a.	16,3 °C / 61.3 °F	21,3 °C / 70.3 °F	26,2 °C / 79.1 °F	31,0 °C / 87.8 °F	36,0 °C / 96.8 °F
85 %	N. a.	15,5 °C / 59.9 °F	20,4 °C / 68.7 °F	25,1 °C / 77.2 °F	30,0 °C / 86.0 °F	35,0 °C / 95.0 °F
80 %	N. a.	15,0 °C / 59.0 °F	19,5 °C / 67.1 °F	24,0 °C / 75.2 °F	28,9 °C / 84.0 °F	34,0 °C / 93.2 °F
75 %	N. a.	15,0 °C / 59.9 °F	18,4 °C / 65.1 °F	22,9 °C / 73.2 °F	27,7 °C / 81.8 °F	32,6 °C / 90.7 °F
70 %	N. a.	15,0 °C / 59.9 °F	17,2 °C / 60.8 °F	21,6 °C / 70.8 °F	26,3 °C / 79.3 °F	31,1 °C / 88.0 °F
65 %	N. a.	15,0 °C / 59.9 °F	16,0 °C / 60.8 °F	20,4 °C / 68.7 °F	25,0 °C / 77.0 °F	29,8 °C / 85.6 °F
60 %	N. a.	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	19,2 °C / 66.5 °F	23,6 °C / 74.4 °F	28,3 °C / 82.9 °F
55 %	N. a.	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	17,8 °C / 64.0 °F	22,1 °C / 71.7 °F	26,9 °C / 80.4 °F
50 %	N. a.	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	16,3 °C / 61.3 °F	20,5 °C / 68.9 °F	25,2 °C / 77.3 °F
45 %	N. a.	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	19,0 °C / 66.2 °F	23,2 °C / 73.7 °F
40 %	N. a.	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	17,0 °C / 62.6 °F	21,2 °C / 69.8 °F
35 %	N. a.	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	19,1 °C / 66.3 °F
30 %	N. a.	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	15,0 °C / 59.9 °F	16,7 °C / 62.0 °F

The **surface temperatures** shown adjacent are **minimum values** which need to be maintained on the workpiece to be coated throughout the entire coating period.

The values are based on the physical dew point determination in addition to a tolerance margin of 3 °C.

High surface temperatures and humidity values above average (more than 50 %) usually cause an accelerated material reaction of MetaLine Series 700 and all primers. **Overcoating times** (see Chapter 9) **might be more than halved under such circumstances.** Contact your MetaLine trainer for further clarification in such cases!

MetaLine 924 Borderline Corrosion Protection

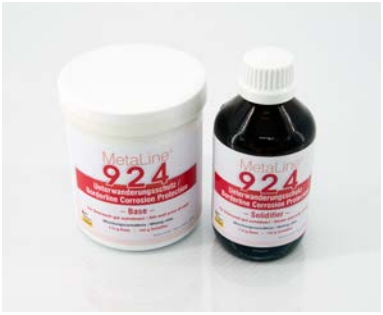


Figure 5
MetaLine 924 Borderline Corrosion Protection (924 Base + 924 Solidifier)

Only use MetaLine 924 Borderline Corrosion Protection on metal surfaces!

The use of **MetaLine 924 Borderline Corrosion Protection (Figure 5)** is mandatory on the following metal surfaces:

- **non-blasted metals**
- **stainless steel and special metal materials**
- **light metals and non-ferrous metals, alloys, galvanically treated metals**
- **hot-dip galvanized metals**
- **metal cast materials (steel casting, stainless steel casting, iron casting, grey casting or similar)**
- **metal components subsequently immersed during use**

This pre-treatment enables an additional electro-chemically active corrosion protection and greatly improves adhesion on all metal surfaces!

Stir MetaLine 924 Base well before use.

- Mix with a weight ratio of 1.1 : 1 (Base in relation to Solidifier) and let the mixture rest for 15 minutes.
- Apply within 8 hours by means of a spray gun, brush or roller with a single coat layer. When spraying, use a commercially available RP spray gun with a nozzle size as from 1.8 mm. **Make sure that only a minimum of atomizing air is used because otherwise spider webs will form.**
- Observe a coverage rate of approximately 90 g/m².

MetaLine 924 Borderline Corrosion Protection must not be overcoated with itself **(no repetition of pre-treatment)!**

At the earliest after 6 hours but at the latest after 10 days, continue with priming using exclusively **MetaLine 900 Universal Primer,** see Chapter 4.

Shake all MetaLine Primers well before use.

MetaLine 900 Universal Primer
Rigid surfaces

Treat metals, aluminum, GRP, polyester, epoxy, plastics, concrete, wood or MetaLine 924 with **MetaLine 900 Universal Primer (Figure 6).**

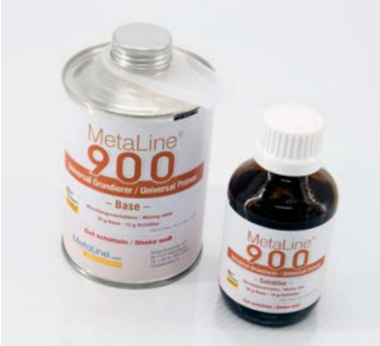


Figure 6 MetaLine 900 Universal Primer (900 Base and 900 Solidifier)

Mix MetaLine 900 Universal Primer with a weight ratio of **3:1 (Base in relation to Solidifier)** and let the mixture rest for 5 minutes. Make sure the mixing container is clean. Apply one thin layer with a brush, roller or spray gun within 4 hours. Maintain a coverage rate of **approximately 70 g/m² per layer.**

Two layers of MetaLine 900 Universal Primer always have to be applied. Apply the **second layer** no sooner than 15 minutes and no later than 1 hour.

Owing to the absorption characteristics of porous surfaces, more universal primer might be needed.

At the earliest after 15 minutes and at the latest after 1 hour after priming, coating with **MetaLine Series 700** can be carried out.

Observe the following when spraying MetaLine 900 Universal Primer:

- use a gravitation feed gun (no HVLP)
- nozzle size of approximately 1.8 mm
- work with **low air pressure (max. 1.5 bar)**
- choose a **narrow spray jet**
- in case of excessive atomization, a visible powdery coat forms which needs to be removed imperatively with **MetaLine 995 Cleaner/Thinner**

MetaLine 910 Rubber Primer
Elastic surfaces

Treat (natural) rubber with **MetaLine 910 Rubber Primer (Figure 7).**

Mix **MetaLine 910 Rubber Primer** with a weight ratio of **100 : 4 (Base in relation to Solidifier)** and **work into the surface** with a stiff bristle brush by applying pressure and with **rotary movements (Video 7.1).** Material consumption is approximately 200 g/m² per layer.

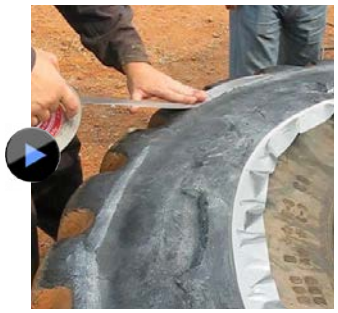
MetaLine 910 Rubber Primer cannot be rolled or sprayed on surfaces.

Subsequently, mask the edges with **fabric tape**, if necessary **(Video 7.2)**.

After a drying time of **at least 1 hour** and **at most 12 hours**, brush on a **second layer of MetaLine 910 Rubber Primer** carefully. Make sure that the first layer is not damaged when doing this.

Carry out coating with MetaLine Series 700 within 20 minutes.

Video 7.1 Application of MetaLine 910 Rubber Primer



Video 7.2 Masking of edges with fabric tape

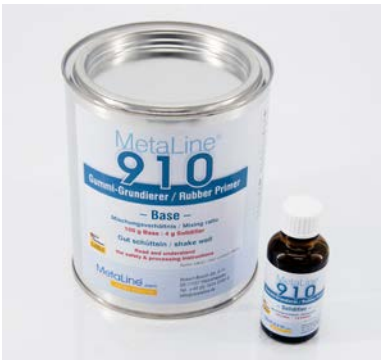


Figure 7 MetaLine 910 Rubber Primer (910 Base and 910 Solidifier)

! Important! If the drying time for the **second coat** of **MetaLine 910 Rubber Primer** exceeds 20 minutes, the surface loses its required stickiness. If this happens, a new layer of MetaLine 910 has to be applied with a brush.

MetaLine 920 Elastomeric Primer
Very soft surfaces

Synthetic elastomers, polyurethane, PVC, sealing compounds on an acrylic base, foams and similar materials have to be pretreated with a single layer of **MetaLine 920 Elastomeric Primer (Figure 8)**. Apply a thin layer by brush and overcoat within 15 to 45 minutes with **MetaLine Series 700**.

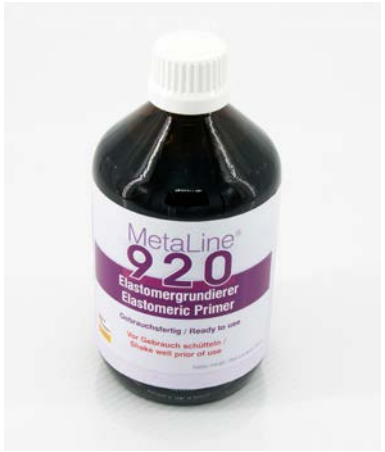


Figure 8 MetaLine 920 Elastomeric Primer

CASTOR G-701

First check all functions without inserted cartridges. The CASTOR G-701 operates manually and does not need neither air pressure nor electricity.

Do NOT trigger the cartridges casting gun to the complete end in empty condition (without inserted cartridges). Otherwise the mechanism will block!

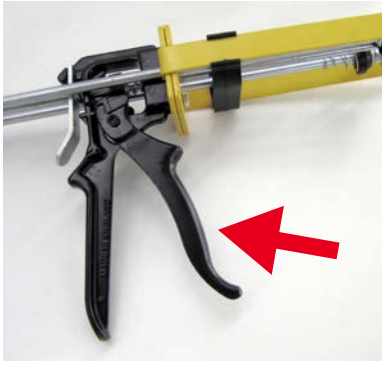


Figure 9 Trigger

Trigger

Pull the **Trigger (Figure 9)** constantly, let it return und pull again immediately (pump-like movement). Avoid a jerky handling. The plungers of the CASTOR G-701 move forwards in parallel motion and empty the cartridges.

Change Cartridge

Push the **Backlatching (Figure 9.1)** in feeding direction and pull the plungers back with the **Retaining knob** at the same time

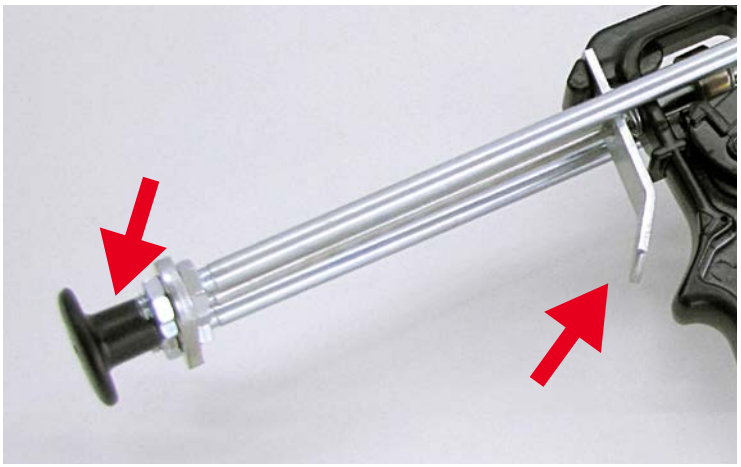


Figure 9.1 Retaining knob Backlatching

Maintenance and care

After use, clean the outer cover with a mild detergent (e.g. alcohol). Check the screw connections once a month to make sure they fit tightly and add some grease to the plungers from time to time.

Heating of Double-Cast-Cartridges

MetaLine Series 700 can be processed in **cold and warm state for casting jobs**. We recommend a hand warm processing about **35 °C.**

A heating is **mandatory** if the big cartridge (Base) is milky and paste-like instead of clear and fluid. In this condition the processing of MetaLine Series 700 is **NOT** allowed

In **cold state** (approx. 20 °C) the material has a distinctly longer processing and solidification time. Your work can be interrupted as far as 5 min. without a need to change the Cast-Nozzle.

In **very warm** state (>50 °C) the processing time is very short (approx. 1 min.). After latest 1 min. work stoppage the **Cast-Nozzle (Figure 13)** must be changed.

10 °C cartridge temperature
approx. 1 Min. for MetaLine 760/785/795

20 °C cartridge temperature
approx. 45 Sec. for MetaLine 760/785/795

30 °C cartridge temperature
approx. 30 Sec. for MetaLine 760/785/795

The large cartridge (Base) must be evenly transparent (NOT cloudy) after heating!

Preheating

Warm up the closed double cartridge in a **microwave oven (800-1200 W, possibly with a rotary plate**). The exact **warming time** depends on the cartridge temperature and has to be set to the corresponding value **on the microwave oven**. The values shown on the right are reference values.

Other means of heating, such as a water bath or a standard oven, are not suitable!

Figure 10 Cartridge transport lock

Figure 11 Sealing caps

Assembly of Double-Cast-Cartridges

Grip the double cartridge as shown in **Video 11.1** from below and turn it over several times to ensure uniform heating. Pull off the orange **cartridge transport lock (Figure 10)** and remove the two black **sealing caps (Figure 11)**.

Position the black **Flow-Restrictor (Figure 12)** so that one drill hole each is above both cartridge openings.

Attach the **Cast-Nozzle (Figure 13)** and then the black **union nut (Figure 14)** in a straight manner and **securely tighten the nut manually** since otherwise unmixed material might escape from the thread during coating and drip onto the coating surface.

Video 11.1 Assembly of the double cartridge

Figure 12 Flow-Restrictor

Figure 13 Cast-Nozzles

! Make sure that the black **cartridge pistons** are **not pressed into the cartridge** during assembly since this would force material into the **Cast-Nozzle (Figure 13)**. (When this happens, a material reaction is caused within one minute and leads to clogging of the Cast-Nozzle).

Insert the double cartridge **immediately** after assembly into the CASTOR G-701 and start processing (see Chapter 8, Start of Casting).

Figure 14 Securely tighten the black union nut manually

Start of casting

Insertion of double cartridge

Pull back the silver pistons of the CASTOR G-701 completely (Chapter 6, **Figure 9.1**). Attach the large cartridge on the large piston and the small cartridge on the small piston and insert them. Make sure that the **Double-Cast-Cartridge (Figure 14a)** does not lie tilted in the CASTOR G-701! Do not put the black cartridge pistons under pressure to avoid material flowing prematurely into the cast-nozzle

Figure 14a Double-Cast-Cartridge, 230 g

Mixing

Hold the CASTOR G-701 with the Cast-Nozzle downwards **in a 45° angle**. Pull the trigger in a pumping motion. Turn away from the coating object and dispose the first product mix. Use the coating material only if a homogeneous and air-free mixture is building up. Do not stop the process any more and start the coating work.

Coating

it is highly recommended NOT to stop the coating process!

In case of any stop, feed out the content of the mixer-nozzle and dispose. Continue the coating work only after that. Otherwise mixing failures could occur later on!

If the coating process is stopped too long, the material in the mixing-nozzle will react and block it. In this case, the mixing-nozzle, as well as the Flow-Restrictor, have to be replaced prior the restart. The time frame between 1 and 10 minutes depends on the product type chosen and the processing temperature.

Do not try to clean a clogged spray nozzle by increasing the pressure with the help of the material flow regulator (risk of cartridge bursting).

End of work

Once the cartridges are nearly empty, release the trigger. Do not empty the cartridges completely for technical reasons! Leave approx. 5 mm filling level in the cartridges. Otherwise mixing and material failures can occur!

In case inclusions of cured **particles** becomes visible during the coating work, stop the processing immediately and replace the Cast-nozzle. The solidification has begun and coating failures will occur.

Casting technique

Per pass a thickness of maximum 0,2 mm (without runs) can be applied on verticals. The material reacts within one minute (MetaLine 785 / 795) respectively 7 minutes (MetaLine 760) and does not flow any more afterwards. Pay attention to a **sufficient coverage of angles/corners**. In case of molding work, only enter the material at one spot into the mold to avoid air entrapment.

Casting or injection jobs (Video 15) Forming can be done with a spatula or similar device.

Video 15 Casting example

Overcoating times

Due to the different reaction times of the MetaLine Series 700 materials, correspondingly adapted minimum and maximum overcoating times dependent on the degree of hardness and ambient temperature have to be selected.

The following time details apply for a ambient temperature of 20 °C

MetaLine 760 (soft)
MetaLine 785 (medium)
MetaLine 795 (hard)

If more than 15 minutes (MetaLine 785/795) or **more than 30 minutes (MetaLine 760)** have elapsed after applying the last coat layer, priming has to be repeated with **MetaLine 900 Universal Primer** (see Chapter 5, Priming)

If more than 2 hours (MetaLine 785/795) or **more than 4 hours (MetaLine 760)** have elapsed, roughening, vacuum cleaning and degreasing have to be repeated and afterwards **MetaLine 920 Elastomeric Primer** has to be applied (see Chapter 5, Priming)

Solidification

The material needs 5 days for complete **chemical** solidification (at 20 °C surface temperature). After 24 hours the material may be stressed with a light mechanical load. Higher temperatures shorten the times mentioned considerably. As a rule of thumb, temperature variations of +/- 10 °C halve or double the reaction times. If required, the coating can be heated carefully after finishing the work (infrared heater or similar) to accelerate solidification time. **Do NOT use an open flame for accelerating solidification** and do not heat beyond 50 °C.

Re-use of opened cartridges

When cartridges have been only partially emptied, the s cast ıozzle and Flow-Restrictor have to be disposed immediately after use. Insert a suitable tool (long screwdriver) **from below** into the small cartridge while holding the cartridge above a waste bin and slightly press against the black piston until the material emerges and the cartridge opening is cleaned completely from cured material. Repeat this process afterwards for the large cartridge. **Then replace the two black sealing caps and the red transport lock. Store the double cartridge horizontally.**

When reusing the cartridge, **reduce the heating time in the microwave oven** according to the remaining contents of the cartridge. Before attaching a new Flow-Restrictor and a new nozzle, check both cartridge openings for cured remaining material and remove such material **completely** with a long pointed needle since otherwise the nozzle might become clogged resulting in serious malfunctions of the system (risk of cartridge bursting)!

Cured material appears predominantly on the solidifier component (small cartridge).

Storage conditions

Store all materials sealed at approximately 20 °C. Keep them away from heat, moisture, ammoniac or active hydrogen. Store the MetaLine Series 700 double cartridges **horizontally in their original packages and in the dark**. The shelf life of the products is at least 6 months as from delivery. The expiry date is imprinted on all components.

When storing the products for an extended period of time or under extreme transport conditions, **sedimentation of the color pigments used will occur (Figure 16)**. This precipitation has no effect on the product function or its quality, only the color intensity will vary. These cartridges can still be processed without any problems whatsoever. However, the maximum storage time should not be exceeded.

Figure 16 Sedimentation of color pigments

Disposal

The completely emptied cartridges consist of polypropylene and can be recycled. Cured waste can be disposed with the household refuse (adhering to local laws).

Mechanical finishing

MetaLine 760/785/795 can be machined and **mechanically finished**. The harder the selected coating, the easier and more precise finishing will be. The thickness of the coating must be dimensioned ensuring sufficient excess. After solidification, machining up to **+/ 0.01 mm** is possible. Owing to flexible displacement or natural avoidance behavior, no significantly higher degree of dimensional accuracy can be achieved.

Rougher surface structures as well as higher tolerances result from machining than is the case with metal materials. Basically, the process involved for forming is similar to machining **medium soft rubber.**

When milling, sharp-edged **carbide tools** should be used. The tooth feed rate is to be selected between 0.05 mm and 0.2 mm. If the feed rate is too low, the surface will become rugged, if the feed rate is too high, the surface will become corrugated. Machining with reverse rotation is preferable to machining with synchronous rotation.

Drilling fluid should be used for cooling to avoid overheating.

MetaLine - Type	**Cutting Speed.** m/minute	**Feed** mm/Revolution	**Tool**	**Tool Shape**			**Surface quality** medium roughness
				α	β	γ	in μ
760	300-500	0,1-0,2	Fast turning steel	12	53	25	100
785	300-500	0,1-0,2	Fast turning steel	12	53	25	50
795	100-150	0,1-0,2	Fast turning steel	12	53	25	10

Cutting off

When wide parts have to be cut off, the same conditions apply as for longitudinal turning. When cutting off thin discs, tool steel with a blade tapered with an angle of 15° is recommended. Owing to the enormous heat development, drilling fluid has to be used for cooling.

Thread cutting

Since MetaLine Series 700 is relatively soft in comparison with steel, only very coarse threads are recommended.

Milling

The required surface quality is reached with a circumferential speed between 200 and 400 m/min. by a milling cutter made of a fast turning tool steel with a clearance angle of $y = 10°$ and $y = 25°$. The milling cutter should only have one tooth (no milling head) to facilitate chip removal.

Drilling

When drilling, typical steel drills may be used. Cutting speeds between 40 and 50 m/min. with a feed rate as small as possible (0.01 to 0.03 mm/rev.) are recommended. When using MetaLine 795, a higher feed rate may be selected. With MetaLine 760 and MetaLine 785, the diameters of the drill hole are up to 4 % smaller than the drilling diameter due to the softer material.

Grinding

Using grinding discs made of regular corundum with ceramic bonding, a fine grain size, medium hardness and coarse structure, smooth surfaces are achieved. With MetaLine 760, the grinding speed must be high (30 to 50 m/sec.).

Health protection

Harmful to health | Highly flammable

Carry out processing only if an exhaust system is available (wall of paint mist). **Ventilate well** during operation. Do not inhale vapors and dusts. Avoid skin or eye contact. Do not eat, drink or smoke during processing. Wear enclosed protective clothing, head cover, **safety goggles** and gloves (latex or neoprene). Wear a respiratory mask according to protection class 6942 **A2/P2** or self-contained fresh air mask. Do not target spray jet towards living creatures! Liquid (uncured) materials should not be discharged into the sewage system.

Handle hot, liquid materials with care. Avoid any overpressure in the cartridges (e.g. in the case of clogged nozzle) since otherwise the cartridges may burst or hot material might emerge from the pistons backwards (risk of injuries). DO NOT try to empty clogged nozzles by increasing the pressure.

First-aid measures

- **Skin contact:** Wash with plenty of fresh water and soap. Change contaminated clothing immediately.
- **Eye contact:** Rinse immediately for 15 minutes with water and seek medical assistance at once.
- **Inhalation:** Take the affected person outdoors. If breathing is difficult, provide artificial respiration and seek medical assistance at once.
- **Ingestion:** Do not swallow materials! Seek medical assistance at once. Drink water to dilute.
- **Fire:** Use CO_2, foam or extinguishing powder to extinguish the fire. Firefighting should be carried out only with protective clothing and breathing apparatus.
- Seek medical assistance in case of continuing irritations.

Declaration according to the Ordinance on Hazardous Substances (GefStoffV)

MetaLine 900 Base	Xi + F	Methylethylketone (MEK)
MetaLine 900 Solidifier	Xn + F	MEK, Diphenylmethane-4,4‘-diisocyanate
MetaLine 910 Base	Xi + F	Methylethylketone (MEK)
MetaLine 910 Solidifier	Xn + F	Polyisocyanate, Ethylacetate
MetaLine 920	Xi + F	Methylethylketone (MEK)
MetaLine 924 Base	Xi + F	Methylethylketone (MEK)
MetaLine 924 Solidifier	Xn + F	MEK, Diphenylmethan-4,4‘-diisocyanat
MetaLine 700 Base	Xn	2,4 + 2,6 Diisocyanate toluene
MetaLine 700 Solidifier	Xn	Diethyltoluenediamine
MetaLine 995	Xi + F	Methylethylketone (MEK)

Troubleshooting

No or insufficient material delivery

- Clogging of nozzle or cartridge. Attach a new flow regulator and a new spray nozzle
- Material temperature too low (heat for an extended period of time)

Inclusions

Partly clogged cast nozzle resulting from interrupting for too long or processing too slowly.

- Replace the flow regulator and the cast nozzle

Drops

An insufficient tightening torque on the union nut of the spray nozzle results in an uncontrolled discharge of unmixed material at the cartridge thread. Material is dripping on the coating surface causing small uncured blisters.

- Tighten union nut of spray nozzle more firmly

Sagging/flowing off

Applying the coating too quickly or coating the same spot for too long results in uneven running behavior.

- Put on less material and do not overcoat before 1 minute (MetaLine 785/795) or 7 minutes (MetaLine 760) have elapsed

Blistering

- The cartridge material was used right from the start, without checking a **homogenous coloring (mixture)** in the cast nozzle.
- Interruption of the casting process without subsequent short-term material discharge after resuming work (turned away from the coating object). Both sources of error lead to an impaired mixing ratio and thus to material softness, insufficient adhesion, stickiness and local blistering and delamination.

Insufficient angle coverage

The coating is applied too fast without considering the material flow behavior of the coating.

- Coat the edges specifically several times
- Insufficient edge radius (min. 3 mm)

Coat separation

The maximum overcoating time is exceeded.

- Adhere to the maximum overcoating time (see Chapter 9).

Adhesion problems

- Insufficient surface roughness
- Non-adherence of overcoating times
- Dew point problems
- Wrong primer selection and/or processing

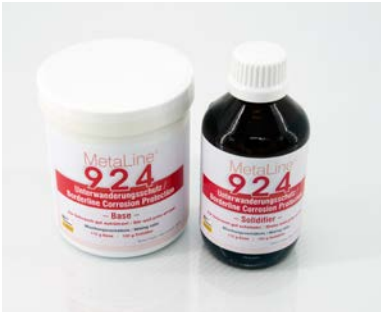
Our product information and application notes are based on the best of our knowledge and belief. They also apply, however, regarding property rights of third parties unconditionally and do not relieve the user from testing the products and processes for their intended use regarding their suitability and material compatibility.

We do not assume any liability or warranty for application results even if we knew beforehand about the intended purpose.

Processing Data – Overview

MetaLine 924 Borderline Corrosion Protection

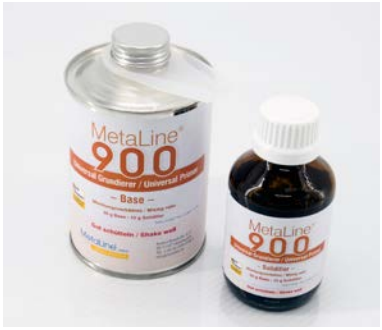
Mixing ratio	1,1 : 1		per weight
Mixing ratio	1 : 1		per volume
Consumption	90 g/m²		
Number of layers	1 layer		
Processing time	8 h		at 20 °C
Overcoating time	6 h	minimum	at 20 °C
Overcoating time	10 days	maximum	at 20 °C



MetaLine 924 Borderline Corrosion Protection (924 Base and Solidifier)

MetaLine 900 Universal Primer

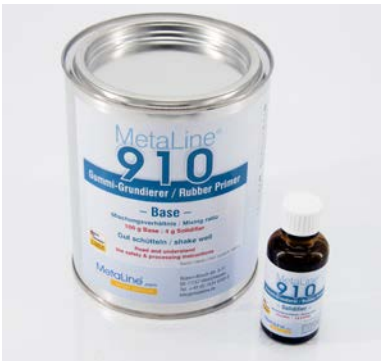
Mixing ratio	3 : 1		per weight
Mixing ratio	3.15 : 1		per volume
Consumption	70 g/m²		per layer
Number of layers	2 layers		
Processing time	4 h		at 20 °C
Overcoating time (900)	15 min.	minimum	at 20 °C
Overcoating time (900)	1 h	maximum	at 20 °C
Overcoating time (700)	15 min.	minimum	at 20 °C
Overcoating time (700)	1 h	maximum	at 20 °C



MetaLine 900 Universal Primer (900 Base and 900 Solidifier)

MetaLine 910 Rubber Primer

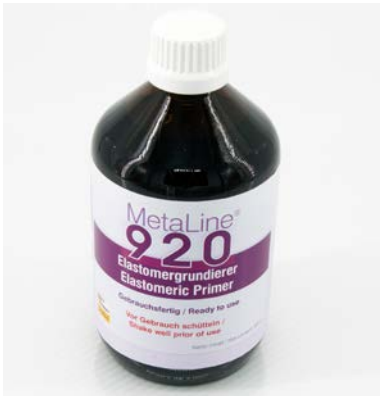
Mixing ratio	100 : 4		per weight
Consumption	200 g/m²		per layer
Number of layers	2 layers		
Processing time	5 h		at 20 °C
Overcoating time	1 h	minimum	of 1st layer
at 20 °C	12 h	maximum	of 1st layer
Overcoating time	5 min.	minimum	of 2nd layer
at 20 °C	20 min.	maximum	of 2nd layer



MetaLine 910 Rubber Primer (900 Base and 910 Solidifier

MetaLine 920 Elastomeric Primer

Mixing ratio	ready to use		
Consumption	60 g/m²		
Number of layers	1 layer		
Overcoating time	15 min.	minimum	
at 20 °C	45 min.	maximum	



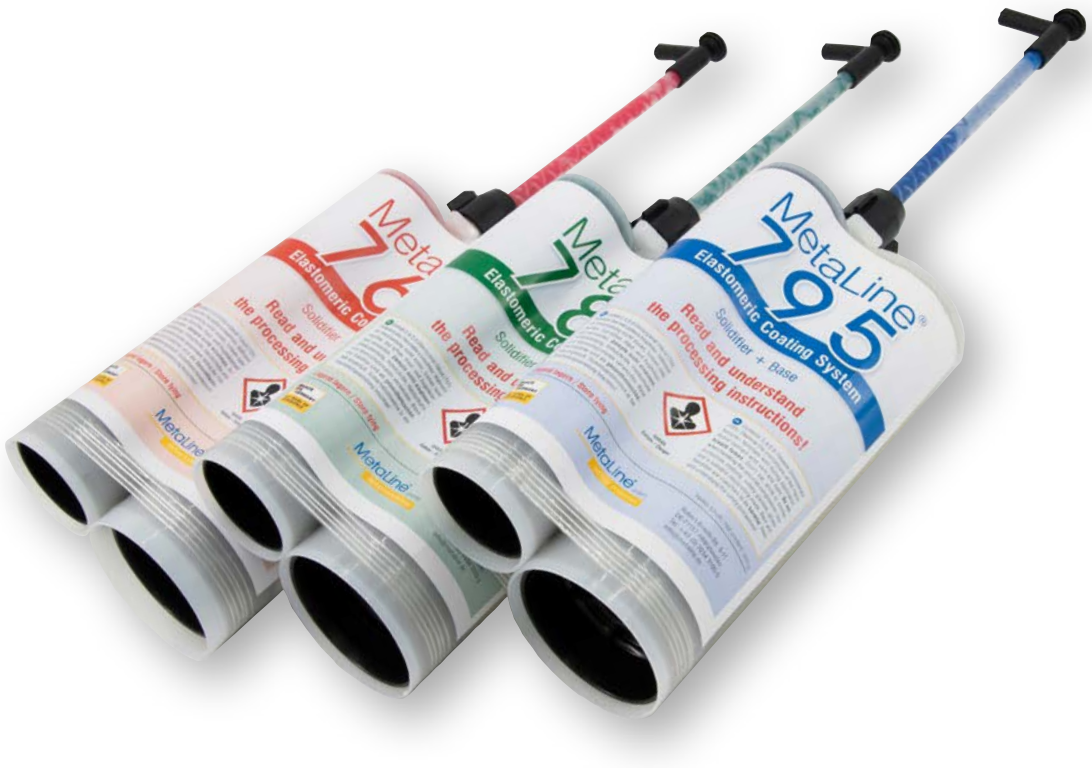
MetaLine 920 Elastomeric Primer

MetaLine 760

Nozzle selection	only long standard nozzle and all special nozzles		
Processing time	7 min.		
Consumption	1.25 kg/m²		s=1.0 mm (w/o loss)
Overcoating time	7 min.	minimum	at 20 °C
Overcoating time	30 min.	maximum	at 20 °C
Solidification time	1.5 days		light mechanical load
at 20 °C	4 days		full mechanical load
at 20 °C	6 days		full chemical load

MetaLine 785 / 795

Nozzle selection	all standard nozzles and all special nozzles		
Processing time	1 min.		
Consumption	1.2 kg/m²		s=1.0 mm (w/o loss)
Overcoating time	1 min.	minimum	at 20 °C
Overcoating time	15 min.	maximum	at 20 °C
Solidification time	1 day		light mechanical load
at 20 °C	3 days		full mechanical load
at 20 °C	5 days		full chemical load



MetaLine can look back on more than 50 years of experience when it comes to protecting, maintaining and repairing stressed surfaces and parts. We offer internationally tried and tested „coat-your-self solutions“ for many areas of application.

... from the Experts of Coating Technology

protect repair save cover improve

Processing Instructions V701UR (EN), August 2020

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