MetaLine®.com

surface protection

FDA
Certified pharmacy quality as per CFC 177.1680 (title 21)

MetaLine® Elastomeric Coatings

680 / 760 / 785 / 795

Processing instructions including video-support

- Spraying
- Injecting
- Casting
- Wear protection
- Chemical protection
- Friction variation

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!

MADE IN GERMANY
60 YEARS OF EXPERIENCE

Hello and welcome!

On the following pages, we will explain step by step the coating process with the MetaLine® Series 700 Cartridge Spray System and the APPLICATOR S-700.

Read these instructions carefully. The sequence of work steps must be followed as described. Questions must be clarified BEFORE starting work - not in the middle or afterwards, otherwise the result will suffer!

According to REACH requirements, **isocyanate safety training** is mandatory within the European Union before processing the following products. The training courses are available face-to-face or online and must be carried out by occupational safety specialists.

MetaLine® offers the option of booking **practical** processing training courses with an experienced coating trainer. We will gladly submit you an offer!

- Do not start processing until you have understood everything!
- MetaLine® Series 700 coatings are **rubberlike coatings** and not paint. Please forget your previous knowledge of painting!
- Shake or stir **all** MetaLine® components well before use!
- The original MetaLine® APPLICATOR S-700 is required for processing. The double cartridges do not fit into other devices!
- Treat open containers with gaseous nitrogen and seal tightly! All MetaLine® components are **sensitive to moisture** and can only be stored for a limited time!
- Without using an original MetaLine® primer, any MetaLine® Series 700 coating can be completely peeled off. In fact, there will be no adhesion built up!
- A minimum surface temperature of 15 °C (59 °F) is absolutely essential for processing!

The spray processing is virtually nearly identical for all three **MetaLine® Series 700** materials. They are different in hardness gradations / surface friction and are recommended for the following applications:

MetaLine® 760 (soft)	– used preferably for repairing and overcoating of existing rubber surfaces
MetaLine® 785 (medium soft)	– used preferably for components subject to impact and wear, even in saltwater
MetaLine® 795 (medium hard)	– used preferably for wear-resistant non-stick linings

Some of the materials are highly flammable! Observe all safety measures during processing, in particular to protect against electrostatic charging!

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Available: Monday – Friday
9-11 am and 1-3 pm

Videos: Additional videos are available via the QR code on the photos (internet connection required)

Contents

By clicking on the chapter heading you will be taken directly to the relevant page

Contents

Contents

Materials

MetaLine® Series 700 double cartridge Base + Solidifier (Pic. 1)
MetaLine® 995 Cleaner / Thinner (Pic. 11)
MetaLine® 924 Borderline Corrosion Protection Base + Solidifier (optional) (Pic. 14)
MetaLine® 900 Universal Primer Base + Solidifier (Pic. 15)
MetaLine® 910 Rubber Primer Base + Solidifier (optional) (Pic. 16)
MetaLine® 920 Elastomeric Primer (optional) (Pic. 17)

Application tool

MetaLine® APPLICATOR S-700 (Pic. 1)
MetaLine® spray nozzles (Pic. 2)
MetaLine® flow restrictor (Pic. 3)

Microwave

A standard microwave is absolutely essential for heating the double cartridges. Approx. 850-1200 watts, with turntable minimum diameter 27 cm (10.5 in), minimum inside dimensions: H/W/D 15 cm / 30 cm / 29 cm (6 / 12 / 11.5 in). When processing 20 or more cartridges simultaneously, 2 microwaves are required (heat attenuation and risk of overheating)

Roughening tools

Grit blasting gun SP1 for metal (optional) (Pic. 7)
Carbide tipped roughening tools (optional) (Pic. 9)

Aids

Compressed air (see chapter 7)
Duct tape and adhesive foil tape for masking (Pic. 4)
Wire adhesive tape (optional) (Pic. 12)
Cutter knife with exchangeable blades
Electronic scale with an accuracy of +/- 1 g (0.04 oz)
Mixing spatula and mixing cups (solvent-resistant)
Short-hair brushes in different widths
Wet-film thickness control lens (Pic. 6)
Drill / Electric screwdriver (optional)
Weight balancer (optional) (Pic. 21)
Rotating device (horizontal/vertical) (optional) (Pic. 34)

Personal protective equipment

Air supplied full face protective mask (respiratory / eye / face protection) (Pic. 5)
Solvent-resistant protective gloves
Protective clothing / solvent-resistant overalls
Ventilation / Paint mist extraction unit
Eye rinsing bottle according to DIN 15154-4
Isocyanate safety training (only within the European Union)

Pic. 1 MetaLine® APPLICATOR S-700 with double cartridges

Pic. 2
Spray nozzles

Pic. 3
Flow restrictor

Pic. 4 Duct tape and adhesive foil tape (available at MetaLine®)

Pic. 5 Air supplied full face protective mask (available at MetaLine®)

Pic. 6 Wet-film thickness control lens (available at MetaLine®)

Apply MetaLine® Series 700 only to thoroughly roughened, unpainted, clean, degreased and dry surfaces. Sharp edges or bends have to be rounded to a radius of at least 3 mm (120 mils).

Pic. 7 Grit blasting gun SP1 for small surfaces (available at MetaLine®)

Metals

It is essential to **grit blast** all surfaces with sharp-edged blastig grit (Pic. 8):

Degree of purity SA 2 1/2 (DIN EN ISO 12944-1 or SSPC-SP10 or NACE 2)
Roughness depth Rmax = min. 125 µm (5 mils)
Sharp-edged blasting material (copper slag, steel grit, aluminum oxide)
Particle size 1.0 to 2.0 mm (40 to 80 mils) (screening Fepa 11 or G 55)

Coating surfaces with a reduced impact load can be prepared alternatively by grinding or sanding. Carry out final cleaning with MetaLine® 995 Cleaner/Thinner (see Cleaning / degreasing, page 9).

Pic. 8 Grit blasting material (sharp edged & large diameter) (available at MetaLine®)

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

1. Grit blasting	(preliminary cleaning)
2. High pressure water cleaning	(chlorine neutralization at 140 °C (280 °F) and 150 bar (2200 psi) water pressure)
3. Flame treatment	(capillary drying by means of a gas flame)
4. Grit blasting	(roughening)
5. Vacuum cleaning	(dust cleaning)
6. Degreasing	(final cleaning with MetaLine® 995 Cleaner/Thinner)

Water blasting (hydroblasting), glass bead blasting and needle stiching (including the MBX Bristle Blaster® system) are **unsuitable** for substrate preparation. These lead to greatly reduced adhesion!

Polar plastics

Roughen epoxy, GRP, CFRP, PA, ABS and similar bondable plastics mechanically (80# grit) and then clean with MetaLine® 995 cleaner/thinner and allow to dry (see Cleaning / degreasing, page 9).

Non-polar plastics

PE, PP, POM, hard PVC and similar non-bondable plastics require a thermal shock treatment (Corona procedure) before priming in order to be able to build up adhesion at all. After roughening and cleaning with MetaLine® 995 Cleaner/Thinner, apply a short shock flame treatment – DO NOT melt! **Immediately apply** MetaLine® 900 Universal Primer **without any delay**. Observe all safety rules, as MetaLine® 900 is a highly flammable product!

Pic. 9 Different roughening tools for rubber (available at MetaLine®)

Rubber / polyurethane / elastomers

Thoroughly roughen the surface with a drilling machine or cordless drill fitted with carbide-tipped roughing tools (Pic. 9). It must be ensured that the surface does not become sticky (no overheating – work at a **very low rpm**). Carry out final cleaning with MetaLine® 995 Cleaner/Thinner (see Cleaning / degreasing, page 9).

Foams

Elastic foams must be roughened to ensure sufficient adhesion. The following tools are suitable:

- Orbital / eccentric sander with a K80 grit size
- Slow-rotating flex grinder with a K40 grit size
- Copper carbide tools (Pic. 9)
- Bristle needle tools (e.g. Monti Bristle Blaster®)

Some foams form a superficial skin. This skin must be removed by grinding. Final cleaning with MetaLine® 995 Cleaner/Thinner (see Cleaning / degreasing, page 9).

Note: Roughening is also necessary to remove the dirt embedded in the pores of used foams.

Pic. 10 **Roughened surface of an elastic foam**

Wood

Carefully remove all paint layers and roughen the wood by means of sandpaper (grain size 40 – 60). Rounden sharp edges. Vacuum clean intensively to remove residual dust. Let the wood dry sufficiently (maximum residual moisture content 7 %) to avoid blistering on the coating.

Note: Do NOT clean the wood with MetaLine® 995 Cleaner/Thinner!

Concrete

Allow to cure for at least 28 days. Remove loose parts, cement slurry and coats of paint etc. Roughen mechanically. Soak up deep-seated deposits, oil or grease with oil binder. High pressure hot water blast with a cleaning agent additive. Rinse with clear water (remove cleaning agent residues). Allow to dry and carry out a moisture measurement (maximum 3 % residual moisture content).

Note: Do NOT clean concrete with MetaLine® 995 Cleaner/Thinner!

The coating thickness of MetaLine® Series 700 on concrete must be at least 1.5 mm (60 mils)! A thinner film thickness tend to form pinholes. Due to the absorbency, more MetaLine® 900 primer is required!

Surfaces not being coatable

NO chemical adhesion can be achieved with MetaLine® primers on the following materials: Styrofoam, glass, technical ceramics, PTFE, silicone, ebonite, bakelite, glazed tiles, enamel. Surface preparation is therefore not advisable.

! Every surface preparation must be performed with consistent quality across the entire area, including all edge sections. Ideally, it should even extend slightly beyond the actual coating area!

Cleaning / degreasing

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

! Fire hazard – Allow to evaporate and dry sufficiently (at least 15 minutes). Observe safety measures, in particular to protect against electrostatic charging!

If in **exceptional cases,** non-grit-blasted surfaces have to be treated, 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 finally clean!

Pic. 11 MetaLine® 995 Cleaner/Thinner (highly flammable!)

Edge design / taping

Tape all material edges carefully and define sharp & precise borders. Use **fiber-reinforced duct tape** – not paper adhesive tape (Pic. 4).

Always keep the **edge length** as short as possible. Do not create small sections, but as continuous an area as possible. Extend coating edges beyond the main load area.

From a planned coating thickness of 3 mm (120 mils) or more, a wire adhesive tape (Pic. 12) should be used. The embedded wire is pulled through the coating immediately after application. This results in a precise and even cut at the edge, without stressing the fresh coating adhesion.

Never apply the coating to NON prepared or NON primed (adjacent) areas. Otherwise the coating will definately **lift off**! The edges of the elastomeric MetaLine® Series 700 coatings must be precisely designed and installed.

Pic. 12 Wire adhesive tape (available at MetaLine®)

Dew point risks

A dry surface is mandarory to ensure adhesion. Condensation of air 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 surface temperatures at high humidity! Therefore protect the part to be coated against sunlight and **quickly changing temperatures**.

– Do not process below 15 °C (59 °F) or above 35 °C (95 °F) surface temperature
– For surface temperatures above 35 °C (95 °F), please contact us
– Do not process in atmospheres with a humidity above 90 %, or when mist or condensate formation occurs

As from a humidity of 65 % and above, surface and air temperature must be monitored in order to exclude condensation of humidity! Basically, the (normally invisible) condensate forms on **surfaces being relatively cooler** than the surrounding air temperature. (Pic. 13).

Pic. 13 Condensation of air moisture on a cold substrate (greatly enlarged)

The **surface temperatures** below are **minimum values** which need to be maintained on the workpiece throughout the entire coating period. The values are based on the physical dew point determination plus a tolerance margin of 3 °K.

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 / 59.0 °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 / 59.0 °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 / 59.0 °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 / 59.0 °F	15,0 °C / 59.0 °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 / 59.0 °F	15,0 °C / 59.0 °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 / 59.0 °F	15,0 °C / 59.0 °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 / 59.0 °F	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	19,0 °C / 66.2 °F	23,2 °C / 73.7 °F
40 %	N. a.	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	17,0 °C / 62.6 °F	21,2 °C / 69.8 °F
35 %	N. a.	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	19,1 °C / 66.3 °F
30 %	N. a.	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	15,0 °C / 59.0 °F	16,7 °C / 62.0 °F

The use of MetaLine® 924 Borderline Corrosion Protection (Pic. 11) is mandatory on the following **metallic** substrates:

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

This pre-treatment provides additional, electro-chemically active corrosion protection. It also significantly improves adhesion to **all** kind of metallic substrates.

Mix at a weight ratio of 1.1 : 1 (Base to Solidifier) in a clean mixing container and let the mixture set for 15 minutes. Apply within 8 hours by means of a spray gun, brush or roller with a single coat layer. Observe the coverage rate of approximately 90 g/m² (0.29 oz/ft²). Do NOT apply too thickly – the metallic substrate should show through slightly!

For spraying only use airless-spray or a “RP” spray gun with a nozzle size as from 1.8 mm (#70). Make sure that only a **minimum of atomizing air** is used because otherwise spinning threads will occur which will dissolve the adhesion.

Proceed with priming at **the earliest 6 hours** but at the latest 10 days later (see chapter 5+6), using only MetaLine® 900 Universal Primer.

Note: When processing in hollow bodies or geometries that are sealed at the bottom, the escaping solvent (heavier than air!) cannot evaporate. In this case, solidification will be delayed or even stopped. Blow in fresh air regularly and remove the solvent. Never vacuum electrically (risk of explosion)! This warning applies to all MetaLine® primers!

– Only use on metallic surfaces – NO other substrates
– Stir MetaLine® 924 Base well before use
– Observe the minimum drying time (6 hours)
– Never overcoat with itself (no double treatment)

Pic. 14 MetaLine® 924 Borderline Corrosion Protection (924 Base + 924 Solidifier)

Rigid surfaces

Treat metals, aluminum, GRP, polyester, epoxy, plastics, concrete, wood or MetaLine® 924 with MetaLine® 900 Universal Primer (Pic. 15).

Pic. 15 MetaLine® 900 Universal Primer (900 Base + 900 Solidifier)

Mix MetaLine® 900 Universal Primer with a weight ratio of **3:1 (Base to Solidifier)** and let the mixture set 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 80 g/m²** (0.26 oz/ft²) **per layer**.

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

Due to the absorption characteristics of porous substrates, higher MetaLine® 900 Universal Primer quantities will be needed.

Coating with MetaLine® Series 700 can be applied at the earliest 15 minutes and at the latest 1 hour (at 20 °C / 68 °F) after priming.

We generally advise against **spray application** of MetaLine® 900 Universal Primer. If the compressed air used contains water or the air humidity is too high, **complete loss of adhesion** may occur. In addition, the following special spraying features must be observed:

use a RP gravitation feed gun only (NO HVLP)
nozzle size of approximately 1.8 mm (#70)
work with **low air pressure** (max. 1.5 bar) (20 psi)
choose a **narrow spray jet**
in case of excessive atomization, a white powdery coat forms, which destroys adhesion
MetaLine® 900 is highly flammable

Do not spray MetaLine® 900 Universal Primer like a paint and apply it smoothly, but instead sprinkle on individual **small droplets of material** with too little air. The primer surface should be uneven!

! High surface temperatures and / or high humidity (above 65 %) generally cause an accelerated material reaction of all primers. The overcoating times can be more than halved. In this case, continue immediately after the respective minimum recoating time has elapsed!

Rubber surfaces

Treat natural rubber with MetaLine® 910 Rubber Primer (Pic. 16).

Mix MetaLine® 910 Rubber Primer in a weight ratio of **100 : 4 (Base to Solidifier)** and work into the surface within 5 hours. Use a stiff, short bristle brush by applying pressure and with **rotary movements** (Video 7.1). Material consumption is approx. 200 g/m² (0.7 oz/ft²) per layer.

MetaLine® 910 Rubber Primer cannot be rolled or sprayed on. Do not mix very small quantities of less than 100 grams (0.22 lb), otherwise the precise mixing ratio can hardly be maintained.

Subsequently, mask the edges with duct tape and form them precisely (Video 7.2).

After a drying time of at least 1 hour and at most 12 hours, carefully brush on a **second layer** of MetaLine® 910 Rubber Primer without applying pressure. Make sure that the first layer is not damaged when doing this.

Coat with MetaLine® Series 700 within a maximum of **20 minutes**.

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, another coat of MetaLine® 910 has to be applied

Note: Natural rubber can **discolor** every MetaLine® Series 700 coating. The reason for this is rubber resins that "bleed" out of the rubber in an uncontrolled manner and penetrates into the coating on top. The intensity of the discoloration depends on the quality of the rubber.

Pic. 16 MetaLine® 910 Rubber Primer (910 Base + 910 Solidifier)

Video 7.1 Application of MetaLine® 910 Rubber Primer

Video 7.2 Masking of edges with duct tape

Elastic surfaces and elastic foams

Synthetic elastomers, polyurethane, neoprene, soft PVC, sealing compounds and similar materials should be treated with MetaLine® 920 Elastomeric Primer (Pic. 17). Apply a thin layer by brush and overcoat with MetaLine® Series 500 within 15 to 45 minutes. **DO NOT spray!**

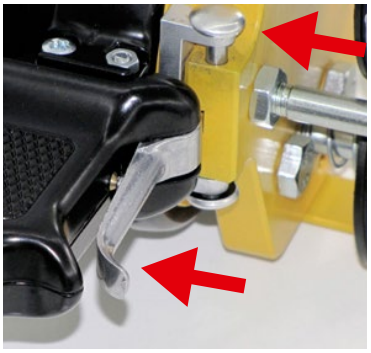
Pic. 17 MetaLine® 920 Elastomeric Primer

Compressed air supply

Connect compressed air (5 bar (73 psi), at least 350 liters/min (93 gal/min.) to the EURO quick coupling (NW 7.2) of the **air flow regulator** (Fig. 20) of the APPLICATOR S-700. The compressed air quality must be free of oil and water. An suitable filter unit (filtration size 0.01 μm at 5 bar (73 psi) must be connected upstream. The use of a compressed air dryer is generally recommended.

Trigger

When pulling the **trigger** (Pic. 18), material delivery is started if the double cartridge is inserted and the **material flow regulator** (Pic. 19) was opened slightly beforehand. The pistons of the APPLICATOR S-700 move forwards simultaneously and empty the double cartridge.



Pic. 18 Trigger (lower arrow) and trigger lock (upper arrow)

Trigger lock

To fix the trigger, the trigger must first be actuated and held. By pushing the slide to the right, the **trigger** (Pic. 18) can be fixed in the spraying position and released again by pressing it to the left.

Pull-back button (cartridge replacement)

By **pressing the pull-back button firmly** (Video 9.1) and simultaneously actuating the trigger, both pistons of the APPLICATOR S-700 move to the starting position (provided the material flow regulator is slightly open). The double cartridge can then be removed. If possible, do not move the S-700 pistons by hand.

Video 9.1 Pull-back button for cartridge replacement (hard to press!)

Material flow regulator

The **material flow regulator** (Pic. 19) on the backside of the APPLICATOR S-700 regulates the coating material output. Turning it clockwise increases the material delivery, turning it counterclockwise reduces the material output. The material flow regulator reacts with a time delay (sluggish) to adjustments. Material delivery only starts after approximately one full turn (at 5 bar / 73 psi air inlet pressure).

Pic. 19 Material flow regulator

Air flow regulator

By turning the **air flow regulator** (Pic. 20) in counter-clockwise direction, air flows through the transparent air hose to the spray nozzle and atomizes the contents of the MetaLine® Series 700 double cartridge.

The optimum air volume setting depends on the selected material quantity and the required degree of atomization. As from about 1/4 revolution (at 5 bar / 73 psi), a usable spray pattern starts to form. The greater the selected air volume, the finer the spray pattern. At the same time, however, the amount of spray mist increases enormously (material loss + contamination)! Do not select an air volume greater than that required for your actual work!

When the air flow regulator (Pic. 20) is closed, casting operations and injections can be carried out (see Chapter 12).

Pic. 20 Air flow regulator

Functional test before starting (without double cartridge)

Open the air flow regulator (Pic. 20):
Is there sufficient compressed air flowing through the air hose?

Pull the trigger (Pic. 18) **and open the material flow regulator** (Pic. 19):
Do the silver APPLICATOR S-700 pistons move forward smoothly?

Pull the trigger (Pic. 18) **and press the pull-back button** (Video 9.1):
Do the silver APPLICATOR S-700 pistons move backwards smoothly?

If the pistons don't move smoothly (stick-slip), follow the instructions in chapter 21: Care and maintenance)!

Weight compensation for stationary use

For the stationary use of the MetaLine® APPLICATOR S-700, a **weight balancer** is recommended (Pic. 21). This ensures fatigue-free operation even over long periods of time. The weight of the APPLICATOR S-700 is almost completely compensated!

Pic. 21 Weight balancer
(available at MetaLine®)

Trowel processing

! This page is only valid for the use of the trowelable MetaLine® 680 in combination with the APPLICATOR S-700

1. All previous instructions in chapters 1 to 7 are fully valid.
2. Unlike the sprayable versions of the 700 series, MetaLine® 680 is a purely **trowelable** material (Pic. 22).
3. There is no nozzle selection – Chapter 9 on nozzle selection does **not** apply. The supplied static mixers without atomizer attachment and without flow-restrictor must be used only.
4. The overcoating times of all abovementioned primers remain unchanged.
5. The heating time in the microwave must **not exceed 1 minute**. The material can also be processed without heating, provided that the base cartridge has not become stiff due to cold storage/transport.
6. After venting (chapter 11) the material can be extruded and trowelled – but NOT sprayed.
7. If coloring is required, MetaLine® 930 color pigment can be mixed in immediately after extrusion. Maximum 10 ml (0.35 fl oz) per cartridge of MetaLine® 680. Coloring is optional and has NO influence into the technical function.
8. MetaLine® 680 can be applied up to a thickness of 25 mm (1 in) in a single operation – also vertically (Pic. 23). At a higher layer thickness, the material begins to sag.
9. Overcoating with MetaLine® Series 700 can be carried out within 30 minutes **without additional priming**. In case of longer waiting times, proceed as described in chapter 13 (overcoating / solidification).

Pic. 22 MetaLine® 680 double cartridge (Base + Solidifier)

MetaLine® 680 trowelable elastomer

Nozzle selection	static mixer only	(no spray nozzles)
Processing time	10 min	
Consumption	1.2 kg/m² (0.24 lbs/ft²)	1,0 mm (40 mils) (without loss)
Overcoating time with 680 / Series 700	10 min minimum	at 20 °C (68 °F)
Overcoating time with 680 / Series 700	30 min maximum	at 20 °C (68 °F)
Solidification time	2 h	grindable
(20 °C / 68 °F)	1 day	mechanical load
	3 days	full mechanical load
	5 days	full chemical load

Pic. 23 MetaLine® contour spatula for convex/concave applications

Standard nozzles

All MetaLine® Series 700 cartridges are delivered including a **spray nozzle with a tip angle of 0°** (Pic. 24). For inaccessible areas, **spray nozzles with a tip angle of 90°** (Pic. 25) can be ordered in a short or long version. All nozzles achieve a conical spray pattern with a width of approximately 15 cm (6 in) (at a spraying distance of 30 cm (12 in).

Pic. 24
Spray nozzle 0°

Pic. 25
Spray nozzle 90°

Length-adjustable nozzles

Nozzles with a total length of 105 cm (41 in) are available for complex coating objects. These are alternatively available with a 0° or 90° material output. The length of the nozzles can be shortened if required. Open one of the two metal circlips with a plier. Pull off the hose and shorten it. Place a new circlip, assemble the hose and press the circlip firmly into place.

The nozzles can be guided **flexibly** by hand (Pic. 26) or fixed **rigidly** to the APPLICATOR S-700 using an aluminum air-supply tube (Pic. 27).

Pic. 26 Length-adjustable nozzle - flexible with plastic air-supply hose

Mounting flexible length-adjustable nozzle (Pic. 26)
Insert the flexible air-supply hose on the APPLICATOR S-700 front panel into the plug-in holder. Attach the 90° quick connector (Video 13.1) to the other end of the hose.

Mounting rigid length-adjustable nozzle (Fig. 27)
Slide the aluminum union nut (Pic. 28) onto the aluminum air-supply tube. Insert the air tube into the plug-in holder on the APPLICATOR S-700 front panel and screw tight. Attach the 90° quick connector (Video 13.1) to the other end of the tube.

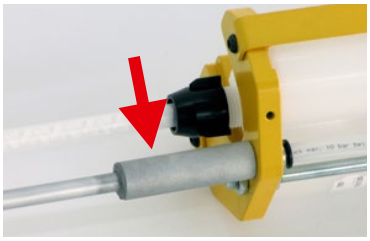
Pic. 27 Length-adjustable nozzle - rigid with aluminum air-supply tube

When using the length-adjustable nozzles, note the following special features:

1. Suitable **eye/face protection** (all-round safety goggles) is mandatory.
2. The **heating time** of the cartridges must always be halved (Chapter 10, Preparing the double cartridges).
3. Venting of the cartridges must be carried out manually **before** mounting the spray nozzle. Hold the open cartridges inclined over a waste bin so that the air bubble of the large cartridge is **beneath the cartridge outlet**. Press in the large black piston manually from behind with a finger, until the air and some material have emerged. Repeat this process for the small cartridge.
4. The material discharge (regulated with the material flow regulator) must be **high**, otherwise the nozzle will clog very quickly. Maximum spraying time 3 minutes per nozzle/cartridge.
5. Do not interrupt the spraying process by any means.
6. Never try to clear a clogged nozzle by increasing the pressure via the material flow regulator. Risk of nozzle or cartridge bursting!
7. If **particles** become visible on the coating area during spraying, interrupt the spraying process immediately and replace the entire nozzle. The material has started to solidify in the nozzle. Thus leading to material inclusions and defects in the coating.
8. Dispose each nozzle after use and do not reuse under any circumstances.

Video 13.1 Quick connector 90°

Due to the fast material reaction (approx. 1 minute) MetaLine® 785/795 are much more **time-critical** than MetaLine® 760 when using the length-adjustable nozzles.



Pic. 28 Aluminum union nut

Heating of double cartridges

MetaLine® Series 700 is designed as a **hot** processing system. Heat the sealed double cartridge in a microwave oven **(800-1200 Watts with turntable)** without interruption. Insert only one double cartridge at a time. For appliances without a turntable, remove the double cartridge after half the heating time, turn to the other side and heat for the remaining time. If the microwave has a grill, be sure to switch it off.

The heating time depends on the storage temperature of the cartridge and must be set on the microwave. The information on the right is for **guidance** only and can vary EXTREMELY depending on the ambient temperature and the power of the microwave! After heating, allow the cartridge to rest for at least 1 minute to ensure complete heat distribution in the cartridge.

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

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

10 °C (50 °F) cartridge temperature
app. 6 min. for MetaLine® 760
app. 5 min. for MetaLine® 785/795

20 °C (68 °F) cartridge temperature
app. 5 min. for MetaLine® 760
app. 4 min. for MetaLine® 785/795

30 °C (86 °F) cartridge temperature
app. 4 min. for MetaLine® 760
app. 3 min. for MetaLine® 785/795

Temperature control

Piston position: In the initial state, the two black cartridge pistons are positioned **recessed by 5 mm** (0.2 in) and should approximately align with the bottom end of the cartridge after heating and thermal expansion. If the black piston of the large cartridge protrudes **more than 5 mm** (0.2 in), the double cartridge is overheated and must **not** be used. In this case, allow it to cool down for 24 hours before using it again.

Air Bubble: The **large** cartridge contains a visible air bubble. Its **flow rate** can be used to check the required heating. To do this, turn the cartridge slowly several times. The air bubble should rise from one end of the cartridge to the other within **1-2 seconds**.

Assembly of double cartridges

MetaLine® 760 – can be processed only with the **long** standard nozzles (28 cm / 11 in) or the length-adjustable nozzles (Chapter 9, Spray nozzle selection). Do NOT use short standard nozzles (20 cm / 8 in).

MetaLine® 785/795 – can be processed with **all** available spray nozzles.

Grip the double cartridge from below as shown in video 17.1 and turn several times to ensure a homogenious internal heat-transfer. Pull off the red cartridge transport lock (Pic. 29) and remove the two black sealing caps (Pic. 30).

Check both cartridge openings for solidified material residues and remove these **completely** with a long pointed needle if necessary.

Place the black **flow restrictor** (Pic. 31) so that one hole is positioned over each cartridge opening. Both holes are the same size!

Attach the **spray nozzle** (Pic. 32), place the black **union nut** (Pic. 33) straight and **fasten it hand-tight**. Check that both half threads of the cartridges are exactly **aligned** and that the union nut can be screwed on straight and smoothly. Do not use any tools for tightening, as the plastic threads will otherwise overtighten and leak.

Insufficient tightening torque will result in unmixed material escaping from the thread during the coating process and drip onto the coating object!

! Do not press the black cartridge pistons into the cartridge during assembly. Otherwise, material will flow into the spray nozzle, causing an immediate material reaction and clogging the spray nozzle within 1 minute!

Insert the double cartridge **immediately** after assembly into the APPLICATOR S-700 and start processing (Chapter 11, Venting the double cartridge).

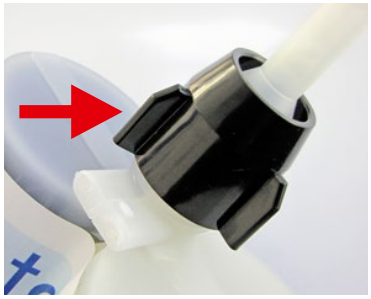
Pic. 29 Cartridge transport lock

Pic. 30 Both sealing caps of the double cartridge

Video 17.1 Assembly of the double cartridge

Pic. 31 Flow restrictor

Pic. 32 Standard spray nozzles



Pic. 33 Union nut - securely tighten manually

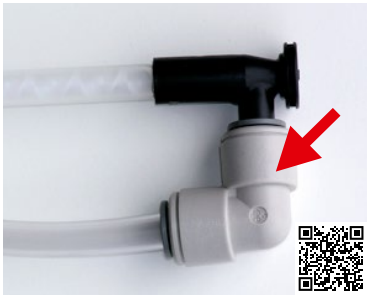
Inserting the double cartridge

Fully retract the silver APPLICATOR S-700 pistons (Chapter 7, Video 9.1). Place the large cartridge on the large piston and the small cartridge on the small piston and insert (Video 20.1). Make sure that the cartridge is not tilted in the APPLICATOR S-700! Do **not** apply pressure to the black cartridge pistons to avoid premature flow of material into the spray nozzle.

Caution! If material flows nevertheless into the spray nozzle, venting of the double cartridge and spraying has to be carried out within 60 seconds to avoid clogging of the nozzle.

Attach the air hose from the air flow regulator to the air connection of the spray nozzle (Video 20.2) and open the air flow regulator (Pic. 20) slightly (turn counterclockwise). Open the material flow regulator (Pic. 19) slightly (turn clockwise).

Video 20.1 Insert double cartridge



Video 20.2 Quick connector 90° to spray nozzle

Video 20.3 Venting of cartridges

Venting the double cartridge

Correct venting of the cartridge is of the utmost importance for the coating quality! Otherwise bubbles will form during solidification and the coating will be DESTROYED!

Always vent the cartridge facing **away** from the real coating object, as unmixed components will escape!

1. Hold the APPLICATOR S-700 with the spray nozzle upwards at an angle of approx. 45° (Video 20.3) and leave it in this position
2. Open the air flow regulator slightly
3. Turn the **black handle** (Pic. 18) to the **left** and pull the trigger
4. Continue to open the material flow regulator until material emerges
5. Spray material for at least 10 seconds to remove the air entrapped in the large cartridge (which would lead to mixing errors)
6. Do **not** release the trigger
7. Continue to hold the APPLICATOR S-700 with the spray nozzle at a **45° upward angle**
8. Turn the **black handle** (Pic. 18) to the **right** and repeat the venting process for the **small cartridge**
9. Check on the transparent mixing tube if both material components (transparent/colored) flow in evenly and a **homogenous tinting** is achieved
10. Do not release the trigger anymore

! Never attempt to clean a clogged spray nozzle by increasing the pressure using the material flow regulator (risk of cartridge bursting)!

Spray pattern adjustment and start of spraying

Atomization: Adjust the desired atomization with the air volume regulator. The higher the air flow, the finer the atomization – however, this also increases material loss and adjacent contamination. Use only as much atomizing air as is absolutely necessary!

Material quantity: Use the material flow regulator to regulate the desired **coating speed.** Increase the material quantity by turning clockwise and start coating immediately.

Spraying technique

Spray the MetaLine® Series 700 with a quantity discharge of material appropriate to the size of the object, preferably without interruption. Spray the surface systematically and evenly in a **criss-cross pattern** (alternate spraying at a 90° angle).

The material flow regulator setting must be readjusted as the double cartridge emptied. It is not possible to apply the entire double cartridge consistently with a single regulator setting. Due to the changing friction in the cartridge, the material flow regulator must be **opened** further as work progresses.

The use of a horizontal (Video 21.3 and Pic. 34) or vertical (Video 21.2) rotating rdevice is recommended for optimum processing and uniform coating thickness.

Return to the starting point of your spraywork after approx. 1 minute (MetaLine® 785/795) or 7 minutes (MetaLine® 760) at the earliest and repeat the spray process until the desired coating thickness is achieved (Video 21.1 – Video 21.5).

Ensure **sufficient edge coverage**! A **maximum layer thickness** of 0.1 mm (4 mils) **per pass** can be applied vertically without causing “runs”. Observe the following overcoating times:

minimum 1 minute and **maximum 15 minutes**
(MetaLine® 785/795)

minimum 7 minutes and **maximum 30 minutes**
(MetaLine® 760)

Coating interruption

It is strongly recommended **not to interrupt** the spraying process! If short interruptions (not longer than 40 seconds) cannot be avoided, material must be discharged for approx. 15 seconds facing away from the coating object. This is mandatory to resume a homogenous material-mix an a **failure-free** spray pattern. Only then continue with the actual spraying process. Otherwise there is the massive risk of an off-ratio mixing error which subsequently lead to disastrous blistering!

If the coating process is interrupted for **more than 40 seconds** with MetaLine® 785/795 or **more than 3 minutes** with MetaLine® 760, the material in the spray nozzle will react and clog the nozzle. If this occurs, the spray nozzle as well as the flow restrictor must be **replaced**.

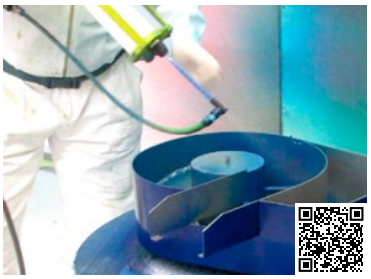
Cartridge change

After emptying and removing a cartridge from the APPLICATOR S-700, work can continue immediately with the next cartridge. There is **no** minimum waiting time between. **Each** cartridge must be vented as described.

Different colors can be sprayed on top of each other.

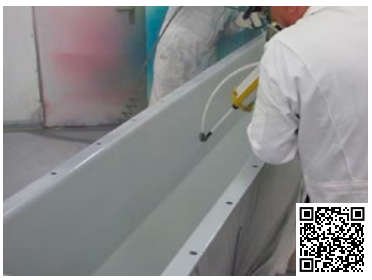
Video 21.1 Spraying technique on vertical surfaces

Video 21.2 Spraying technique on vertical rotating devices



Video 21.3 Spraying technique on horizontal rotating devices

Video 21.4 Spraying technique for overhead applications



Video 21.5 Spraying technique for 2 persons working parallel

Creating overlaps

Complete the first part of the coating. **IMMEDIATELY** remove the duct tape for edging and apply a coat of MetaLine® 900 to the MetaLine® coating edge and the adjacent metal surface. After 15 minutes, tape and cover the existing touch-to-dry MetaLine® coating at a distance of 3 mm (0.12 in) from the edge.

Double-prime the new coating area and the existing coating edge with MetaLine® 900 Universal Primer as specified. Apply and finalize the MetaLine® Series 700 coating within the maximum overcoating time. Carefully remove the duct tape within **15 minutes at the latest** (Chapter 13, Removing duct tapes). Sand flat after 6 hours at the earliest. Do not overheat the coating when doing so.

Pic. 34 MetaLine® Rotating device, height-adjustable and movable (available at MetaLine®)

Coating thickness & coating thickness measurement

During processing: the wet film thickness of a MetaLine® Series 700 coating can be measured **mechanically**! Prick into the wet coating with a thin needle during processing. The coating thickness becomes visible at the tip of the needle. The penetration depth can be read to 1/10 mm (4 mils) using the MetaLine® wet film thickness measuring lens (Pic. 6). MetaLine® Series 700 coatings solidify **without shrinking or swelling**. Therefore the wet film thickness measurements correspond to the dry film measurements!

After processing: the dry film thickness of a MetaLine® Series 700 coating can be measured **electronically**. The measurement can be carried out approx. 10 minutes after the end of spraying.

The minimum coating thickness of MetaLine® Series 700 should be 1 mm (40 mils). A thinner layer is not recommended, as depending on the application, the elastic film may no longer have sufficient mechanical resistance. The maximum thickness is not limited.

Large areas

From an area of 10 m² (12 ft²) at the latest, two APPLICATOR S-700 should be used **simultaneously** in order to comply with the maximum overcoating times. For areas larger than 100 m² (120 ft²), using the MetaLine® HSM-700 hot spray system (Pic. 35) can be considered as an alternative.

Non-stick coatings

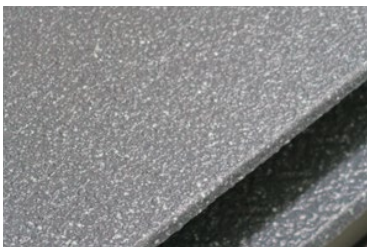
MetaLine® Series 700 double cartridges with the suffix “980” (non-stick properties) must be **shaken** intensively after heating. Hold the red cartridge transport lock and the two black pistons so that they are protected from falling out. When using these additive types, the standard material (without the “980” additive) should first be applied onto the primed surface before the “980” version can be sprayed on top.

Pic. 35 MetaLine® HSM 700 Digital hot spray system for larger areas

Structured coatings

The desired MetaLine® coating must first be completed with a smooth finish. After 5 minutes (for 785/795) or 10 minutes (for 760), **briefly** allow additional coating material to rain down from a distance of about 2 metres (6.5 ft) (Pic. 36). The colder the MetaLine® Series 700 coating material is, the **coarser** the structure will be. Use minimal atomizing air. Repeat if necessary until the desired texture is visually achieved.

Excessive amounts of structuring material lead to a self-leveling of the structure and an undefined orange peel-like, round structure.



Pic. 36 MetaLine® Series 700 structured coating

Antistatic coatings

MetaLine® Series 700 coatings are also available with an antistatic additive. **Shake** the double cartridges intensively after heating. Hold the red cartridge transport lock and the two black pistons so that they cannot fall out.

Anti-static coatings must not be mechanically machined after solidification, as the change in conductivity will otherwise be lost.

Translucent coatings

MetaLine® Series 700 coatings are available pigmentless in the color “natural” (Pic. 37). Up to a coating thickness of approx. 1.5 mm (60 mils), these versions are transparent (translucent) but not crystal clear. At higher layer thicknesses, an ivory-colored tint is created. Due to the air atomization, small air inclusions are visually unavoidable. The translucency is gradually lost under mechanical load and increased UV exposure.

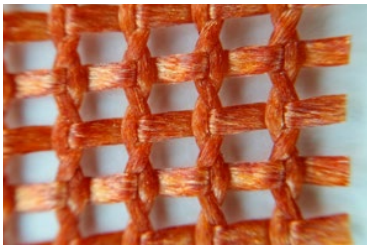
Pic. 37 Translucent MetaLine® Series 700 coating (color “natural”)

Brushing / troweling / rolling

Application by brush or paint roller is not possible. Small troweling jobs can be carried out within 1 minute (785/795) and 7 minutes (760) after application. The MetaLine® 680 should be used instead for bigger troweling jobs.

Reinforcement

MetaLine® Series 700 coatings can be reinforced with metallic stainless steel mesh or the textile MetaLine® reinforcement mesh (Pic. 38). The use of **multiple** layers is possible. Glass fiber fabric and similar materials are COMPLETELY unsuitable for this purpose. Apply the mesh into the wet coating in the middle of the planned coating thickness. Remove air bubbles by applying trowel pressure. Ensure complete saturation. There must not be any contact to the primer, but the fabric must be embedded floating and **completely covered** (saturated).



Pic. 38 Textile MetaLine® reinforcement mesh

Casting technique

Remove the black atomizer attachment from the spray nozzle. The fine tip eases precise casting. This can be used to carry out smaller **casting or injection work** (Video 22). Bring to shape with a spatula or similar tool.

Only heat the MetaLine® Series 700 double cartridges for **half the time** as specified in chapter 10. Owing to the missing atomizing air (cooling effect) cracking might occur otherwise on the cooled off casting.

A **minimum clearane gap** of 3 mm (120 mils) to the casting mold is required. Surfaces as casting molds, to which no adhesion shall be achieved, must be isolated with MetaLine® release agent and allowed to dry off for 15 minutes.

For casting applications over 2 kg (4.4 lb) per casting, we recommend the MetaLine® 685, which can be processed for about 25 minutes.

Video 22 Casting technique

Injecting

The rapid reaction of MetaLine® Series 700 coatings causes the flow to stop after 1 Minute (MetaLine® 785/795) or 5 minutes (MetaLine® 760) at the latest. An injection process must not last longer than this under any circumstances. Otherwise there is a risk of bursting the pressurized double cartridge.

Overcoating with the same or softer material

Minimum overcoating time	Maximum overcoating time at 20 °C (68 °F)
7 minutes (MetaLine® 760)	30 minutes (MetaLine® 760)
1 minute (MetaLine® 785)	15 minutes (MetaLine® 785)
1 minute (MetaLine® 795)	15 minutes (MetaLine® 795)

Overcoating with harder material

Minimum overcoating time	Maximum overcoating time at 20 °C (68 °F)
20 minutes (MetaLine® 760)	30 minutes (MetaLine® 785/795)
5 minutes (MetaLine® 785)	15 minutes (MetaLine® 795)

Observe the time specifications. Otherwise, tension-caused blistering or delamination may occur. These times are shortened at temperatures above 20 °C (68 °F)!

!

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

If more than 2 hours (MetaLine® 785/795) or more than 4 hours (MetaLine® 760) have elapsed after applying the last coat, the surface must be roughened, vacuum cleaned, degreased and primed with **MetaLine® 920 Elastomeric Primer**

End of work

Release the trigger. Close the air flow regulator. To remove the double cartridge (Chapter 7, Video 9.1), leave the **material flow regulator slightly open**!

Removing duct tapes

Remove duct tapes **latest** 15 minutes after finishing the coating work. Always remove duct tapes at an angle of 180° to the coating and “cut” the fresh coating with the duct tape. Do NOT peel off vertically (90°) to the coating, otherwise coating edges may disbond.

For coating thicknesses of 3 mm (120 mils) or more, the coating must be **cut** with a sharp blade before the duct tape can be removed. Ensure that no tape residues remain below the coating edge.

Solidification

MetaLine® Series 700 requires 5 days for its complete **chemical** solidification (at 20 °C / 68 °F surface temperature). It can be mechanically loaded after 24 hours. Higher temperatures shorten the time. As a rule, a temperature variation of +/- 10 °K will halve or double the reaction time. In order to accelerate solidification, the coating can be heated up to a MAXIMUM of 50 °C (122 °F) from approx. 2 hours after the end of work. Use infrared radiation or similar but **DO NOT use an open flame.**

Reuse of opened cartridges

In case of partially empty cartridges, dispose the spray nozzle and flow restrictor after use. Insert a suitable tool (long screwdriver) from below into the small cartridge while holding the cartridge above a waste bin. Press slightly against the **black piston** until material emerges and the cartridge opening is cleaned completely from cured material. Repeat the process for the large cartridge. Clean the threads and install the two black sealing caps and the red transport lock again.

When reusing the cartridge, **reduce the heating time in the microwave proportionally** according to the remaining content. Before attaching a new flow restrictor and nozzle, check both cartridge openings for cured material. Remove this **completely** using a long pointed needle since otherwise the nozzle might become clogged resulting in serious malfunctions (including risk of cartridge bursting)!

Pic. 39 Settling of color pigments (small cartridge)

Storage conditions

Store the materials in closed containers. Use an approved dry storage area for highly flammable substances at approx. 20 °C (68 °F). Keep away from flames, moisture, ammonia or substances containing active hydrogen. Ensure adequate ventilation. Store MetaLine® Series 700 double cartridges **horizontally and dark in the original packaging.**

When storing the products for an extended period of time or under extreme transport conditions, **settling** of the color pigments will occur (Pic. 39). This precipitation has no effect on the product function or processing quality. Only the color intensity varies. These cartridges can be processed safely.

There is an expiry date on all components. Do not use after the expiry date!

Disposal

The completely emptied cartridges consist of polypropylene and can be recycled. Cured waste can be disposed with the household garbage (depending of local/national laws).

Color stability

MetaLine® Series 700 are rubber-like, technical coatings and not an optical varnish. Color stability **cannot** be guaranteed. Similiar components coated with different cartridges may have different color nuances. This is due to varying atomization air quantities, different application temperatures and others.

When processing outdoor, as well as with high UV radiation indoor (halogen spotlights), yellowing already occurs during processing. The same applies to mechanical stress, which additionally leads to **matting** (loss of gloss).

Non-porosity compliance

Holyday detectors can be used to check the **non-porosity compliance** of MetaLine® Series 700 coatings. The test voltage should be between 2,000 and 5,000 volts. The test must be carried out at the earliest 12 hours after the end of application.

Turning

MetaLine® 760/785/795 can be **machined** and mechanically finished. The harder the selected coating, the easier and more precise the finishing will be. The thickness of the coating must be dimensioned ensuring sufficient excess. After solidification, machining up to +/- 0.01 mm (+/- 0.4 mils) is possible.

Rougher surface structures as well as higher tolerances result from machining than it is the case with metals. Basically, the process is similar to machining **medium soft rubber**. A superficial porosity is due to the spraying process and cannot be avoided!

MetaLine®-Type	**Cutting speed** m/Minute	**Feed** mm/Revolution	**Tool**	**Tool Shape**			**Surface quality** medium roughness
				α	β	ɣ	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

Milling

Feed rate between 0.05 mm (2 mils) and 0.2 mm (8 mils). If the feed rate is too low, the surface will become rugged, if the feed rate is too high, the surface will become grooved. Counter-rotation machining is preferable to synchronised machining. Peripheral speed between 200 and 400 m/min (650 and 1.300 ft/min.) using a milling cutter made of a fast turning tool steel. Select clearance angles y = 10° and y = 25°. To ensure favourable chip removal, the milling cutter should only have one tooth (no milling head). To avoid overheating, cool with drilling fluid.

Drilling

When drilling, typical steel drills may be used. Cutting speeds between 40 and 50 m/min. (140 ft and 180 ft/min.). Feed rate as small as possible (0.01 to 0.03 mm/rev. / 0.4 to 1.2 mils/rev.). Using MetaLine® 795 a higher feed rate can be selected. With MetaLine® 760 and MetaLine® 785, the diameters of the drill hole are up to 5 % smaller than the drilling diameter due to the soft material character.

Grinding

With sanding discs made of aluminium oxide with a ceramic bond, a fine grit, medium hardness, smooth surfaces are achieved. With MetaLine® 760, the grinding speed must be high (30 - 50 m/sec. / 100 - 165 ft/sec.). **Cool** with drilling fluid.

Cutting off

If 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. 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 achievable.

Health protection

Carry out processing only if an exhaust system is available (paint mist extraction). **Ventilate well** during operation. Do not inhale vapors and dusts. Avoid skin or eye contact. Do not eat, drink or smoke during processing. Wear closed 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!

Hot liquid - handle with care. Avoid any overpressure in the cartridges (e.g. in the case of a clogged nozzle). Otherwise cartridges may burst and hot material might emerge from the pistons backwards (risk of injuries). **DO NOT** try to empty clogged nozzles by increasing the material output volume.

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	Seek medical assistance at once. Drink water to dilute. Do **not** induce vomitting.
Fire	Use CO_2, foam or extinguishing powder to extinguish the fire. Firefighting must be carried with protective clothing and breathing apparatus.
Environment	Do not allow materials to enter drains/waste water.

Declaration according to REACH (Europe)

MetaLine® 900 Base	GHS02, GHS07	Methyl-Ethyl-Ketone (MEK) Bisphenol-A-Epichlorhydrin resin
MetaLine® 900 Solidifier	GHS02, GHS08	Methyl-Ethyl-Ketone (MEK) 4,4-Methylene Bisphenyl Isocyanate
MetaLine® 910 Base	GHS02, GHS07	Methyl-Ethyl-Ketone (MEK) Bisphenol-A-Epichlorhydrin resin
MetaLine® 910 Solidifier	GHS02, GHS08	Methyl-Ethyl-Ketone (MEK) 4,4-Methylene Bisphenyl Isocyanate
MetaLine® 924 Base	GHS02, GHS07	Methyl-Ethyl-Ketone (MEK) Bisphenol-A-Epichlorhydrin resin
MetaLine® 924 Solidifier	GHS02, GHS07, GHS08	Methyl-Ethyl-Ketone (MEK) 4,4-Methylene Bisphenyl Isocyanate
MetaLine® 700 Base	GHS08	2,4 Diisocyanat-toluene
MetaLine® 700 Solidifier	GHS08	Diethyltoluenediamine
MetaLine® 995	GHS02, GHS07	Methyl-Ethyl-Ketone (MEK)

Flammable (GHS02)

Irritant (GHS07)

Health hazard (GHS08)

No or insufficient material dispatch

Not enough coating material is emerging from the nozzle:

– *Air inlet pressure at APPLICATOR S-700 too low*
– *Open material flow regulator further*
– *Clogging of nozzle or cartridge. Attach a new flow restrictor and a new spray nozzle*
– *Material temperature too low (heat for an extended period of time)*

Particle inclusions

Partly clogged spray nozzle resulting from interrupting spraying for too long or spraying too slowly:

– *Replace the flow restrictor and the spray nozzle*

Non-smooth surface

Material temperature in the cartridges is too low resulting in insufficient flow behavior (orange peel forming):

– *Open air flow regulator further*
– *Open material flow regulator further*
– *Heat double cartridge for a longer period of time*

Drops

An insufficient tightening torque on the black 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 / running off

Applying the coating too quickly or coating the same spot for too long results in runs & sags:

– *Spray on less material*
– *Do not overcoat before 1 minute (MetaLine® 785/795) or 7 minutes (MetaLine® 760) have elapsed*

Blistering

During the solidification process, blisters form in the coating:

– *Insufficient venting of the cartridges at the beginning of the spray process*
– *Interruption of the spraying process without subsequent short-term material discharge prior resuming to work (turned away from the coating object). Both errors lead to an impaired mixing ratio and thus to material softness, insufficient adhesion, stickiness and local blistering and delamination*
– *Cartridge leaking (refer to extra column)*

Insufficient edge coverage

The coating is applied too fast without considering the material flow behavior at the edges:

– *Insufficient edge radius (min. 3 mm / 0.12 in)*
– *Coat edges several times extra*

Pinholes

Small, needle-shaped holes (approx. 1 mm / 0.04 in) in the surface due to applying the coating too fast. The atomizing air cannot escape completely:

– *Apply more slowly and reduce the discharge quantity*
– *Examine the substrates for porosities and fill up*

Wetting disturbances

Large, round circles (approx. 3 mm / 0.12 in) on the surface. So-called “fish eyes” (wetting disturbances):

– *Oil particles (e.g. silicone spray) in the compressed air used or in the ambient air*

Intercoat delamination

Delaminations / layer separation within the coating. Inspection should take place no earlier than 12 hours (!) after work end:

– *Observe the maximum overcoating time*
– *Check compressed air for moisture and connect a more efficient oil/water filter unit*

Adhesion problems

Large-area (blister-free!) detaching from the substrate:

– *Insufficient surface roughness / preparation*
– *Non-compliance with overcoating times*
– *Dew point problems*
– *Wet compressed air*
– *Wrong primer selection and / or processing*
– *Surface temperature below 15 °C (59 °F) during application*
– *Re-commissioning too early*

Edge delamination

Delamination of coating edges:

– *Coated beyond the prepared / primed area*
– *Edges not masked and bordered*
– *Insufficient coating thickness at the edge*
– *Incorrect use of paper tape instead of textile reinforced tape*
– *Delayed removal of masking tape*
– *Edge design against the direction of load or flow*

Insufficient coating thickness

The coating thickness does not meet the specified requirements:

– *Failure to conduct the wet film thickness measurement correctly (Chapter 12)*
– *Overcoat using the correct procedure (Chapter 13, Overcoating)*

Cartridge leaking

Material leaks from the black cartridge piston and contaminates the APPLICATOR S-700. This type of cartridge failure leads to coating defects (softening / blistering) because the mixing ratio is incorrect. The cause is excessive pressure in the cartridge, caused by:

– *Clogging of the spray nozzle combined with increased material pressure by opening the material flow regulator*
– *Significantly low material temperature*
– *Significantly high material temperature*
– *Incorrect nozzle selection for MetaLine® 760 (short standard nozzle)*

Insufficient color saturation

The substrate – or edges – shine through the coating

– *Minimum coating thickness of 1 mm (40 mils) not achieved*
– *Pigment segregation in the cartridge due to expired shelf-life*
– *Extreme color contrasts in the substrate due to design conditions (please contact us)*

Soft or non-cured spots

Softer or even non-solidified areas can locally be found in the coating:

– *For failure reasons, see menu item “Blistering”*

MetaLine® 924 Borderline Corrosion Protection

Mixing ratio	1.1 : 1		per weight
Mixing ratio	1 : 1		per volume
Consumption	90 g/m² (0.29 oz/ft²)		
Number of coats	ONLY 1 single coat		
Processing time	8 h		at 20 °C (68 °F)
Overcoating time	6 h	minimum	at 20 °C (68 °F)
Overcoating time	10 days	maximum	at 20 °C (68 °F)
Application area	ONLY on metallic substrates		

MetaLine® 924 Borderline Corrosion Protection (924 Base and 924 Solidifier)

MetaLine® 900 Universal Primer

Mixing ratio	3 : 1		per weight
Mixing ratio	3.15 : 1		per volume
Consumption	80 g/m² (0.26 oz/ft²)		per layer
Number of coats	2		
Processing time	4 h		at 20 °C (68 °F)
Overcoating time (900)	15 min	minimum	at 20 °C (68 °F)
Overcoating time (900)	1 h	maximum	at 20 °C (68 °F)
Overcoating time (700)	15 min	minimum	at 20 °C (68 °F)
Overcoating time (700)	1 h	maximum	at 20 °C (68 °F)
Application area	Solid surfaces and onto MetaLine® 924		

MetaLine® 900 Universal Primer (900 Base and 900 Solidifier)

MetaLine® 910 Rubber Primer

Mixing ratio	100 : 4		per weight
Consumption	200 g/m² (0.66 oz/ft²)		per coat
Number of coats	2		
Processing time	5 h		at 20 °C (68 °F)
Overcoating time	1 h	minimum	(1st layer)
at 20 °C (68 °F)	12 h	maximum	(1st layer)
Overcoating time	5 min	minimum	(2nd layer)
at 20 °C (68 °F)	20 min	maximum	(2nd layer)
Application area	Only on (natural) rubber		

MetaLine® 910 Rubber Primer (910 Base and 910 Solidifier)

MetaLine® 920 Elastomeric Primer

Mixing ratio	ready to use		
Consumption	60 g/m² (0.2 oz/ft²)		
Number of coats	1		
Overcoating time	15 min	minimum	
at 20 °C (68 °F)	45 min	maximum	
Application area	Polyurethane, acrylics, sealing compounds, foams		

MetaLine® 920 Elastomeric Primer

MetaLine® 760 Elastomeric Coating

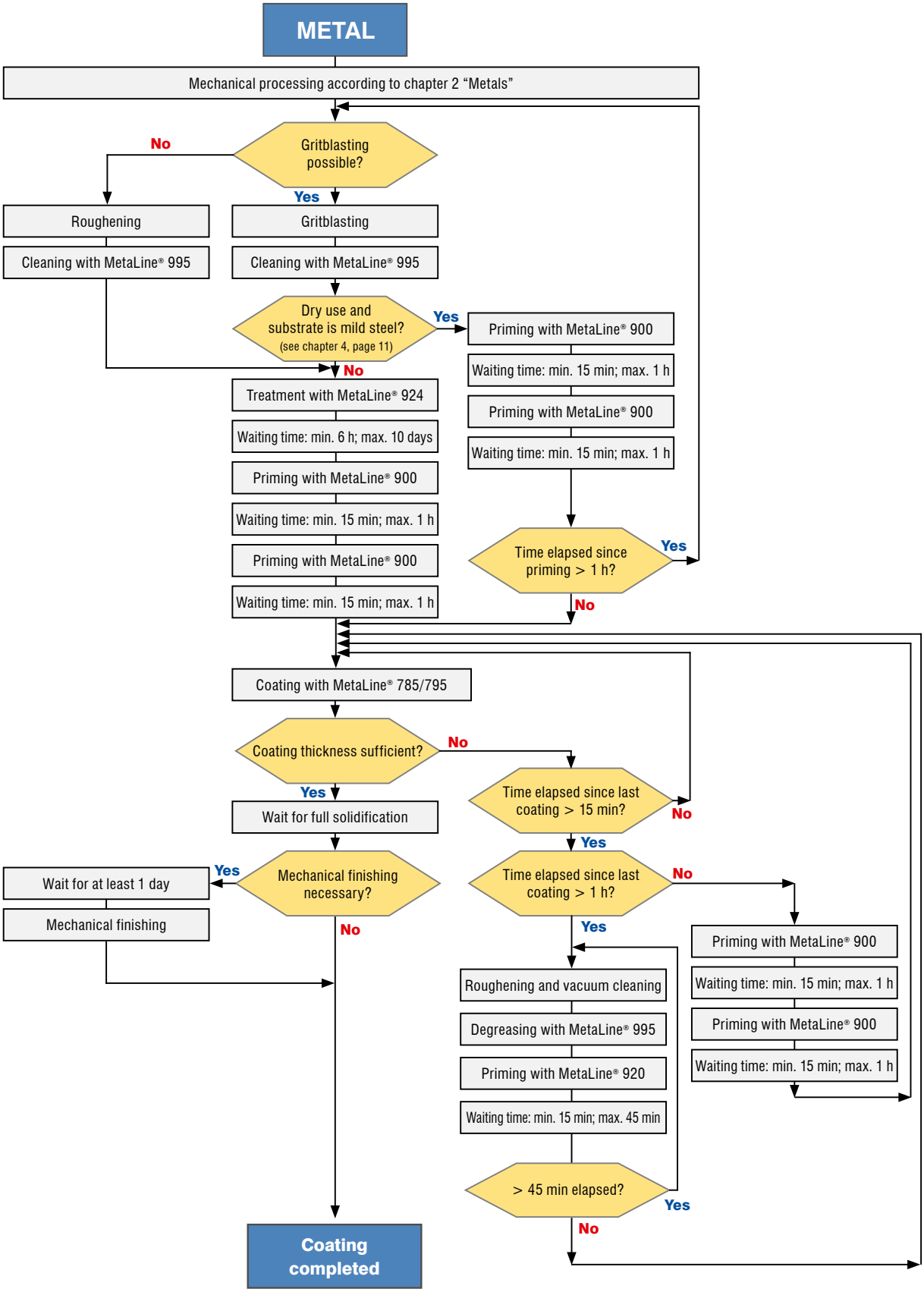
Nozzle selection	only **long** standard nozzles and length adj. nozzles	
Processing time	7 min.	
Consumption	1.25 kg/m² (0.25 lbs/ft²)	s=1,0 mm (40 mils) (without loss)
Overcoating time	7 min. minimum	at 20 °C (68 °F)
Overcoating time	30 min. maximum	at 20 °C (68 °F)
Solidification time at 20 °C (68 °F)	1.5 days	mechanical load
at 20 °C (68 °F)	4 days	full mechanical load
at 20 °C (68 °F)	6 days	full chemical load

MetaLine® 785 / 795 Elastomeric Coating

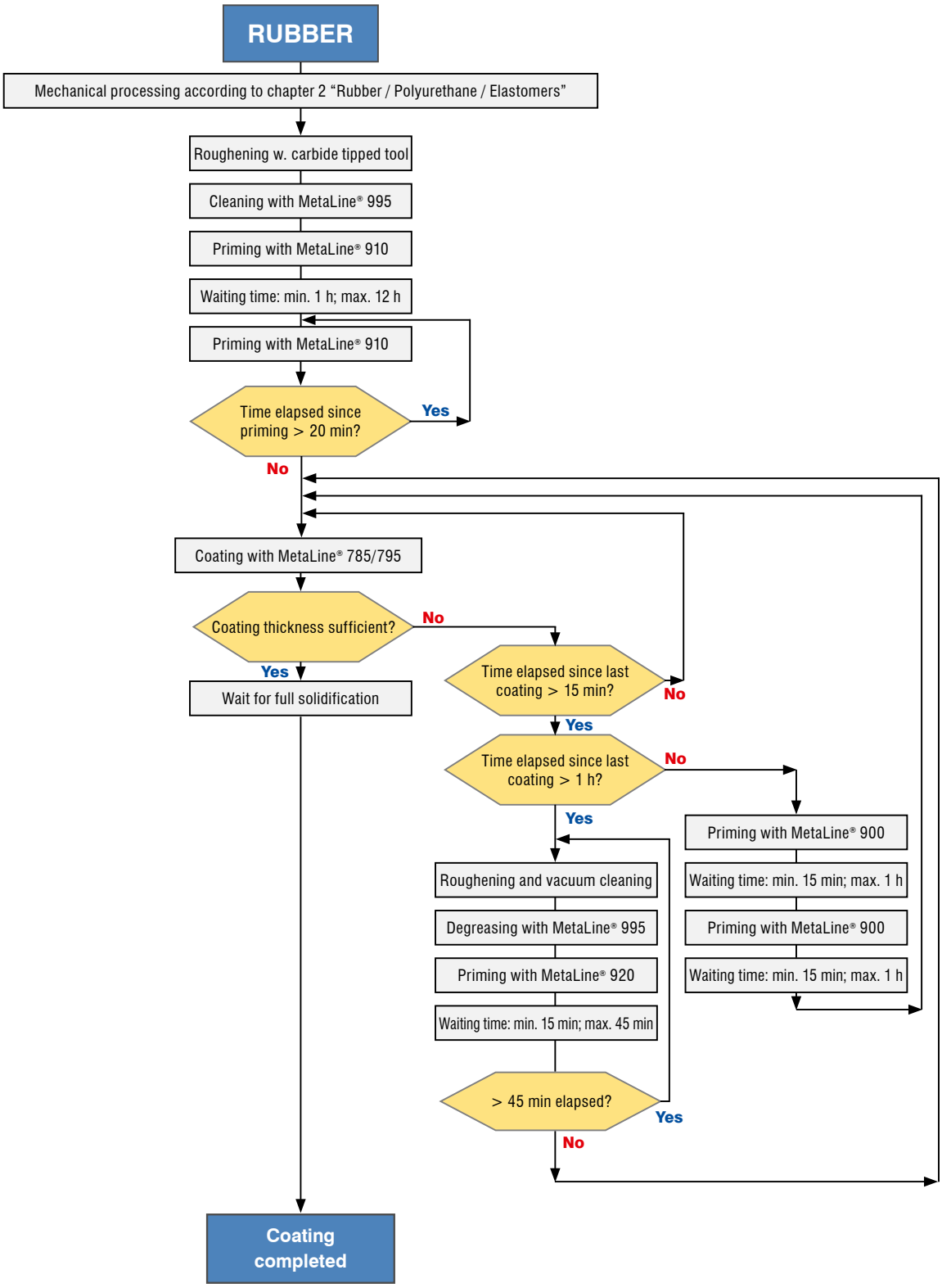
Nozzle selection	**all** standard nozzles and length adjustable nozzles	
Processing time	1 min.	
Consumption	1.2 kg/m² (0.24 lbs/ft²)	s=1.0 mm (40 mils) (without loss)
Overcoating time	1 min. minimum	at 20 °C (68 °F)
Overcoating time	15 min. maximum	at 20 °C (68 °F)
Solidification time at 20 °C (68 °F)	1 day	mechanical load
at 20 °C (68 °F)	3 days	full mechanical load
at 20 °C (68 °F)	5 days	full chemical load

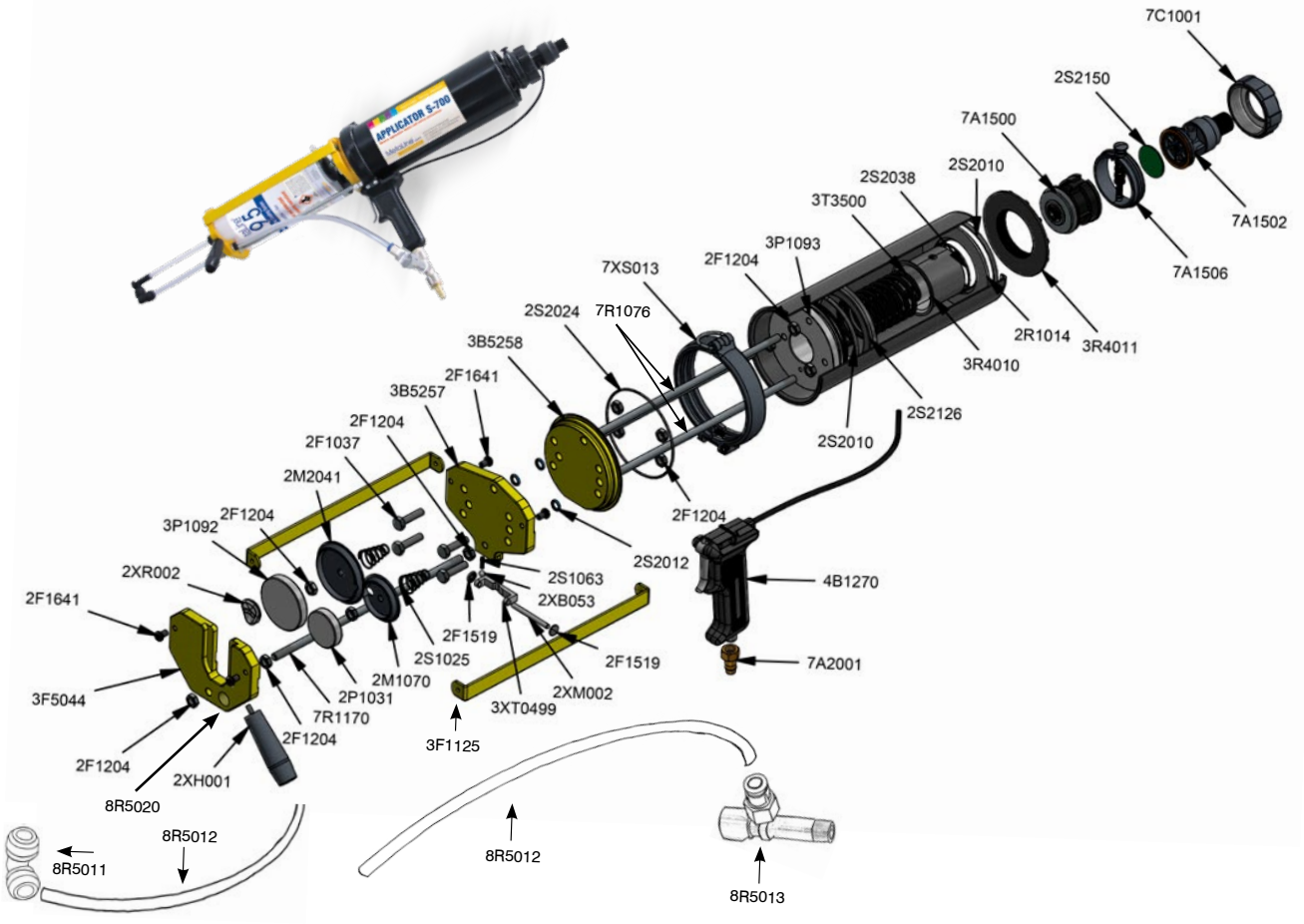
Depending on the geometry of the part, there is an unavoidable spray mist loss of 20 % to 100 %, which is not included in the material consumption figures above.

Only valid for MetaLine® 785 / 795



Only valid for MetaLine® 785 / 795





2F1037	M8 x 30 mm Bolt
2F1204	M8 Lock Nut
2F1519	Starlock Washer
2F1641	M6 x 10 mm Button Head Screw
2M1070	300 ml Cartridge Support
2M2041	600 ml Cartridge Support
2P1031	Plunger Ally 42 mm
2R1014	Reducer Flange
2S1025	Cartridge Locater Spring
2S1063	Spring S3 airgun valve
2S2010	O-Ring
2S2012	O-Ring (BS 109)
2S2024	O-Ring
2S2038	O-Ring

2S2126	3 7/8" Piston U Seal
2S2150	Dump Valve Diaphragm
2XB053	Bearing
2XH001	Handle
2XM002	Plate Shaft
2XR002	Return Pusher
3B5257	Bulkhead Plate
3B5258	Bulkhead
3F1125	Frame
3F5044	Front Plate
3P1092	Plunger Ally 60 mm
3P1093	Piston (Including Air Return Fitting)
3R4010	Reducer
3R4011	Backing Ring
3T3500	Coiled Tube
3XT0499	Trigger Lock

4B1270	Air Gun Butt Assembly (Trigger Lock)
7A1500	Dump Valve Body Assembly
7A1502	Regulator Asem. (Incl. O-ring/Washer)
7A1506	Spool Valve Assembly
7A2001	European Quick Release Fitting
7B6551	Barrel 272 mm
7C1001	Air Gun Back Cap
7R1075	Rod 265 mm
7R1076	Plunger Rod 262 mm (2 x)
7R1170	Rod 270 mm
7XS013	Barrel Strap (including screws/nuts)
8R5011	Quick Connector 90 °
8R5012	Air hose
8R5013	Air Flow Regulator
8R5020	Air Connector M17/1

Disconnect the APPLICATOR S-700 from the **compressed air supply** before carrying out any maintenance work. After use, clean the outer casing with a weak cleaning agent (e.g. alcohol). Check all screw connections for tightness once a month. Apply some lubrication oil (resin-free) to the air connection to protect and lubricate the internal surfaces exposed to air.

Do not allow any cleaning agent or coating material to get inside the APPLICATOR S-700. If the two pistons (7R1076) do not move **smoothly**, please grease them. If problems persist, replace the seals 2S2024 and 2S2012.

The APPLICATOR S-700 is manufactured in accordance with the European Machinery Directive CE 010195.

Notes

Technical assistance: +49 (0)7034 31000

With over 60 years of experience,
MetaLine® stands for the protection,
preservation and reconstruction
of extremely impacted components

... changing surfaces to the better!

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protect repair save cover improve

Processing Instruction V700UR (EN), December 2024

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