MetaLine®.com

surface protection

Elastomeric assembly coatings

Storage, Packaging, Transport, Handling, Gripping, Feeding, Separation, Control, Assembly, Automation, Robotics

MetaLine® Series 500/700

Durable protection against scratches, marks, stickiness, abrasion, noise & discoloration

with FDA conformity

Feeding optimization: silent, gently and safely . . .

MADE IN GERMANY

60 YEARS OF EXPERIENCE

MetaLine® Series 500 / 700

Duroplastic spray coatings for solving handling problems in feeding and assembly technology

MetaLine® Series 500 – extremely variable, for the highest precision and individually adapted coatings up to about 1.5 mm coating thickness

MetaLine® has been involved in coating materials for active surface protection for over 60 years. The processes are leading in assembly automation and are recommended by almost all important European robotics OEM manufacturers ...

MetaLine® Series 500/700 consists of two elastomeric coating systems with feeding properties that are **individually adapted to the conveyed parts**. Why? Because a dry silicone ring requires different coating properties than an oily screw or a delicate plastic cap – whether in conveying, gripping, clamping, sorting or mounting!

During application, the following parameters are systematically aligned:

Hardness	*60 to 98 Shore A*
Stiction	*my(0) 0.1 to 0.7 slippery to slip-resistant*
Layer thickness	*0.5 mm to 20 mm*
Thickness profile	*E.g., partial bowl base reinforcements*
Surface structure	*Mirror-smooth, velvety profiled or grained*
Electrical conductivity	*Electrically insulating up to anti-static*
Color and contrast	*White to black (glossy only)*

This variable adjustment optimizes the conveying speed, prevents scratches and minimizes waste. A unique and outstanding MetaLine **quality feature**: No other lining method can influence surface properties more directly or precisely.

MetaLine® – a milestone in the **transport optimization** of bulk items!

MetaLine® Series 700 – extremely wear and impact-resistant for coating thicknesses starting from 1.5 mm, and simpler component geometries

MetaLine® coatings understand what sensitive parts require . . .

Wear reduction
Scratch protection
Feeding optimization
Non-stick function
Service life extension
Shock absorption
Noise deadening

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

Application Areas

MetaLine® coatings for the automation industry

Fast and cost-effective transport process optimization

- Vibratory bowl feeders
- Linear vibratory conveyors
- Spiral elevators
- Steep belt conveyors
- Multi-jaw grippers
- Vibratory hoppers
- Workpiece holders
- Tool pads
- Infeed chutes
- Ultrasonic welding frames
- Vibration welding frames
- Load hooks
- Workpiece magazine
- Drive rollers
- Hold-down devices
- Clamping tools
- Screw conveyors
- Dosing devices
- Tube conveyors
- Weighing scales
- Blister packaging machines
- Parts washers
- Assembly supports
- Pneumatc tools
- Stainless steel wire mesh trays
- Diabolo rollers
- Conveyor belts
- Guideways

FDA Conformity as per CFC 177.1680 (Title 21)
EU No. 1935/2004

MetaLine is partner for many "Fortune 500" companies like:

ABB – Agfa – Airbus – Alstom – Audi – BHP Billiton - BMW – Boehringer – Böllhoff – Bombardier – Bosch – Bugatti – Coca-Cola – Continental – Dassault – Delphi – Fairchild – Faurecia – Feintools – Festo – Fiat – fischerwerke – Freudenberg Gilette – Hewlett-Packard – ITT – Johnson – Kraft Foods – Liebherr – Lufthansa – Kellogg – Krauss-Maffei – Magna MANdiesel – manroland – Mercedes-Benz – Metso – Nissan – Oerlikon – Pfizer – Playmobil – Porsche – Procter & Gamble PSA – Schaeffler – Siemens – SKF – Stihl – Swarovski – Thyssen Krupp – Toyota – Tyco – Volkswagen – Wacker Chemie Wrigley – ZF Friedrichshafen . . .

Vibratory Feeder Bowls

MetaLine® Serie 500/700 – **OEM-Coatings for scratch and mark protection**

Sprayable elastomeric coatings for optimizing conveying characteristics and noise reduction.

Series 500: For individually adapting the coating to the parts to be conveyed (e.g. oily, anti-static, non-stick, structured) or for complex geometries and custom tooled equipment.

Series 700: Optimally suited for simple structural bowl designs without complex tooling.

- vibratory feeder bowls
- centrifugal feeders
- stepped feeder bowls
- cylindrical feeder bowls
- conical feeder bowls
- spiral elevators
- tee nut feeders

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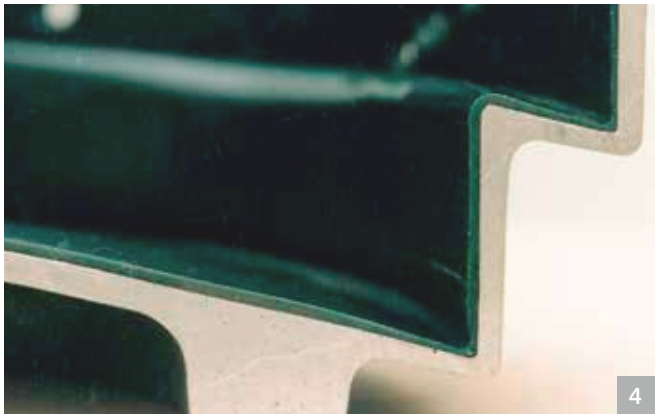
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Reference

- individual adaptation of the static friction and the coating structure to the conveyed material
- high geometric accuracy and exceptionally wear resistant
- approved by all leading European vehicle manufacturers

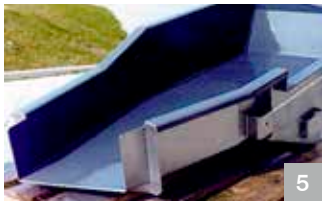
Vibratory Conveyors

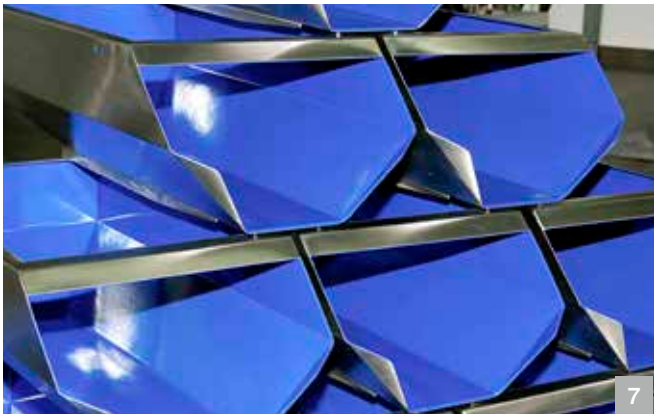
MetaLine® Series 700 – **Coatings for surface protection in vibration control technology**

Elastomeric surface treatment for lining vibratory linear feeders. Parts protection, noise reduction, feeding optimization and equipment lifetime extension. FDA approval for use in the pharmaceutical & food sector.

Applications

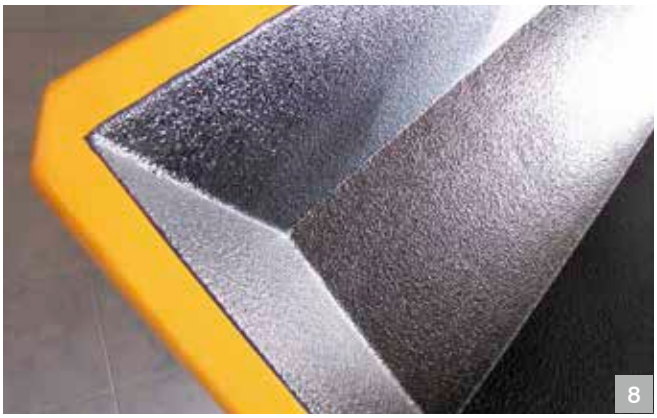
- tubular conveyors
- chutes / slides / trays
- vibratory trough dosing devices
- vibrating tables
- linear feeders
- drag conveyors





Reference

- textured surfaces can prevent oily components from sticking
- resistant for holding maxial 120 °C (250 °F) hot parts
- 4 to 5 times more wear and impact resistant than steel



Clamping / Gripping Tools

MetaLine® Series 500/700 – **Coatings to securly grip & fix without damages**

Sprayable, elastomeric coatings to protect sensitive items during handling processes: Scratch protection, slip reduction, improving maneuvering stability. Static surface friction index up to my(0) = 0.7

Applications

- multi-jaw grippers
- hold-down / clamping tools
- holding pliers
- clamping pads / stops
- girders
- steady rests
- shackle hitches / beams

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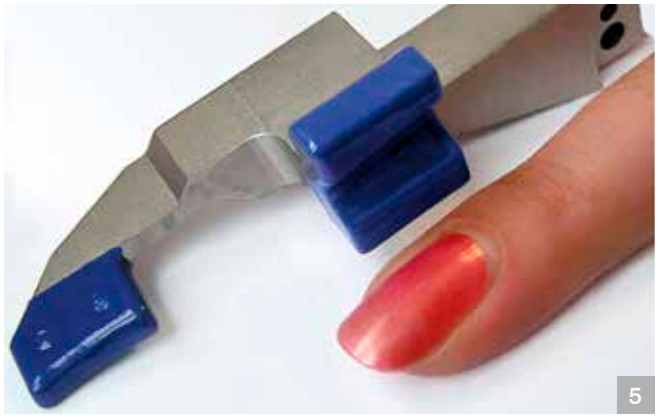
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Reference

- no discolorations, pressure marks, scratches or edge damages
- free of silicone or paint wetting impairing substances
- rubber-like grip for maximum power transmission with minimum clamping force

Lifting Devices

MetaLine® Series 700 – **Coatings to increase transport safety and slip protection**

Soft touch coatings to improve grip and protect the load. Prevents scratches, markings, imprints or discolorations.

Conform to pharmaceutical and partially food grade specifications in accordance with FDA & EU regulations.

Applications

- load hooks
- eye hooks
- forklift attachments
- lashing straps
- inflatable lifting bags

Reference

- available in different colors and signal / warning tones
- coefficients of static friction up to my(0) = 0.7 ensure maximum slip resistance
- silicone free - approved by all leading automotive manufacturers

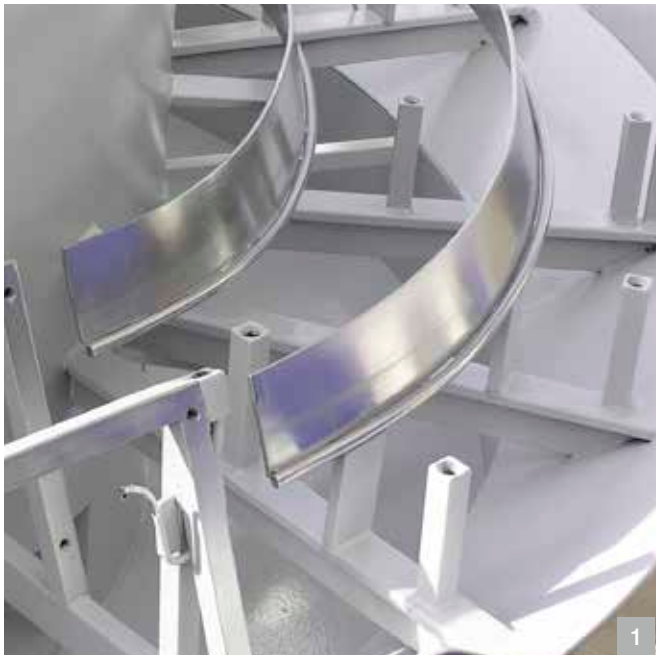
Pharmaceutical / Medical Engineering

MetaLine® Series 500 – **Coatings for the surface protection of medical items**

Sprayable elastomeric coatings with FDA 177.1680 (Title 21) conformity. Impact-resisting, seamless, gentle to the parts to be conveyed and sterilizable. Preventing black discoloration to pills. Reduces operational noise.

Applications

- transport containers
- dosing devices
- packaging machines (Blister)
- feeding chutes
- sampling equipment
- weighing devices
- mixers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Reference

- absorbs drop heights and protects against breakage and deformation
- can be applied to a wide range of materials including polished stainless steel
- variable static friction to accelerate or decelerate the parts transport

Automation Components

MetaLine® Series 500 – **Coatings for surface protection in automation technology**

Sprayable elastomeric coatings for the protection of sensitive surfaces. For scratch protection, feeding optimization and substantial noise reduction – reliable & proven.

Applications

- linear feeders
- elevators feeders
- vibration trays
- vibration hoppers
- head and tail conveyor pulleys
- centrifugal feeders
- step feeders

Reference

- silicone- and metal-free
- can be applied in smooth and various surface textures
- suitable for extremely difficult to access geometries

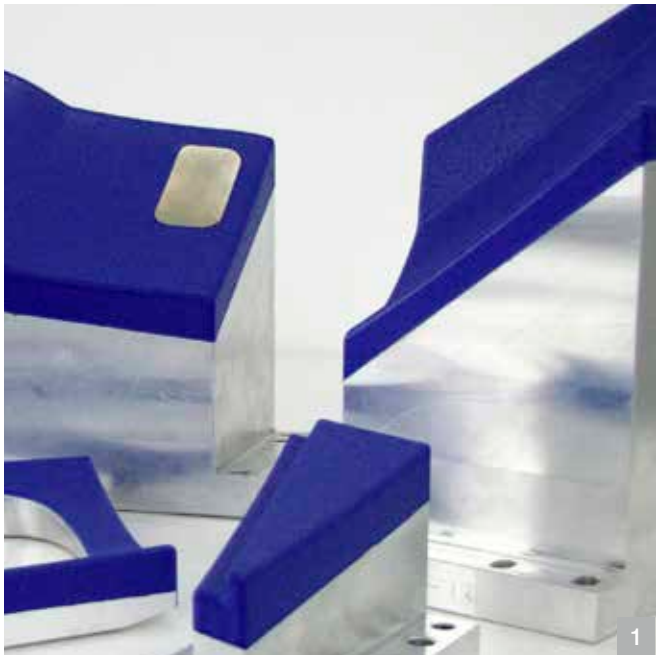
Workpiece Carriers

MetaLine® Series 500 – **Coatings for scratch protection in workpiece handling**

Sprayable elastomeric coatings for safeguarding highly sensitive surfaces and for scratch and marking protection. Fulfills highest protection demands during the assembly of painted, translucent or chromed automotive parts.

Applications

- assembly supports
- assembly nests
- transfer systemes
- sockets / prisms
- workpiece carrier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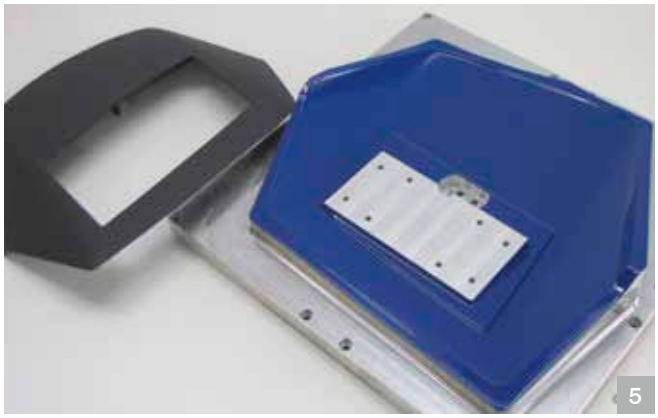
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Reference

- textured (velvet-like), anti-static properties for the reduction of the contact area
- free from any paint wetting impairment substances
- approved by all European & US vehicle manufacturers

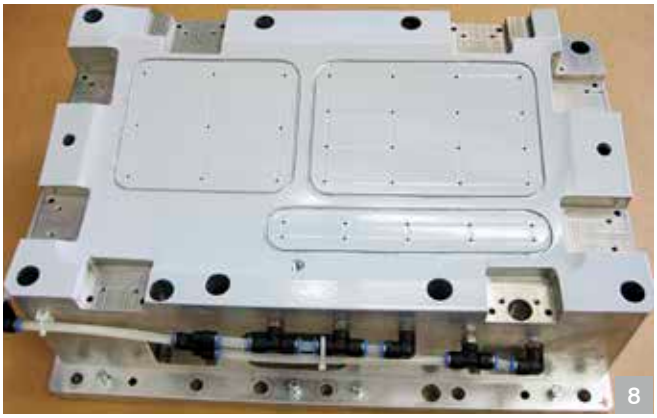
Plastic Welding

MetaLine® Series 500 – **Anti-scratch coatings for thermoplastic welding processes**

Sprayable elastomer coatings to protect sensitive surfaces in plastic welding processes. Prevents scratches and marks on the products to be welded. Precise, contour-accurate processing. Soft haptic yet highly wear-resistant film properties.

Applications

- ultrasonic plastic welding tools
- vibration plastic welding tools
- friction plastic welding tools



Reference

- high contour accuracy – even with complex geometries
- suitable for smooth or textured plastic welded parts
- variable static friction values for optimum adaptation to the welding situation

Workpiece Magazines

MetaLine® Series 500/700 – **Scratch-proof coatings for component picking**

Complex surface geometries of toolcarriers require adaptable coating solutions in order to protect sensitive surfaces and providing scratch, mark and slip protection.

Applications

- wire rack inserts
- tool bins
- assembly supports
- wire display magazines
- tray racks

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Reference

- almost freely customisable in terms of color in order to be able to assign articles via a color scheme
- wet cleanable to ensure maximum cleanliness (particle-free) during operation
- also available in anti-static version (ESD)

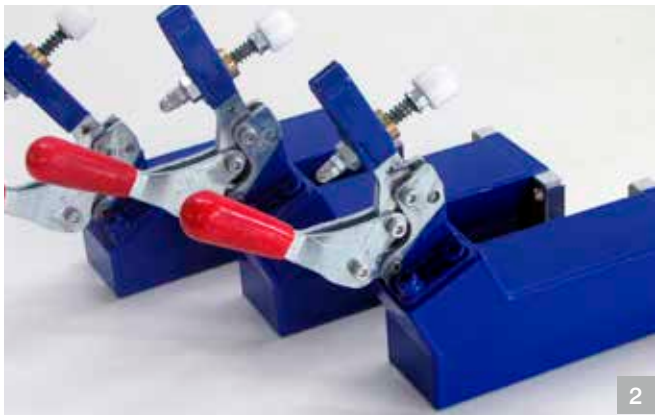
Electrical Insulation

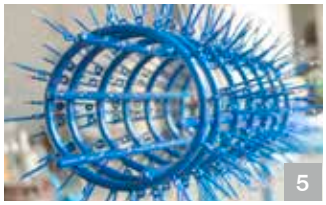
MetaLine® Series 500/700 – **Coatings to protect against electric breakdown**

Elastomeric coatings to be applied by means of spraying for electrical and thermal insulation. Dielectric breakdown voltage approximately 5 KV per 1 mm (40 mils) of coating thickness. Anti-Static (ESD) versions available upon request!

Applications

- large welding electrodes
- sensors
- current collectors
- control tools / handles
- submersible motors
- dip galvanizing frames





Reference

- can be applied on site and variable in layer thickness / electric breakdown protection
- fire protection class B2 “normal flammability” by German standards
- exceptional grip / haptics for increased working safety

Protective Covers for Assembly

MetaLine® Series 700 – **Removable protectors for paint and parts protection**

Sprayable elastomeric coatings to create tailermade protective covers for assembly purposes. Very low weight (density 1.05 g/cm³ / 0.038 lb/in³). Mechanically resistant & fast to clean. Individual color codes for easy identification can be implemented.

NO mold is needed for the production! The fabrication can be done on an original body component.

Applications

- scratch protection covers
- impact protection covers
- door frame inserts

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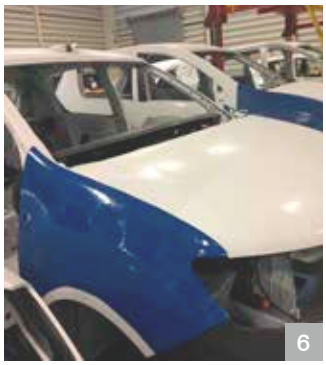
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Reference

- no mold design required – can be quickly manufactured from a quantity of 1
- engravable and printable for internal assignment and tracking
- maximum mechanical paint protection

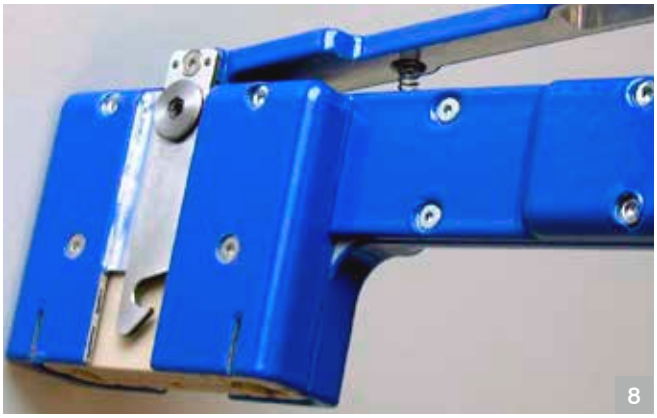
Special Tools

MetaLine® Series 500 – **Haptic tool coatings for assembly protection**

Sprayable elastomeric coatings for the protection of sensitive surfaces against scratches. Non-allergenic, grip-enhancing properties for wet/oily hands. Different color codes to avoid danger of tool mix-ups can be integrated.

Applications

- tool handles
- tool socket / bits
- tool extensions
- scanner handles
- measurement gauges



Reference

- thermally and electrically insulating for maximum personal safety
- magnetic tool properties remain almost unchanged
- high adhesion to metallic and synthetic materials

Cathodic Dip Painting

MetaLine® Series 700 – **Coatings for electrical insulation in dip painting**

Sprayable, elastomeric coatings as non-stick lining in cathodic dip painting (cataphoresis). Smooth surface and repairable at any time. In contrast to often used glass-fiber reinforced vinyl ester coatings, extremely impact and shock resistant. Electrically insulating.

Applications

- conveying satellites
- dip basins
- auxiliary frames

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Reference

- up to 5 KV dielectric strength per mm (40 mil) layer thickness
- non-stick properties reduce deposits and avoid fabrication errors
- flexible film properties prevent chipping or flaking

Drive Pulleys / Rollers

MetaLine® Series 700 – **Elastomeric coatings for friction improvement**

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Sprayable elastomeric compouds for the repair of existing linings or complete new roller coatings. Available hardnesses 60 / 85 / 95 Shore A in a seamless quality. End-faces can be covered as well.

Applications

- drive rollers
- vacuum rollers
- transport rollers
- pulley lagging
- friction wheels
- diabolo rollers
- cable reels

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Reference

- mechanically precise remachining up to 1/100 mm (1/2 mil)
- static friction values up to my(0)= 0.7 ensure maximum conveying effect
- under certain circumstances directly deployable without mechanical post-processing

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Weighing Technique

MetaLine® Series 500/700 – **Coatings for noise/breakage protection during weighing**

Sprayable elastomeric coatings for the soft cushioning, protective lining of weighing elements. FDA conformity and easy to clean/sterilize. Re-commended as break protection for frozen food. Extremely noise-reducing.

Applications

- multihead scales
- scale pans
- flow scales
- cut-gate weighers
- forklift scales

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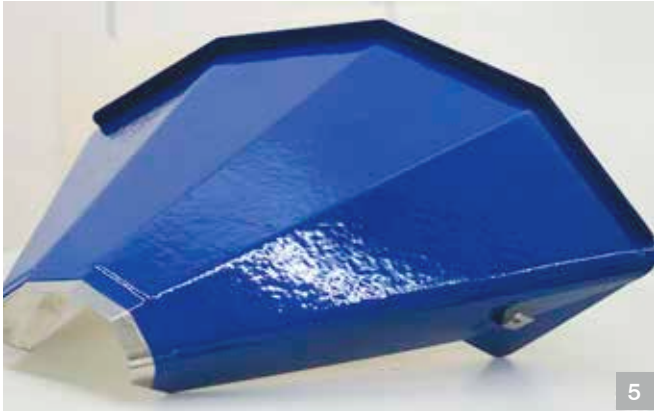
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Reference

- no chipping or flaking possible due to the elastic film properties
- resistant to low temperatures up to -50 °C (- 58 °F) also suitable for freeze/thaw cycles
- significant structure-borne sound altering properties

Dumpsters / Containers

MetaLine® Series 700 – **Coatings for sticking protection in bulk material transport**

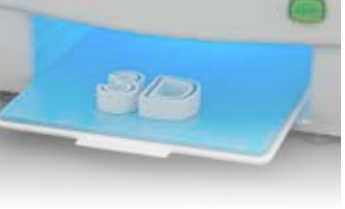
Sprayable elastomer coatings for the lining of storage and transport containers. Coating thickness-variable depending on impact load. Resists impact, reduces noise, protects against sticking and solves corrosion problems..

Applications

- metal stacking boxes
- bins / skips
- roll-off dumpsters
- compost containers
- shipping trays
- chemical storage containers

Reference

- resistant to biomass and its aggressive decay processes
- resists bending and twisting during loading and unloading
- non-stick performance close to PTFE – but impact resistant



Plastics 3D Printing

MetaLine® Series 500/700 – **Coatings to optimize 3D printed parts**

Printed plastic components show a superficial roughness (porosity) which excludes their use in areas subject to food and pharmaceutical regulations. Unsuitable coefficients of surface friction and inadequate wear and impact resistance furthermore limit their usability.

MetaLine® coatings optimize 3D printed parts in terms of mechanical resistance and surface quality. Compliant with FDA 177.1680 and (EU) 1935/2004.

Suitable for filaments, among others like:

- PLA (Polyactide)
- ABS (Acrylonitrile butadiene styrene)
- PVA (Polyvinyl alcohol)
- PA66 (Polyamide)
- PS (Polystyrene)

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Reference

- non-porous, smooth and uniform surface properties
- anti-static or electrically insulating up to 5 KV per mm (40 mil) layer thickness
- decorative, extremely functional, durable and highly wear resistant

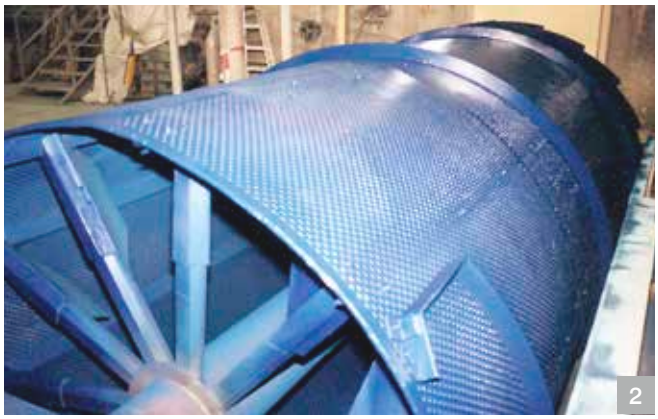
Food / Beverages

MetaLine® Series 700 – **Coatings for hygiene optimization and breakage protection**

Sprayable elastomeric coatings to protect (frozen) food against breakage, sticking or discoloration. Easy to clean and improved non-stick properties. Will not "chip" like paint or plastics due to its rubber-like material behavior.

Applications

- flour mills
- bottle grippers
- packaging lines
- screw conveyors
- food transport vehicles
- weighing equipment



Reference

- excellent noise- and impact-absorbing film properties
- food compliant according to FDA 177.1680 (title 21) and EU 1935/2004
- resistant to high pressure cleaning and acid/alkaline water-based detergents

Aeronautical Engineering

MetaLine® Series 700 – **Coatings for assembly protection in aircraft manufacturing**

Sprayable elastomeric coatings offering soft-touch surface characteristics. Extremely resilient, wear-resistant and durable. Walkable, impact-absorbent and variable in color. Applicable in any required film thickness.

Applications

- mounting brackets
- maintenance equipment
- engine testing devices
- check-weights for wing testing
- pneumatic tools
- protective assembly covers (protectors)

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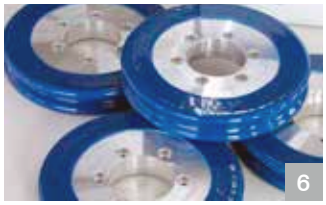
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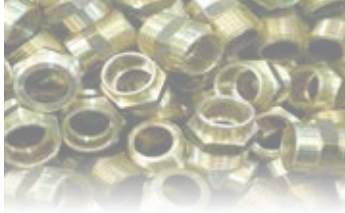
Reference

- signal colors to prevent “forgetting” in the aircraft
- completely metal-free and can therefore be used on special alloys without hesitation
- non-magnetic, electrically non-conductive, not staining

Sound Deadening



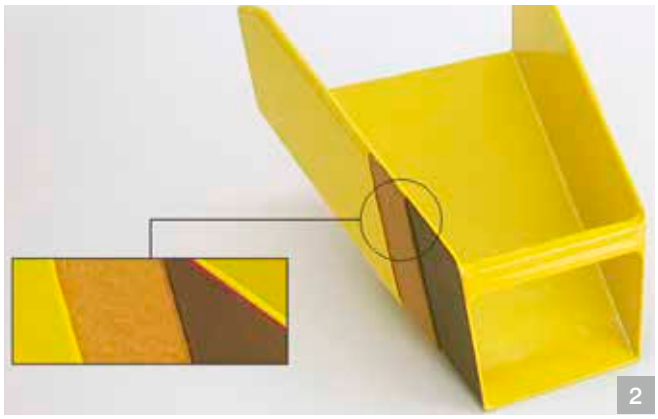
MetaLine® Series 500/700 – **Coatings for anti-drumming and noise reduction**

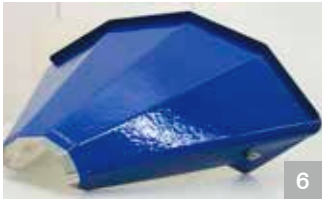
Sprayable dispersion coating (MetaLine® 440) for the external structure-borne sound deadening of thin-walled metal structures. Rest-elastic and decorative.

FDA compliant overcoatable with MetaLine® 500/700 series.

Applications

- transfer funnels
- chutes / conveyors
- feeder bowls
- metal enclosures
- thin sheet metal coverings





Reference

- vibration-resistant and almost undetachable bonded to the substrate
- paintable / recoatable and, if required, also waterproof
- up to 30 dB(A) noise reduction depending on component geometry

Engineering Details

Reference: MetaLine® Series 500/700

The Coating Materials

The deciding functional element of MetaLine® surfaces is their seamlessness. The coating thickness starts from 500 my and increases depending on the load. Most applications ranges between 1–2 mm - in order to build up a sufficient and permanently elastic compression memory.

■ **Scratch / Mark protection** – prevents scratches, marks or discoloration. Explicitly recommended for transparent plastics and glass parts

■ **Noise inhibition –** prevents noise even in the beginning instead of a complex enclosure. Structure-borne sound- absorbing properties allow a reduction of up to 20 dB (A)

■ **Increased performance** – speeds up the transport of oily, dirty or dusty parts. Damps down forces and supports smooth sliding

■ **Wear protection** – withstands extreme bumping, impacting and scratching stresses. When comparing identical layer thicknesses, the coatings are as wear-resistant as glued polyurethane sheets!

MetaLine® adheres to all metals, GRP, polyamide, epoxy, rubber and other materials. Unlike glued-on elastomer plates which often require renewal due to a loss of bonding, MetaLine® polymerizes in the shape of the component. There is no tension-related detachment tendency from the substrate.

MetaLine® is a **particle-free system** that does not contribute to the contamination of the transported material – e.g., in contrast to conveying brushes. Cleanable with aqueous cleaning agents; sterilizable in the vaporizing process by means of alcohol (IPA). The application can be done in various shades to ensure contrast formation of camera systems.

MetaLine® coatings are considered to be **pharmaceutically safe** by the US authorities under FDA 177.1680 (Title 21) and for dry substances classified as food-safe.

A special form are the **structured coating versions**. These ensure smoother transport, scratch-free delivery, minimize static charge build-up due to the **reduced surface charge** and are even mandatory for manipulating **oily** or wet parts.

Hardness (A.S.T.M. D2240-68)	60-98 Shore A
Density (DIN 53 479)	approx. 1.05 g/cm³
Tensile strength (A.S.T.M. D412-68)	20-24 N/mm²
Tear resistance (DIN 53 515)	55–68 N/mm
Elongation at break (A.S.T.M. D412–68)	275–650 %
Bashore resilience (DIN 53 512)	27–63 %
Thermal conductivity (DIN 52 612)	0.2 W/K m
Dielectric surface resistivity (DIN 53 482)	7 x 10^{10} ohms
Dielectric breakdown voltage (DIN 53 841)	> 5 kV / mm
Temperature resistance (dry)	-50 °C to +120 °C
Abrasion according to Taber (A.S.T.M., D1-044-73 - H-22)	approx. 8.2 mg
Abrasion (DIN 53 516)	55–85 mm³
Coefficient of static friction (DIN EN ISO 8295)	μ (0) = 0.1-0.7
Approvals International	FDA 177.1680 (21)

Cost Effectivness & Repair Options

Reference: MetaLine® Series 500/700

Great solutions for a reasonabel budget!

MetaLine® automation coatings have been used or recommended by almost all leading European suppliers for many years – a proven, trusted and **safe process**!

The application is made by experienced **specialists** in a multi-layered process at our southern German headquarters. For this purpose, high or low pressure spraying processes with up to 150 bar pressure are used. Highest attention is paid to the precise contour impression. The components are not exposed to heat. The coatings are machinable after solidification with **cutting processes**. Existing old linings are previously environmentally friendly removed.

For each workpiece, a mixing batch of up to **8 components** and additives is prepared to set the desired conveying properties. The data are determined on the basis of the conveyed material, also by means of operationinal testing in advance. MetaLine® however does NOT perform any mechanical adjustment or optimization work on the provided components!

The **self-processing** of MetaLine® automation coatings is possible in principle, but requires investments in sandblasting, coating equipment and paint booth technology as well as an intensive multi-day training and **experience** in dealing with automation components. The self-application is interesting only for the manufacturers of supply systems!

Standard coatings are carried out within 7 working days. For a surcharge, **24-hour express production** for single parts is available upon request. The coating services are charged according to effort and not dimensions.

On-site repairs and maintenance . . .

MetaLine® has developed the **Series 700 Cartridge Casting System** for local, minor spot repairs. This provides the user with a material that can be used for **partial repairs** of existing linings. Return to service is possible already after 12 hours. Surfaces to be repaired must be dry, clean, grease-free and **roughened**. The procedure conforms to FDA standards.

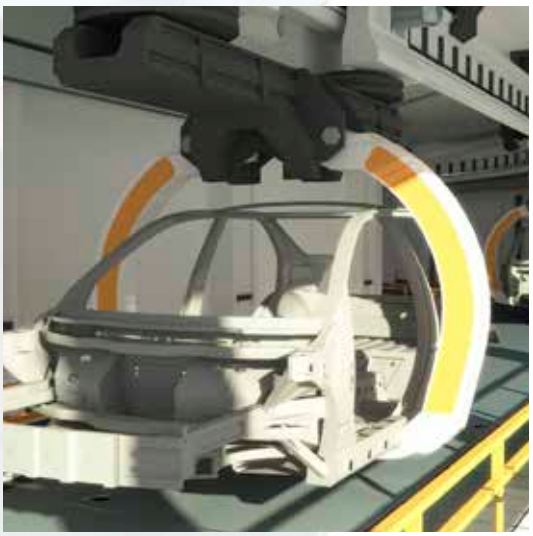
A complete repair kit with a caulking gun, roughening tool, cleaning agent, primer and 0.23 kg coating material is available right from the shelf to cover urgencies.

However this method is NOT suitable for coating complete components or repairing bigger or multiple damages!

MetaLine® Series 700 Cartridge Casting System
Small, fast, cost-effective – the on-site self-processing repair solution for emergencies

MetaLine®.com

surface protection



Grip improving
Permanently elastic
Scratch preventing
Noise reducing
Shock-absorbing
Glide-enhancing or
Slip-minimizing

You will find MetaLine® products being used worldwide in various industries such as:

- Aeronautical Engineering
- Automation Technology
- Automotive Manufacturing
- Ceramics Industry
- Chemical Industry
- Concrete Production
- Conveyor Technology
- Electrical Engineering
- Fertilizer Production
- Foodstuff Processing
- Glass Processing
- Metal Foundries
- Mining Technology
- Municipal Technology
- Nautical
- Occupational Safety
- Offshore & Marine
- Packaging Technology
- Petrochemical
- Pharmaceuticals
- Plastics Processing
- Power Plant Technology
- Pulp & Paper
- Recycling Technology
- Surface Technology
- Textile Machinery Design

... and many more

Simply trust MetaLine's "Engineering Made in Germany"!

protect | repair | save | cover | improve

K-700 Automation (EN), June 2023

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