MAXURETHANE® BIO-HYGIENE

POLYURETHANE RESIN WITH VIRUCIDAL AND ANTIBACTERIAL PROPERTIES FOR HYGIENIC FLOORING SYSTEMS

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DESCRIPTION

MAXURETHANE® BIO-HYGIENE is a two-component, solvent-free, polyurethane binder with special additives, designed specifically to provide a highly hygienic virucidal and antibacterial flooring system on concrete and industrial pavements.

Special additives of ***MAXURETHANE® BIO-HYGIENE*** impart excellent virucidal and antibacterial activity, inhibiting the growth of virus and bacteria on surface above 99%, and provides a virus-free, bacteria-free, and highly cleanliness floor.

MAXURETHANE® BIO-HYGIENE can be applied with different finishing:

- Smooth finish by brush.
- Anti-slippery finish by broadcasting sand.
- Polyurethane/sand mortar with fluid or trowel consistency, for higher thickness layers.

APPLICATION FIELDS

- Hospitals, healthcare facilities, emergency rooms, pharmaceutical industry, and other health care centers where a highly hygienic pavement is required.
- Food processing areas, cannery industries, slaughterhouses, breweries, wineries, kitchens, central food wholesalers or any other food industry where a healthy surface is mandatory.
- Supermarkets, shopping centers, restaurants, waiting-room areas, etc. and other areas with high traffic of people to provide a clean environment.
- Anti-slippery finishes on areas permanently wet, stairs, access ramps, loading docks, fridge chambers, etc.
- High chemical and abrasion protection coating exposed to heavy traffic and forklifts on industrial floors.

ADVANTAGES

- Hygienic surface with virucidal and antibacterial activity according to ISO 22196:2011 and JIS Z 2801:2000.
- Provides a continuous, seamless, uniform, and compact surface, with anti-dust finish. Easy cleaning and hygienic maintenance.
- Excellent abrasion and wearing resistance to car and heavy wheel traffic on industrial floors.
- Very good chemical resistance against a wide range of compounds: oils and greases, petrol, acid and alkali solutions, solvents, salts, etc.
- Wide range of finishes, thicknesses, and colours for aesthetic purpose.
- Environmentally friendly: non-toxic, non-flammable and solvent-free. Suitable for poor ventilated areas.

APPLICATION INSTRUCTIONS

Surface preparation

Surface must be structurally sound, firm, without cement laitance, as uniform as possible and preferably with a slight roughness, i.e., open textured surface. Minimum tensile strength of substrate must be 1 N/mm². It must be clean and free of paints, coatings, efflorescence, loose particles, grease, oils, curing

agents, form release agents, dust, gypsum plasters, organic growth or any other contaminants that may affect the adhesion.
Surface moisture content should not exceed 5 %. Do not apply on substrates subject to rising damp or negative water pressure.
For surface cleaning and preparation, preferably in case of the smooth and/or poorly absorbent substrates, provide a mechanical texturing by abrasive disc, dry sandblasting, scarification, or other abrasive method to achieve at least a slightly textured surface, not being desirable aggressive mechanical or chemicals means. Finally, vacuum the dust and loose particles.
Voids, holes, cold joints, and static cracks or any others defects deeper than 10 mm, once opened and routed must be repaired with patching mortar ***MAXROAD®*** (Technical Bulletin No. 27).
Expansion joints and fissures/cracks subject to movements, once opened must be sealed with any suitable sealant of ***MAXFLEX®*** range.

Mixing
MAXURETHANE® BIO-HYGIENE is supplied as a pre-weighed two-component set. Premix the components separately, and then pour the entire hardener component B, on the resin component A. Mix mechanically by low-speed drill (300-400 rpm. maximum) fitted with a suitable liquid mixer, until achieving a homogeneous product in colour and appearance. Do not mix for prolonged period which may heat the mixture nor use high-speed mixer to avoid introducing air bubbles.
Pot-life before application at 20 ºC is 30 minutes. Higher temperatures reduce this pot-life.
For preparing a polyurethane/sand mortar, once previously mixed components (A+B), add dry and clean silica sand ***DRIZORO® SILICA*** while mixing again, until achieving a homogeneous mortar in colour and appearance. The binder:sand ratio for achieving a fluid mortar is 1 part binder with 0,5 – 0,7 parts by weight of ***DRIZORO® SILICA 0102*** or ***DRIZORO® SILICA 0204*** depending on levelling properties required.
For a trowelable consistency mortar, the binder:sand ratio is 1 part binder with 3 parts by weight of ***DRIZORO® SILICA 0204***.
Other ratios and granulometries of sand can be used with preliminary testing and according to the final properties desired.

Application
Priming:
Apply by brush or roller the solvent-free, 100% solids, epoxy primer ***MAXEPOX® PRIMER*** (Technical Bulletin No. 45) or solvent-free, 100% solids, polyurethane primer ***MAXURETHANE® PRIMER*** (Technical Bulletin No. 380) with a recommended consumption of 0,25-0,3 kg/m^2, and allow to dry perfectly from 12-24 hours.
In case of residual moisture on surface, apply the water-based epoxy primer ***MAXEPOX® PRIMER-W*** (Technical Bulletin No. 372) with an estimated consumption of 0,20-0,3 kg/m^2, depending on substrate porosity. Allow to dry completely between 12-24 hours depending on temperature, before applying ***MAXURETHANE® BIO-HYGIENE***.

Smooth finish:
Once the primer is perfectly dry, apply ***MAXURETHANE® BIO-HYGIENE*** (components A+B) using a brush, short-piled roller, or air-less spray equipment in two successive coats, with a minimum time lapse of 8 hours and maximum of 24 hours, depending on temperature conditions.

Anti-slippery finish by broadcasting:
Once the primer is dry, apply a first coat by brush, short-piled roller, or air-less spray equipment of ***MAXURETHANE® BIO-HYGIENE*** (components A+B) with an estimated consumption of 0,5-0,6 kg/m^2, and while it is still fresh, broadcast dry and clean silica sand ***DRIZORO SILICA 0204*** or ***DRIZORO SILICA 0308*** depending on required roughness, with an estimated coverage of 1-1,5 kg/m^2. Once it is perfectly dry after 24 hours, sweep and vacuum surface to remove excess of sand, and apply a second coat of ***MAXURETHANE® BIO-HYGIENE*** (components A+B) as topcoat with an estimated consumption of 0,5-0,6 kg/m^2.

Fluid polyurethane/sand mortar (1-2 mm thickness):
Once the primer is dry, apply by toothed trowel ***MAXURETHANE® BIO-HYGIENE*** mixed with ***DRIZORO® SILICA*** (ratio 1/0,5 or 1/0,7) in a layer of maximum 2,0 mm thickness. Before material begins to set, from 15-20 min, use a spiked roller to obtain an optimum finish and remove possible air bubbles on surface.

Trowelable polyurethane/sand mortar (3-30 mm thickness):
Once the primer is dry, apply evenly by metal trowel ***MAXURETHANE® BIO-HYGIENE*** mixed with ***DRIZORO® SILICA*** (ratio 1/3) up to the desired thickness in layers between minimum 3 mm and maximum 30 mm. Finish surface with a finishing trowel.

Application conditions
Do not apply when environment or substrate temperature is below to 5°C or is expected during the first 24 hours. Avoid contact with water, moisture, dew, condensation, etc. during first 24 hours. Environment and substrate temperature must be at least 3°C higher than dew point. Do not apply when relative humidity exceeds 90 %. Check R.H. and dew point in marine environment proximities. When temperature and humidity conditions exceed the maximum specified values, proper conditions by warm air ventilation should be provided.
Temperatures above 30 ºC lead a quick-setting of the components and heat production, which reduce greatly the pot-life for application.

Curing
Allow ***MAXURETHANE® BIO-HYGIENE*** to cure at least 1 day for pedestrian traffic and 4 days for heavy traffic, at 20 °C and 50% R.H. Applications at lower temperatures or high humidity conditions increase the required curing time.

Cleaning of the tools
All mixing and application tools must be cleaned immediately with ***MAXSOLVENT®*** after their use. Once product cures, it can only be removed by mechanical means.

CONSUMPTION

Smooth finish:
Estimated consumption of ***MAXURETHANE® BIO-HYGIENE*** is 0,25-0,30 kg/m^2 per coat, for a total consumption of 0,6-0,7 kg/m^2 in two coats.

Anti-slippery finish by broadcasting:
Estimated consumption of ***MAXURETHANE® BIO-HYGIENE*** is 0,5-0,6 kg/m^2 per coat, for a total consumption of 1,0-1,2 kg/m^2 in two coats.

Consumption of ***DRIZORO® SILICA*** is between 1,0-1,5 kg/m^2.

Fluid polyurethane/sand mortar:
For a binder:sand ratio of 1:0,7 needs 1,0 kg/m^2 per mm thickness of ***MAXURETHANE® BIO-HYGIENE*** and 0,7 kg/ m^2 per mm thickness of ***DRIZORO SILICA***.

For a binder:sand ratio of 1:0,5 needs 1,2 kg/m^2 per mm thickness of ***MAXURETHANE® BIO-HYGIENE*** and 0,6 kg/ m^2 per mm thickness of ***DRIZORO SILICA***.

Trowelable polyurethane/sand mortar:
Estimated consumption of ***MAXURETHANE® BIO-HYGIENE*** is 0,5 kg/m^2 per mm thickness and 1,5 kg/m^2 per mm thickness of ***DRIZORO SILICA 0308***.

These estimated figures are for guidance only and may vary depending on porosity, texture, substrate conditions and application method. Perform a preliminary test on-site to ascertain the total consumption exactly.

IMPORTANT INDICATIONS

- Surface moisture content must not exceed 5%. Do not apply on substrates subject to rising damp or negative hydrostatic pressure.
- Avoid contact with water, damp, dew, condensation, etc. during the first 24 hours.
- Allow new concrete and mortar to cure a minimum of 28 days before coating.
- Do not add solvents, thinners, additives, or other non-specified compounds.
- ***DRIZORO® SILICA*** must be thoroughly dry before mixing with ***MAXURETHANE® BIO-HYGIENE***.
- For other uses not specified on this Technical Bulletin or further information, consult our Technical Department.

PACKAGING

MAXURETHANE® BIO-HYGIENE is supplied in 25 kg pre-weighed set. Component A in 20 kg drum and component B in 5 kg can. It is available in grey, red, green, and white colour. Others colours available upon special request.

DRIZORO® SILICA is supplied in 25 kg bag, consult its Technical Bulletin No.308.

STORAGE

Twelve months in its unopened original packaging. Store in a fresh, dry, and covered place, protected from moisture, frost and direct sunlight, with temperatures between 5 ºC and 35 ºC.

Temperatures below 5 °C may lead the crystallization of product components. Should this happen, it must be heated slowly at moderate temperature while it is regularly stirred until achieving its homogeneous and original lump-free appearance.

SAFETY AND HEALTH

MAXURETHANE® BIO-HYGIENE is not a toxic product but direct contact with skin and eyes must be avoided. Use rubber gloves and safety goggles during application. In case of skin contact, wash affected area with soap and water. In case of eye contact, rinse immediately thoroughly with clean water but do not rub. If the irritation persists, seek for medical assistance.

Consult the Material Safety Data Sheet for ***MAXURETHANE® BIO-HYGIENE.***

Disposal of the product and its packaging should be carried out according to the current official regulations and it is the responsibility of the final user of the product.

TECHNICAL DATA

CE Marking, EN 13813 *Description: Synthetic resin screed. EN 13813 SR-C30-F10-B1,0-AR0,5-IR14,7* *Uses: Polyurethane system with antibacterial and virucide performance as hygienic flooring for indoor*		
Product characteristics		
Colour and appearance for component A		Pigmented homogeneous paste
Colour and appearance for component B		Brownish liquid
Colour		Grey, white, red, and green
A:B mixing ratio, (by weight)		4:1
A+B/ C mixing ratio as fluid mortar, (by weight)		1/0,5 to 1/0,7
A+B/ C mixing ratio as dry mortar, (by weight)		1/3
A+B+C solids content, (%, by weight)		100
A+B density, (g/cm^3)		1,25 ± 0,1
Flash point		Non-flammable
Application and curing conditions		
Application conditions, T (ºC) / R.H. (%)		5 – 35 / < 90
Pot-life at 20 ºC, (min)		30
Drying- time between coats at 20 °C, (hours)		8 – 24
Curing time at 20 ºC, (days) - Pedestrian traffic/ light traffic / heavy traffic		 1 / 2 / 4
Cured product characteristics		
Flexural strength at 28 days, EN 13892-2 (MPa)		14,1 / F10
Compressive strength at 28 days, EN 13892-2 (MPa)		32,8 / C30
Adhesion on concrete at 28 days, EN 13892-8 (N/mm^2)		>2,5
Elastic modulus, UNE-EN ISO 178 (MPa) / Class		30 / E1
Wear resistance BCA, EN 13892-4 (µm) / Class		0 / Class AR0,5
Impact resistance, EN ISO 6272 IR (N·m)		14,7
Virucidal Activity UNE ISO 22196:2011 / JIS Z 2801:2000	Viral load reduction (%)	99,99 % Pass
Antibacterial Activity UNE ISO 22196:2011 / JIS Z 2801:2000	- Escherichia coli, % bacteria activity decease - Staphylococcus aureus, % bacteria activity decease	99,84% Pass 99,88% Pass
Thickness / Consumption*		
Smooth finish – Top coating - Consumption per coat / total consumption, (kg/m^2)		 0,25 – 0,3 / 0,5-0,6
Anti-slippery finish – Multi-layered system - Thickness (mm) - Consumption per coat / total application, (kg/m^2) - Consumption of ***DRIZORO® SILICA***, (kg/m^2)		 1 - 2 0,5-0,6 / 1,0-1,2 1,0 - 1,5
Fluid polyurethane/sand mortar - resin:***DRIZORO® SILICA*** mixing ratio (by weight) - Thickness per layer, (mm) - Consumption resin:***DRIZORO® SILICA*** (kg/m^2 per mm thickness)		 1:0,7 to 1:0,5 1 - 2 1:0,7 to 1,2:0,6
Trowelable polyurethane/sand mortar - Mixing ratio binder resin:***DRIZORO® SILICA*** (by weight) - Thickness per layer, (mm) - Consumption resin:***DRIZORO® SILICA*** (kg/m^2 per mm thickness)		 1:3 3 - 30 0,5:1,5

* These estimative figures are for guidance only and may vary depending on porosity, substrate conditions and application method. Perform a preliminary test on-site to ascertain the total consumption exactly.

CHEMICAL RESISTANCE

TABLE I.- RESISTANCE TO ACIDS		
Chemical compound	Concentration (%, by weight)	Result
Acetic, acid	2	+
	10	(+)
Acrylic, acid	2	+
	10	+
Hydrochloric, acid	10	+
	20	(+)
Citric, acid	5	+
Hydrofluoric, acid	2	+
Formic, acid	2	+
	10	(+)
Phosphoric, acid	15	+
	50	(+)
Lactic, acid	2	+
	10	+
Nitric, acid	15	+
	50	-
Sulphuric, acid	5	+
	50	-
Tannic, acid	5	+
Tartaric, acid	5	+

TABLE II.- RESISTANCE TO SOLVENTS		
Chemical Compound	Concentration (%, by weight)	Result
Acetone	Pure	(+)
Dichloroethane	Pure	-
Ethylene glycol	Pure	(+)
Phenol	Pure	-
Formaldehyde	Pure	(+)
Glycerine	Pure	+
Methanol	Pure	(+)

TABLE III.- RESISTANCE TO OILS, GREASES & FUELS		
Chemical Substance / Compound	Concentration (%, by weight)	Result
Animal oil	Pure	+
Motor oil	Pure	+
Diesel oil	Pure	+
Petroleum	Pure	+
White spirit	Pure	+

TABLE IV.- RESISTANCE TO ALKALIS & SALTS		
Chemical Substance / Compound	Concentration (%, by weight)	Result
Ammonia, solution	10	+
Sodium hypochlorite	2	+
	20	+
Potassium hydroxide	20	+
Potassium permanganate	5	+
	10	+
Hydrogen peroxide	1	+
	10	+
Calcium sulphate	10	+
Potassium sulphate	10	+
Ammonium sulphate	10	+
Sodium hydroxide	10	+

Test results after 500 hours at 20 ºC:
+ Resistant
(+) Temporary resistant
- Non-resistant

GUARANTEE

The information contained in this leaflet is based on our experience and technical knowledge, obtained through laboratory testing and from bibliographic material. ***DRIZORO®, S.A.U.*** reserves the right to introduce changes without prior notice. Any use of this data beyond the purposes expressly specified in the leaflet will not be the Company's responsibility unless authorized by us. We shall not accept responsibility exceeding the value of the purchased product. The data shown on consumptions, measurement and yields are for guidance only and based on our experience. These data are subject to variation due to the specific atmospheric and jobsite conditions so reasonable variations from the data may be experienced. To know the real data, a test on the jobsite must be done, and it will be carried out under the client responsibility. We shall not accept responsibility exceeding the value of the purchased product. For any other doubt, consult our Technical Department. This version of bulletin replaces the previous one.

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