KEMA IMPREGNATOR POWDER

Chemical concrete surface hardener in powder

- For improving abrasion, frost and chemical resistance
- For surface dust prevention
- For extreme water and oil absorption capability reduction on impregnated surfaces
- Preserves water vapour permeability
- Recommended water mixing ratio is 1:4 (1 unit of the concentrate: 4 units of water)

PRODUCT DESCRIPTION	**Special, 100% concentrated powdery concrete surface hardener, when diluted with water in the appropriate mixing ratio, ready-to-use product with equivalent properties as of the concentrate. The mixing ratio depends on the intended use.** **The result is a product that remarkable reduces freight costs (70-80%), and eliminates problems with freezing during transport and storage wintertime.**
FIELD OF USE	For waterproofing, hardening and dust-proofing concrete floors. Protects the concrete floor from wear, staining and damage from petroleum, oil and other chemicals. The very good S_d-Values of final products ensure optimum water vapour permeability why excess moisture can evaporate. One effect of the treatment is that smooth concrete after some months will get a soft gloss (shine) as satin. Which process can be accelerated by honing or polishing.
	All untreated concrete floors are dusting when exposed to abrasion. This dust is a costly enemy due to the damages it causes to machineries, tools, merchandises and environment health. KEMA IMPREGNATOR POWDER is recommended for use in areas subjected to medium-to-heavy fork lift and to motor traffic: ware-houses, distribution centres, manufacturing plants, textile mills, bottling plants, food processing plants, canning factories, breweries, bakeries, meat and poultry processing plants, service garages, grocery stores, discount retail stores. Other uses include concrete floors subjected to heavy pedestrian traffic, such as civic centres, sports areas, stadiums, hospitals, airports, museums, schools and grocery stores; as well as areas subjected to mild chemical attack: parking decks, private garages, silage storage silos, sewage treatment plants, dairies, fish processing plants, refineries and water treatment plants.
PRODUCT PROPERTIES	• For improving abrasion, frost and chemical resistance • For surface dust prevention • For extreme water and oil absorption capability reduction on impregnated surfaces • Preserves water vapour permeability • Recommended water mixing ratio is 1:4 (1 unit of the concentrate: 4 units of water)

PRODUCT DATA		
BASIC INFORMATION	**Appearance**	White powder (in liquid form colourless)
	Packing	10 kg in plastic bucket / 330 kg (33x10 kg) onpallet 500 kg in 1000 litre container
	Storage and expiration date	12 months from date of production if stored properly in undamaged original sealed packaging in dry and cool conditions. Date of production is printed on packaging.
TECHNICAL DATA	**Technical data for concentrat**	
	Type of product	Modified organosilicon with stabilizer
	Bulk Density	0,5-0,6 kg/l
	Solids	100%
	Tachnical data for liquid (1:4)	
	Bulk Density	1,1 kg/L
	Solids	20 %
	Adhesion strength	>= 2 MPa (against concrete)
	Water absorption without impregnation	500 g/m^2/h^{0,5}
	Water absorption with impregnation	100 g/m^2/h^{0,5}
	Water vapour resistance factor	200
	Sd ekv. (H2O)	0,005 m
	Tack-free time	1 hour (at 20°C and 50% R.H.)
	Penetration in depth	2-3 mm
	Abrasion resistance increasing	30%
	Compression strength increasing	25%

CHEMICAL RESISTANCE

As a rule of thumb, concrete floors correct treated with KEMA IMPREGNATOR POWDER will not be influenced by acids with pH > 5. At pH 3-5 the destructive effect can be weak. At pH 2-3 the effect can be strong. And at pH < 2 the effect can be very strong. The treatment is seldom influenced by alkalis, and thus its pH must be very high. Deterioration caused by chemical reaction is extremely rare. As a rough guide, the treatment is at least five times more resistant in comparison with untreated concrete.

CODES
R = Resistant

MO = Moderate resistant
NR = Not resistant

TABLE:

ALCOHOLS		
Benzyl alcohol	C6H5CH2OH	R
Butyl alcohol	C4H9OH	R
Ethyl alcohol	C2H5OH	R
Glycerol	C3H5(OH)3	R
Hexyl alcohol	C5H11CH2OH	R
Hexyl resorcinol	C12H1802	R
Isopropyl alcohol	C2H5CH2OH	R
Methyl alcohol	CH3OH	R
Methyl ethyl ketone	CH3COCH2CH3	R
ALDEHYDES		
Acetaldehyde	CH3CHO	R
Benzaldehyde	C6H5CHO	R
Formaldehyde	HCHO	R
Furfural	C4H3OCHO	R
AMINES		
Aniline	C6H5-NH2	R
Triethanolamine	(HOCH2CH2)3N	R
ESTERS		
Amyl acetate	CH3COOC5H11	R
Ethyl acetate	CH3COOC2H5	R
ETHERS		
Dibenzyl ether	(C6H5CH2)2O	R
Diethylene glycol	O(CH2CH2OH)2	R
Ethyl ether	C4H10	R
Ethylene glycol	CH2OHCH2OH	R
HALOGENS		
Benzyl chloride	C6H5CH2Cl	R
Carbon tetrachloride	CCl4	R
Chloroform	CHCl3	R
Ethylene dichloride	C2H4Cl2	R
Perchlorethylene	C2Cl4	R

Trichloroethylene	C2HCl3	R
HYDROCARBONS		
Benzene	C6H6	R
Cyclohexane	C6H12	R
Ethylbenzene	C6H5C2H5	R
Heptane	C7H16	R
Hexane	C6H14	R
Methane	CH4	R
Napthalene	C10H8	R
Toluene	C6H5CH3	R
Xylene	C6H4(CH3)2	R
HYDROCARBONS, OTHER SUBSTITUTED		
Carbon disulphide	CS2	R
Nitrobenzene	C6H5-NO2	R
INORGANIC ACIDS		
Acetic acid (10 %)	CH3CO2H	R
Boric acid	H3BO3	R
Carbonic acid	H2CO3	R
Chromic acid (10 %)	CrO3	MR
Chromic acid (conc.)	CrO3	MR
Formic acid (90 %)	HCO2H	R
Hydrochloric acid (10 %)	HCl	R
Hydrochloric acid (30 %)	HCl	MR White stain
Hydrochloric acid (conc.)	HCl	NR
Hydrofluoric acid (conc.)	H2F2	MR
Phosphoric acid (10 %)	H3PO4	R
Phosphoric acid (conc.)	H3PO4	MR Slight attack
Nitric acid	HNO3F	NR
Sulphur dioxide	SO2	R
Sulphuric acid (10 %)	H2SO4	MR White spot
Sulphuric acid (conc.)	H2SO4	NR
Tannic acid	C2O6H6	R
INORGANIC BASES		
Barium hydroxide	Ba(OH)2˙8H2O	R
Calcium hydroxide	Ca(OH)2	R
Potassium hydroxide	KOH	MR

Sodium hydroxide (10 %)	NaOH+H2O	MR
Sodium hydroxide (conc.)	NaOH	MR
INORGANIC SALTS		
Aluminium chloride	AlCl3	MR Discoloration
Ammonium chloride	H4NCl	MR Discoloration
Ammonium nitrate	H4NNO3	R
Barium chloride	BaCl2	MR
Calcium chloride	CaCl2	R
Calcium chlorate	Ca(ClO3)2	MR
Copper chloride	CuCl2	MR
Cupric sulphate	CuSO4˙5H2O	R
Ferric chloride	FeCl3	MR
Ferric nitrate	Fe2(NO3)3	R
Ferrous sulphate	FeSO4˙7H2O	R
Hydrogen sulphite	H2S	R
Magnesium chloride	MgCl2	MR
Magnesium sulphate	MgSO4	R
Nitrate	HNO2	R
Potassium	K	R
Sodium bromide	NaBr	R
Sodium chloride (conc.)	NaCl	MR
Sodium chloride (25 %)	NaCl	R
Sodium sulphate	Na2SO4	MR Discoloration
Sodium sulphite	Na2SO3	R
Sodium thiosulphate	Na2S2O3	R
Zinc sulphate	ZnSO4˙7H2O	MR Discoloration
KETONE		
Dimethylketone (acetone)	C3H6O	R
OILS (INORGANIC AND ORGANIC)		
Anti-freeze	(Ethylene Glycol)	R
Brake fluids		R
Castor oil		R
Coal tar distillates		R
Cottonseed oil		R
Fats and fatty acids		R
Fish oil		R

Fuel oil		R
Gasoline		R
Jet fuel		R
Kerosene		R
Lard		R
Linseed oil		R
Mineral oil		R
Oleo margarine		R
Olive oil		R
Rapeseed oil		R
Soybean oil		R
Tallow and tallow oil		R
Vegetable oils		R
ORGANIC ACIDS		
Carbolic acid (10 %)	C6H5OH	R
Cabolic acid (conc.)	C6H5OH	MR
Citric acid (10 %)	(CO2HCH2)2	MR
Formic acid (10 %)	HCOOH	R
Lactic acid (10 %)	H6C3O3	MR Gray discoloration
Oxalic acid (10 %)	(COOH)2	MR
Picric acid (10 %)	C6H2(NO)3OH	MR
Stearic acid (10 %)	C18H36O2	R
Tannic acid (conc.)	C2O6H6	MR
Tartaric acid (10 %)	C4H6O6	MR
Vinegar acid (10 %)	(HC2H3O2)	MR
MISCELLANEOUS		
Buttermilk		R
Cider		R
Corn Syrup		R
Fermenting fruits, or vegetables		R
Manure		R
Molasses		R
Sauerkraut		R
Sea Water		R
Sulphite Liquor		R
Sugar		R

Wine		R

INSTRUCTIONS FOR USE

MIXING RATIO Mixing ratio depends of intention of use

KEMA IMPREGNATOR POWDER (kg)	WATER (kg)	USE
1,0	4,0	Dust-proofing and increasing of abrasive strength
1,0	3,0	Oil-proofness and chemical resistance
1,0	3,2	In-depth hardening of weak cement substrates
1,0	2,5	Protection of fresh concrete from evaporation of water

CONSUMPTION Calculation

K Imp.Pow.(kg)	Water(kg)	Mixture (kg)	Quantity (L)	Effectivness (m2)	Substrate
1,0	4,0	5,0	4,5	18 - 22,5 22,5 - 27	Normaly substrate, two layers Troweled substrate, two layers
1,0	3,2	4,2	3,8	15,2 – 19 19 – 22,8	Normaly substrate, two layers Troweled substrate, two layers
1,0	3,0	4,0	3,6	14,4 – 18 18 – 21,6	Normaly substrate, two layers Troweled substrate, two layers
1,0	2,5	3,5	3,2	12,8 – 16 16 – 19,2	Normaly substrate, two layers Troweled substrate, two layers

BASE Substrates should be firm (surface strength 1.5-2.0 MPa), free from laitance and clean. The concrete must not be coated with any sealer or paint as product should be used on bare mineral substrates only.

BASE PREPARATION The concrete should be vacuum clean followed by thoroughly cleaning. Allow the surface to dry.

MIX RATIO see table

MIX TIME Used water should be pure, clean and free from objectionable quantities of organic matter, silt and salts. Always sift powder slowly into water (do not dump or shovel it in) while mixer is running at high agitation (900 - 1 420 rpm). Mix for about 10 minutes until powder is completely dissolved. Let rest about one hour. Low temperature of water will increase dissolving time. Warm water will reduce dissolving time. Mixed product should be used within a couple of days.

MIX TOOL Suitable vessel made from plastic (PE) and mixing unit with shaft made from stainless steel. Disperser blade with Ø 170 mm, or larger. Heave capacity 1.5 m3/minute.

INSTALLATION	Stir or shake container. Apply 2-3 full coats wet-in-wet in a continuous film. Use a brush (stiff broom) to break surface tension and help product to better penetrate into concrete. Avoid puddles. Keep wet for about 30 minutes without any dry areas. If the concrete is very porous, make a second application. If the concrete is extremely porous, or the concrete mix appears like it was short on cement (high in sand), a third application may be required. Drying time between each layer should be minimum 12 hours.
TOOL	Use brush or broom.
CLEANING OF TOOL	Clean tools immediately after the use.
USAGE TIME	Mixed product should be used within a couple of days. (Product mixed with de-ionized water can be stored about 6 months.)
COAGULATION	Ready for foot traffic after 12 hours Ready for light vehicles after 72 hours

LIMITATIONS

BASE TEMPERATURE	min. 5°C
AIR TEMPERATURE	min. 5°C
MATERIAL TEMPERATURE	min. 5°C, preferably 20°C
WARNINGS	• Never apply outdoors when rain is imminent. • Times specified in the techical sheet were measured at the temperature of +23°C and relative air humidity of 50 %. Higher temperatures reduce, while lower temperatures prolong those times. • Use only recommended amount of water. Use only mixture from undamaged packaging. • Product is corrosive (pH 11). Protect glass and metal surfaces to avoid etching.
	Recommendation: Remains of unhardened/unset material had to be removed in accordance with the legislation.
	Data source: All technical data in this technical sheet was obtained by laboratory research. Actual data may differ due to different working conditions.
	Local restrictions: Due to specific local regulations the installed product can differ from country to country. For exact instructions for use a country specific technical sheet should be obtained.

SAFETY DATA

Product is corrosive when wet. Irritates eyes and skin. Harmful if swallowed. Keep out of reach of children.
Product is waterborne and presents no fire hazard.

LEGAL BASE

Information and recommendations related to use of KEMA products are presented in good faith and believed to be correct. The later is based on our knowledge and experience with the products. Information is supplied upon the condition that products are stored and used according to the recommendations and the persons receiving the same will make their own determination as to its suitability for their purposes prior to use. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to Information or the product to which information refers. In no event will KEMA be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information or the product to which Information refers. Nothing contained herein is to be construed as a recommendation to the use any product, process, equipment or formulation in conflict with any patent, and KEMA makes no representation or warranty, expressed or implied that the use thereof will not infringe any patent. All orders fall under current sales and supply conditions. The user should always check the latest technical sheet available upon demand.

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