Polychem Systems

Technical Data Sheet EN

PUREX AM

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Product description

The product is a two–component raw material polyurea system for the production of high quality waterproof coatings e.g. polyurethane surfaces of spray foam, concrete, metal and wood. It can be use as floor cover, Our product offers excellent mechanical properties for a finished coating. The product is a pure polyurea which allows you to perform fast seamless curable coatings applied using the unit in areas of required substrate waterproof security and good mechanical properties of the finished waterproofing.

Coatings are used as protecting coatings. Spraying the product allows permanent protection of steel and concrete structures exposed to the chemical environment and water. These coatings are used for e.g.:

- foundations, roofs, basements, balconies, terraces and ponds protection;
- steel tanks, both above ground and underground surfaces;
- water storage tanks, including de-ionized water; sewage treatment plant tanks, sewers, gutters and piping components, concrete tanks, in particular liquids storage;
- automotive industry: surfaces prone to corrosion and mechanical damage, and loading spaces in busses
- surfaces exposed to high temperatures up to 140˚C and occasionally 180˚C

Coating changes color or darkens under UV which may influence the coating's mechanical properties. For lasting color and mechanical parameters preservation it is recommended to secure it by additional coating resistant to UV radiation.

The system has a Hygienic Certificate of the National Institute of Hygiene for contact of the polyurea coating with drinking water. Certificate No.: **PZH B-BK-60210-1168/19**

The product has CE marking and Declaration of Performance has been issued for it.

Two components:	Component A	Component B
Component name	PUREX AM A	PUREX AM B
State of aggregation	liquid	liquid
Colour	grey	straw-coloured
Viscosity at 25°C [mPas]	1100 ± 220	600 ± 200
Density at 25°C [g/cm³]	1,04 ± 0,03	1,12 ± 0,02

Application method recommended

Before using component A needs to be mixed until a solid colour without discoloration and trails is achieved. If the pigment subsides and A component is not mixed properly the components ratio might be impaired which can lead to differences in colour isolation, blisters occurrence, foaming and can impoverish the coating's properties.

Surface preparation:
Before spraying the surface should be cleaned in order to achieve a clean and smooth coating. The substrate should also be free of any impurities such as: oil, dust, grease, loose rust and other undesirable elements from which influenced by the deterioration of adhesion of the coating to the substrate. In order to achieve an even surface the substrate must be primed and aligned. For this purpose, you can use one or two-component primer (primer) which closes pores and produces a surface layer containing no defects (concrete surface). For concrete surfaces is recommended to use a two-component polyurethane primer PRIMER C.

Dew point temperature:
During the application of the insulation coating pay special attention to the weather condition and particularly in relation to the dew point temperature - the temperature of condensation/water condensation. The substrate temperature during the application must be at least 3°C higher than the dew point temperature. Dew point temperature can be determined using a measuring instrument or from the table as per the following scheme:
Air temperature= 21°C
Relative humidity of air = 75%
Dew point temperature from the table = 16,4°C
The hereinabove scheme should not be applied if the shell surface temperature is less than 19,4°C (16,4°C+3°C=19,4°C)
The dependency table of the dew point temperature and the relative humidity of the air located at the end this technical data sheet.

Thickness of the sprayed coating
The recommended thickness of the applied coating is min. 2.0 mm and it is sufficient to obtain good insulation properties and to produce a surface with good mechanical properties. In order to achieve the desired thickness of the coating layer, it is recommended to apply it with the cross method in at least 2 layers. Depending on the application, the thickness of the coating should be selected for the specific application.

Breaks in applying the coating layers
Application of polyurea coating on surfaces has to be performed continuously. While applying PUR PRIMER C primer and after the prime coating has dried, a water-permeable coating needs to be applied within 8 – 24 hours. If the product is then applied predominantly on the old surface polyurea in an interrupted matter the time interval can not be longer than two hours. With a longer period of time PUR PRIMER C covering has to be applied to the old surface width of at least 30 cm.

Spraying the coating on PUR foam.
In case of applying the coating on polyurethane foam by spraying e.g. PUREX NG 0440 we must wait at least 24 hours to cure the foam and stabilize the exchange of gases from the interior of the spray and the air.

Caution:
The product is intended for qualified staff/ experts use. Do not apply on wet surfaces. Prior to application please acquire all any information about the product. Other uses not mentioned in this data sheet are possible only after prior agreement and technology department confirmation. Do not expose isocyanates to moisture. Never store supplies of isocyanates in larger amount.

Never leave A and B components in the material-filled machine for more than 2 weeks. If the machine has been not used for longer period of time it is advised to clean the equipment thoroughly and fill the machine with solvent.

Ambient temperature during application [°C]	5 - 40
The surface coated temperature recommended [°C]	5 - 35
Components temperature recommended [°C]	65 - 80
Recommended components temperature in barrel during application [°C]	40 - 50
Pressure during application [bar]	160 - 200
Optimum humidity	≤ 80 - 85%
Hoses temperature [°C]	65 - 80

Technological properties*

Component A:B ratio - by weight	100 : 105
Component A:B ratio - by volume	100 : 100
Raw materials temperature at the beginning of the reaction [°C]	20
Gel time [s]	> 6
Tack-free time [s]	14 - 18
Free rise density [kg/m³]	≈ 1050

Physical and mechanical product properties*

Tensile strength acc. to EN ISO 527 [MPa]	≥ 20,5
Pull-off properties to concrete surfaces acc. to EN 1542	A – cohesive damage
Tear resistance acc. to ISO 34-1 (B method) [N/mm]	≥ 68
Elongation at break acc. to EN ISO 527	≥ 400
Hardness acc. to EN 868 [°ShD]	≥ 40

*the tests have been performed after 48 hours for 1,8 – 2,0 mm trick coating applied in two layers by cross method. While spraying the layer the machine temperature for borh A and B component has been set as 70°C, hoses temperature as 70°C and working pressure as 190 - 200 bars. The spraying has been performed by use of Graco Reactor 2 EXP-2 machine with Probler PZ pistol and 01 nozzle.

Transport and storage

Store in dry, well ventilated room, in tightly closed containers. Protect against moisture access and direct exposure to sunrays. Store away from heat sources, in the container originally packaged in a vertical position.

Component B needs to be protected against moisture and stored in more than 10°C before solidisation occurs. In case solid particles has formed in B component it should heated for 24 h in 40 - 50°C.

The products should be transported in tightly closed containers.

Permissible temperature during transport [°C]	10 - 30
Recommended storage temperature [°C]	10 - 30
Storage life for component A from manufacture date, if stored in recommended conditions and in original containers:	**6 months**
Storage life for component B from manufacture date, if stored in recommended conditions and in original containers:	**6 months**

Application safety

While performing the insulation protective personal equipment has to be used: clothing, gloves, protective goggles and masks.

While spraying two-component products with a high-pressure machine all participating employees are obliged to wear respiratory masks with double filter.

*Notes

Data presented in this information have been obtained during the system foaming in model conditions. The results obtained when foaming in other conditions can be slightly different from published.

The system application instruction is available if requested. Polychem Systems company offers its assistance at the system implementation and application in client's manufacture.

Every time the user is obliged to check the product and auxiliary agents usefulness for his intentional use.

The user is obligated to have a valid technical data sheet and safety data sheet of the product, which is provided by the manufacturer during the sale and every time on the customer's request.
Prior to processing the user must carefully read aforementioned documentation and follow the rules of procedure for product use.

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Annex

Chemical resistance to chemicals*

The hydro-insulation coating characterises by very good chemical resistance to diluted acids, alkalis (liquors), detergents, alcohols, fuels and other oil-related chemicals. The table below presents the polyurea coating's chemical resistance. The conducted examinations included immerging the coating into the chemical for 7 days in 20°C. The assessment bases on the sample's volume changes and it has been equipped with a 4-level A to D scale to determine them, that is:
A – volume change of 0% to 3%
B – volume change of 4 % to 15 %
C – volume change of 16 % to 35 %
D – volume change of 36 % and more

Chemical compound	Assess.	Chemical compound	Assess.	Chemical compound	Assess.
Acetone	D	Nitric acid 5%	A – B	Ozone	A
Acetic aldehyde	D	Hydrobromic acid	D	Steam	D
Butyl alkohol	B	Bromic acid	A	perchlorethylene	C – D
Ammonia	B	Lemon acid	D	Sodium hypochlorite	D
Aniline	D	Chromic acid	C – D	Propanol	B – C
Ammonium nitrogen	A	Phosporus acid	C	Mercury	A
Benzaldehyde	B – C	Phosporus acid (10%)	A – B	Hydrogen sulphide	C – D
Benzen	D	Hydrofluoric acid	B – C	Ammonium sulphate	A
Benzine	A – B	Gallotannic acid	A	Aluminium sulphate	A
Bromide	B – C	Malic acid	C – D	Antimony salt	B
Chlorine	C – D	Silicid acid	A – B	Arsenic salt	A
Chloroform	D	Acetic acid	C – D	Taverner salt	A
Ammonium chlorine	A	Oleic acid	A – B	Zink salt	A
Aluminium chlorine	A	Lactic acid	B	Tin salt	A
Methylene chlorine	D	Formic acid	C – D	Chrome salt	A
Cyklohexane	B	Perchloric acid	D	Magnesium salt	A
Cyklohexanone	D	Palmitic acid	A	Manganium salt	A
Tetroxide carbon	C	Hydrochloric acid	B	Copper salt	A
Dichlorobenzen	C	Sulphuric acid 10%	A – B	Nickel salt	A
Dimetyloformaldehyd	D	Sulphuric acid 30%	C	Lead salt	A
Ethanol	B – C	Oxalic acid 5%	A	Potasium salt	A
Ether	B – C	Tartaric acid	A	Sodium salt	A
Paints	A	Varnish	A – B	Silver salt	A
Phenol	D	Methanole	D	Titanium salt	A
Formaldehyde	C	Urea	A – B	Calcium salt	A
tris-o-cresylphosphate	C – D	Soap	A – B	Iron salt	A
Trisodium phosphate	B	Peroxide	B	Styren	A
Natural gas	A	Paraffine	B	Terpentine	B – C
Glicerine	A	naphthalene	B	Oxygen	A
Di-ethylene glicol	B	Nitrobenzene	D	Sulphur oxide	B
Ethylene glicol	B	Butyn acetate	D	Karbon oxide	A
Propylene glicol	B	Oil and animal fats	A – B	trichlorethylene	D
Hexane	A	Cotton seed oil	A	tryethyloamine	B
Hydrazine	D	Linseed oil	B	Water	A
Isooctan	B	Mineral oil	A	Sea water	A
Isopropanol	B – C	Diesel	B	Amon water	A – B
Koine solution	A	Castor oil	A – B	Barium hydroxide	A
Metyl etyl keton	D	Lubricating oil	D	Sodium hydroxide 30%	A – B
Xylen	C	Transformer oil	B – C	Sodium hydroxide (45%)	B – C
Nitric acid	D	Hydrocarbon oil	A	Calcium hydroxide	A

The laboratory tests are only indicative of the polyurea spraying elastomers application. We recommend that you check the shell behavior for your application at the end of each use.

DEW POINT TEMPERATURE AT RELATIVE AIR MOISTURE

Air temperature	RELATIVE AIR HUMIDITY											Air temperature
	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	
2°C	-7,7	-6,6	-5,4	-4,4	-3,2	-2,5	-1,8	-1,0	-0,3	0,5	1,2	**2°C**
4°C	-6,1	-4,9	-3,7	-2,6	-1,8	0,9	-0,1	0,8	1,6	2,4	3,2	**4°C**
6°C	-4,5	-3,1	-2,1	-1,1	-0,1	0,8	1,9	2,7	3,6	4,5	5,4	**6°C**
8°C	-2,7	-1,6	-0,4	0,7	1,8	2,8	3,8	4,8	5,7	6,5	7,3	**8°C**
10°C	-1,3	0,0	1,3	2,5	3,7	4,8	5,8	6,8	7,7	8,5	9,3	**10°C**
12°C	0,4	1,8	3,2	4,5	5,6	6,7	7,8	8,7	9,6	10,5	11,3	**12°C**
14°C	2,2	3,8	5,1	6,4	7,6	8,7	9,7	10,7	11,6	12,6	13,4	**14°C**
15°C	3,1	4,7	6,1	7,4	8,5	9,6	10,7	11,7	12,6	13,5	14,4	**15°C**
16°C	4,1	5,6	7,0	8,3	9,5	10,6	11,7	12,7	13,6	14,6	15,5	**16°C**
17°C	5,0	6,5	7,9	9,2	10,4	11,5	12,5	13,6	14,5	15,6	16,2	**17°C**
18°C	5,9	7,4	8,8	10,1	11,3	12,4	13,5	14,6	15,4	16,3	17,3	**18°C**
19°C	6,8	8,3	9,8	11,1	12,3	13,4	14,5	15,5	16,4	17,4	18,2	**19°C**
20°C	7,7	9,3	10,7	12,0	13,2	14,4	15,5	16,5	17,4	18,4	19,2	**20°C**
21°C	8,6	10,2	11,6	12,9	14,2	15,4	**16,4**	17,4	18,4	19,3	20,2	**21°C**
22°C	9,5	11,2	12,5	13,9	15,2	16,3	17,4	18,4	19,4	20,3	21,2	**22°C**
23°C	10,4	12,0	13,5	14,9	16,0	17,3	18,4	19,4	20,4	21,3	22,2	**23°C**
24°C	11,3	12,9	14,4	15,7	17,1	18,2	19,2	20,3	21,4	22,3	23,2	**24°C**
25°C	12,2	13,8	15,4	16,7	18,0	19,1	20,2	21,6	22,8	23,3	24,2	**25°C**
26°C	13,2	14,8	16,3	17,7	18,9	20,1	21,3	22,3	23,3	24,3	25,2	**26°C**
27°C	14,1	15,7	17,2	18,6	19,8	21,1	22,2	23,3	24,3	25,2	26,1	**27°C**
28°C	15,0	16,6	18,1	19,4	20,9	22,1	23,2	24,3	25,3	26,2	27,2	**28°C**
29°C	15,9	17,6	19,0	20,5	21,8	23,0	24,2	25,2	26,2	27,3	28,2	**29°C**
30°C	16,8	18,4	20,0	21,4	23,7	23,9	25,1	26,1	27,2	28,2	29,1	**30°C**
32°C	18,6	20,3	21,9	23,3	24,7	25,8	27,1	28,2	29,2	30,2	31,2	**32°C**
34°C	20,4	22,2	23,8	25,2	26,5	27,9	28,9	30,1	31,2	32,1	33,1	**34°C**
36°C	22,2	24,1	25,5	27,0	28,4	29,7	30,9	32,0	33,0	34,2	35,1	**36°C**
38°C	24,0	25,7	27,4	28,9	30,3	31,6	32,8	34,0	35,0	36,1	37,0	**38°C**
40°C	25,8	27,7	29,2	30,8	32,2	33,5	34,7	35,9	37,0	38,1	39,1	**40°C**
45°C	30,3	32,2	33,9	35,4	36,9	28,2	39,5	40,7	41,9	43,0	44,0	**45°C**
50°C	34,8	36,6	34,5	40,1	41,6	43,0	44,3	45,6	46,8	47,9	49,0	**50°C**

From the table you can see at which surface temperature condensation occurs.

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