Technical Data Sheet
ACE PU-100 HE

DESCRIPTION

ACE PU-100 HE is a 100% pure aromatic polyurea waterproofing system with high elongation, applied using hot spray equipment to form a continuous, elastic membrane with excellent mechanical properties. It is suitable for structures subject to large movements, metal roofs and components, and equipment requiring a highly resilient coating.
Its two components, mixed "in situ", react within seconds to form a 100% solids coating that is environmentally friendly since it contains no solvents (VOCs) or CFCs.
Due to its fast curing, it can be applied on horizontal and vertical surfaces, even if irregular, and at any thickness in a single application.
The system performs excellently in very humid environments, withstands thermal shock, and maintains elongation even at temperatures below 0°C.

FIELD OF APPLICATION

For waterproofing and protection of structures subjected to heavy loads or thermal expansion effects:

- Metal roofs made of steel, copper, zinc, or pre-coated sheet metal.
- Roofs made of corrugated fibre-cement sheets or similar.
- Rehabilitation of roofs with asphalt membranes.
- Concrete slabs, retaining walls, and foundations.
- Protection of ACE ARTFOAM ECO polyurethane foam thermal insulation systems.

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Technical Data Sheet
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ANALYSIS OF THE COMPONENTS

DESCRIPTION	COMPONENT ACE PU-100 HE A	COMPONENT ACE PU-100 HE B
	Isocyanate	Amines/pigment mix
Appearance	Liquid	Liquid
Colour	Light yellow	Amber/pigmented according to RAL chart
Mix ratio by volume	1	1
Freezing point	Below 0º C (32ºF)	N/A
Viscosity at 25°C	600-900	300-600

PROPERTIES OF THE SYSTEM

PROPERTIES	OUTCOME	TEST
Hardness	SHORE A 75 / SHORE D 35	ASTM D 2240
Gel time	15 sec.	
Tack-free	5 minutes	
Density @25Cº (77ºF)	1,06 gr/cm^3	ASTM D 792
Solids	100%	
VOC	0%	
Elongation	638% ±10%	ASTM D 412
Tensile strength	>13Mpa	ASTM D 412
Tear resistance (given type c)	46 N/mm	D53515
Resilience	>30%	ASTM D 2632
Adherence	Concrete >450PSI	ASTM D 4541
Weathering (*) 1000 h exposure	Gloss loss and colour change without cracking, delamination or blistering	ASTM D 4329

(*) Aromatic system; UV protection is required for colour stability.

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PACKAGING

Set: 200 kg B (transparent) / 205 B (colour) + 225 kg A

STORAGE AND TRANSPORT

Component A / Isocyanate:
Original drums must be kept tightly closed to prevent contamination with moisture or other materials that could adversely affect processing. This product reacts slowly with water forming polyureas and releasing CO_2, which may cause sealed drums to expand and rupture.
Recommended storage temperature: 24°C–40°C (75°F–104°F). Shelf life: 12 months when stored in original tightly closed containers at 25°C (77°F).

Component B / Amines:
This product is hygroscopic; therefore, drums must be kept closed to prevent moisture absorption which may adversely affect processing.
Recommended storage temperature: 10°C–45°C (50°F–113°F). Shelf life: 12 months when stored in original tightly closed containers at 25°C (77°F).

Transport shall be carried out in accordance with current land and sea transport regulations in each territory. Air transport is not permitted.
Refer to the Safety Data Sheet for classification of the substances in each case.

APPLICATION METHOD AND REQUIREMENTS ACCORDING TO SUBSTRATE

APPLICATIONS ON CONCRETE / MORTAR/ FIBRE-CEMENT:

1) The substrate must be sound with minimum tensile strength of 1.5 N/mm^2, compressive strength of at least 250 N/mm^2, concrete cured for a minimum of 28 days, and pH between 9–12.

2) The surface must be structurally sound, free of laitance and contaminants such as rust, grease, or salts, and completely clean of dust, vegetation residues or any agent negatively affecting adhesion.

3) The substrate must be dry (less than 5%, ASTM D4263) and with minimal moisture vapour transmission (less than 3 lb/24 hr/1000 ft^2, RMA Test Method).

4) Surface preparation must be carried out according to ICRI 03732 to a minimum profile CSP 3 using shot blasting, hydro-cleaning, or other valid preparation techniques. After mechanical treatment, remove generated contaminants leaving the surface clean and dust-free.

5) For fibre-cement, perform pressurised hydro-cleaning for cleaning and pore opening, brushing locally more deteriorated areas; mechanical treatment equipment must not be used.

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6) After treating details and singular points, prime the entire surface to improve substrate conditions and promote adhesion. Use the appropriate primer depending on moisture level and substrate condition; for highly porous substrates, two primer coats are recommended, either the same product or a combination such as a first coat of epoxy primer ACE EPOPRIMER 100 and a second coat of polyurethane ACE PRIMERFLEX PLUS. Always broadcast dry aggregate over primers to enhance mechanical anchorage.

7) Apply the polyurea system respecting the minimum and maximum recoat times indicated in the technical data sheets, and only when substrate temperature is between 3°C and 35°C and at least >3°C above dew point to prevent condensation.

Suitable primers for concrete / mortars / fibre-cement:
ACE PRIMERFLEX PLUS, ACE EPOPRIMER 100 and ACE EPOPRIMER 52WB (for substrates with surface moisture).

APPLICATIONS ON STEEL

1) Before blasting, steel surfaces must be cleaned according to SSPC-SP1 ensuring complete removal of visible and non-visible contaminants using solvents, steam, alkaline solutions, soapy emulsions, detergents or organic solvents. Achieve a maximum of 5 µg/cm² surface chlorides, 10 µg/cm² sulfates and 5 µg/cm² nitrates (NACE 6G186, CHLOR*RID).

2) Remove all imperfections, sharp edges or protrusions using mechanical tools. Then blast/shot-clean the entire surface to “near-white metal” finish SSPC-SP10 No. 2 / SA 2½ with a 50–75 µm profile (75 µm required for permanent immersion).

3) After thorough cleaning, apply primer and, within the same day—before the prepared steel can be contaminated or oxidised again—coat with the next layer; within 5 hours in humid conditions.

4) The coating may only be applied if substrate temperature is at least 3°C above dew point to prevent condensation, and the primer is cured, dry, clean, and within its recoat window.

Suitable Primers for Steel:
ACEBOND, ACE EPOPRIMER 100, ACE EPOPRIMER and ACE EPOPRIMER FZ.

APPLICATION ON PRE-COATED METAL

1) Clean the surface by high-pressure hydro-cleaning until fully free of visible and non-visible contaminants; use a cleaning agent if required. Achieve max. 5 µg/cm² chlorides, 10 µg/cm² sulfates and 5 µg/cm² nitrates (NACE 6G186, CHLOR*RID).

2) If rust is present, remove it using mechanical tools and, if necessary, apply a metal restorer such as Oxino or similar.

3) After deep cleaning, apply primer and spray the waterproofing system. The coating may only be applied if substrate temperature is at least 3°C above dew point and the primer is cured, dry, clean, and within its recoat window.

Suitable primers for pre-coated sheet metal:
ACE EPOPRIMER 100, ACE EPOPRIMER, ACEBOND.

APPLICATION ON GEOTEXTILES

1) Use short-pile, non-woven polypropylene geotextiles with heat-protection treatment.

2) Lay geotextiles on the surface with approx. 15 cm overlaps, avoiding wrinkles, and remove any substrate elements that could damage them.

3) Do not walk on the geotextile until the coating has been applied to avoid tearing or fraying.

4) Apply the coating starting from the centre and moving towards the perimeter. Allow the membrane to settle for at least 1 hour before applying on parapets/cappings if the treated geotextile will not end up embedded in the drainage screed.

OTHER SUBSTRATES

For application procedures on other substrates, contact our technical staff or local representative.

PROCESSING PARAMETERS

- Product temperature:
  - Component A: 78°C
  - Component B: 65°C–71°C
- Working pressure: 2500–3500 psi
- Volume ratio (A:B): 1:1
- Substrate temperature for spraying: >3°C above dew point
- Maximum relative humidity for application: 85%

Technical Data Sheet
ACE PU-100 HE

APPLICATION PROCEDURE

1) It is recommended to keep products at 20–40°C during storage and pre-heat them to 20°C (70°F) before application.

2) Component B must be stirred for 20–30 minutes to homogenise content and colour using a pneumatic agitator or an electric drill with low-speed blades.

3) Application requires a high-pressure hot-spray unit capable of reaching and stably maintaining the required temperatures and pressures for processing both components.

Suitable equipment: GRACO REACTOR, GRACO HX-P2 and HX-P3 or equivalent.

The metering pump must be able to heat Components A and B to 65–78°C (150–172°F) and generate 17–24 MPa (2500–3500 psi). Heated hoses are required to maintain liquid temperatures up to the spray gun. Only correct maintenance and cleaning of equipment and gun will ensure proper application. Follow the supplier's instructions.

4) Perform a test spray on a clean, dry material before starting work to verify proper curing time. If not correct, check equipment and procedure errors (insufficient mixing, incorrect temperatures, etc.).

5) Apply ACE polyurea consistently and evenly, making successive passes until the desired thickness is reached in a single application.

If re-applying on the same day (to increase thickness or seal a pore), ensure the polyurea remains clean and dry; recoat preferably after 1–2 hours for best adhesion.

When applying onto already cured membrane (overlaps on following days, repairs, etc.), lightly sand and clean with acetone, or use ACE-400 activator or primer before recoating.

6) Once the required thickness is achieved, if a textured "over-spray" finish is desired, apply it immediately after finishing each section from approx. 2–3 m distance. Do not wait until the whole surface is completed to avoid adhesion problems.

7) Aromatic systems without heavy protective finishes (green roofs, ceramics, etc.) must be UV-protected with an aliphatic coating. The aliphatic coating must be applied the same day as the polyurea; otherwise, the polyurea must be activated or primed before applying the top-coat to ensure adhesion, using ACE PROADHESIVE, ACE PRIMERFLEX PLUS or ACE EPOPRIMER 100.

Suitable top-coats: ACE ALIFLEX, ACE 373 PLUS polyurethane, ACE SP FLEX polyaspartic, ACE UV SHIELD aliphatic polyurea.

Technical Data Sheet
ACE PU-100 HE

8) Remember that primers, polyurea and top-coats must only be applied when substrate temperature is at least 3°C above dew point and always respecting technical data sheet information on:

- Minimum and maximum recoat times
- Suitable ambient and substrate temperature/humidity

9) These products are for professional use only. Applicators must hold an isocyanate handler certificate in compliance with legislation. Consult the Safety Data Sheet before use and wear the recommended protective clothing and respiratory protection at all times. Correct application remains the user's responsibility.

STORAGE AND TRANSPORTATION

Component A/ Isocyanate:

The original drums must be kept perfectly sealed in order to prevent contamination due to moisture or any other materials that may have a negative impact on the processing of the product. This product reacts slowly with water creating polyureas and liberating CO2, which may cause the sealed drums to expand and break.

This product is hygroscopic and therefore the drums have to be sealed to prevent the absorption of moisture, which could affect its processing negatively.
It is recommended to store this product between 24 ºC – 40 ºC (75 ºF – 104 ºF) and it can be stored 12 months by keeping the product in the original containers properly sealed.

Component B/ Polyamine:

This product is hygroscopic and therefore the drums have to be sealed to prevent the absorption of moisture, which could affect its processing negatively. It is recommended to store this product between 10ºC – 45ºC (50ºF – 113ºF) and it can be stored 12 months by keeping the product in its properly sealed original containers.

Products transportation will be made according to the current legislation in each territory regarding both land and marine transportation matters, and it does not admit airplane transportation. See security sheet to know more about the classification of the substances in each case.

WASTE MANAGEMENT

In accordance with Law 11/1997 and Article 18.1 of the Regulations that develops "the person responsible for the delivery of the packaging waste or used packaging for its correct environmental management will be the final holder of it."

Technical Data Sheet
ACE PU-100 HE

WARRANTY AND LIMITATIONS OF LIABILITY

Ace Coatings warrants solely that the quality of the product meets its stated specifications at the time of production and that the product is delivered free of any legitimate third party claims of misuse of US patents associated with the product.

Ace Coatings disclaims all other warranties expressed or implied by law or trade practice, including but not limited to any warranty of fitness for a particular purpose or use.

Any claim submitted under this guarantee must be presented by the buyer directly to Ace Coatings, by written communication within a maximum period of 5 days from the detection of the defect, in no case beyond the expiration date of the product, or in any case, no later than 1 year from the date of delivery of the product to the buyer (the earlier option will be valid).

The buyer will not be able to make use of the guarantee if he does not notify Ace Coatings of the non-conformity as indicated above. Ace Coatings shall, in no event and under no circumstances (including negligence of any kind, strict liability or damages), be liable for any indirect, special, incidental or consequential damages related to, arising out of or resulting from any use of the product.

The information contained in this document is for guidance only and is based on laboratory tests that Ace Coatings believes to be reliable.

Ace Coatings may change the information contained in this document at any time as a result of its practical experience and continuous development of the product.

All recommendations or suggestions relating to the use of Ace Coatings products, whether issued in the form of technical documentation in response to a specific inquiry or otherwise are based on data which, to the best of Ace Coatings' knowledge, are reliable. The product and related information are designed for users with the necessary knowledge and qualifications required by the industry. It is the responsibility of the user to verify the suitability for the specific use and application in each case; the buyer is considered to have made the necessary verifications at his own risk; Ace Coatings has no control over the quality or condition of the substrate, or any factor affecting the use and application of the product. Accordingly, Ace Coatings accepts no liability for any loss, injury or damage resulting from the use of the product or this information (unless otherwise agreed in writing).

Variations in application environment, changes in usage procedures or extrapolation of data, the results could be unsatisfactory. This document will prevail over any previous version; the purchaser should ensure that this information remains current before using the product and the English version of this document shall prevail over any translation.

Technical Data Sheet
ACE PU-100 HE

NOTE: The information contained in this technical sheet may be modified based on possible formulation variations and in any case corresponds to the current state of our knowledge and is given in good faith, but without guarantees about the final results since these depend on the conditions of use, which are beyond our control. These data do not exempt from carrying out the appropriate tests of suitability of the product for a certain job. This technical sheet replaces any other with a previous date related to the same product.

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