



DELTAShield HP 400

TWO COMPONENT SPRAY APPLIED HIGH PERFORMANCE PROTECTIVE LINING

DESCRIPTION

DELTAShield HP 400 is an instant curing, spray applied, seamless, and flexible protective membrane. **DELTAShield HP 400** sits at the top of DELTA's high performance coatings range and is suitable for use in a wide range of demanding applications requiring abrasion, impact and chemical resistance.

DELTAShield HP 400 is an excellent primary and secondary containment membrane providing seamless, instant curing, flexible containment solutions that require a higher performance level than standard waterproofing membranes. **DELTAShield HP 400** is an ideal lining for abrasive liquid containment, industrial, chemical and impact applications.

TYPICAL USES

- ✓ Protection of concrete substrates in water and wastewater treatment plants.
- ✓ Steel and concrete tank linings subject to corrosion, abrasion and chemical attack.
- ✓ Waterproofing of areas subject to impact, abrasion, traffic loads, UV exposure.
- ✓ Protection of substrates against abrasion and impact in materials handling applications. – Mining, concrete manufacture, concrete batching plants, sand and gravel quarries.
- ✓ Sacrificial wear plates and linings in the mining and transport industries.
- ✓ Secondary containment linings in the power, petro chemical, oil and gas industries.
- ✓ Applications where substrates are being subjected to abrasion, impact and corrosion in industrial applications.

FEATURES

- ✓ Can be applied even under extreme climatic conditions. Hot, cold and humid conditions
- ✓ Very good abrasion, impact and chemical resistance for most applications
- ✓ Resistant to most standard chemicals, acids, oils, and bleaches
- ✓ Very good elongation at break
- ✓ Very good tensile strength
- ✓ Suitable for exposed applications
- ✓ Seamless application and seamless finish. No welded joints or glued seams
- ✓ Excellent adhesion to concrete, steel, aluminum, plastics, fibers, wood, foam etc.
- ✓ Can be applied across multiple substrates in the same application process
- ✓ Remains flexible under a wide range of climatic conditions
- ✓ Rapid application to any thickness and very fast cure results in faster turnaround times
- ✓ Can build to any thickness in one application Does NOT require multiple coats
- ✓ 100 % solids, VOC-free, contains zero solvents



PRODUCT INFORMATION

PROCESSING PROPERTIES	DATA
Mixing ratio of Comp. A to Comp. B	1 : 1 by volume
Dry film thickness range [mm] <small>For project specific DFT recommendations consult with manufacturer.</small>	Steel Minimum: 1 Maximum: indefinite Concrete Minimum: 2 Maximum: indefinite
Recommended thickness [mm]	Minimum: 1 Maximum: unlimited
Tack Free-Time at 20°C [sec.]	10 - 20
Over coat cycle [h]	0 – 12 (without any pre-treatment)
Curing/loading after [h]	Walkable: 1 Mechanical: 2 Chemical: 12 - 24
Temperature range for application (ambient) [°C]	-10 - +50° C
Temperature range for application (substrate) [°C]	-10 - +50° C
Material Temperature (Preconditioning) [°C]	25 - 30° C
Material Temperature (Spraying) [°C]	65 - 75° C
Maximal relative air humidity for application [%]	98%
Pay attention to the dew point limit	Substrate should be 3°C greater than DP (dew point)

PHYSICAL PROPERTIES	DATA
VOC-content	DIN EN ISO 11890-1 / ASTM D-1259 0%
Solids content	DIN EN 827 / ASTM D-2697 100%
Viscosity [mPa*s] @ 25°C	DIN EN ISO 2884-2 / ASTM D-4878 Comp. A: 600 - 1.000 Comp B: 500 – 900
Density [g/cm ³] @ 20°C	DIN EN ISO 2811-1 / ASTM D-1217 Comp. A: 1,09 ± 1,13 Comp. B: 1,00 ± 1,04
Density [g/cm ³]	EN ISO 1183 / ASTM D-792 1,01 ± 1,05
Tensile strength [MPa]	ISO 37-2005 / ASTM D-638 ≥ 20
Modul [MPa]	IISO 37-2005 / ASTM D-638 100% Elongation: ≥ 10 300% Elongation: 20
Elongation at break [%]	ISO 37-2005 / ASTM D-638 ≥ 400 - 450
Hardness [Shore D]	ISO 868-2003 / ASTM D-2240 45 ± 5



PHYSICAL PROPERTIES	DATA	
Rebound resilience [%]	ISO 4662 / ASTM	≥ 32
Tear growth resistance[N/mm]	ISO 34-1 method A	≥ 45
Volume abrasion [mm ³]	DIN ISO 4649	≤ 130
Taber Abrasion [mg]	ASTM D-4060	< 6 (Wheel CS17 / 1.000g / 1000 Cycles) < 125 (Wheel H18 / 1.000g / 1000 Cycles)
Pull off strength [N/mm ²]	DIN EN ISO 4624 / ASTM D-4541	Concrete: ≥ 1,5 Steel: ≥ 6
Max. Process temp. [°C]	ISO 11346 / ASTM D-2485	Wet: 80 Dry: 130 Peak temperature dry: 160
Water vapor transmission rate [g/m ² *d]	ISO 15106-3	6,1 (at 23° C a. 85% relative humidity) 17,5 (at 38° C a. 90% relative humidity)
Permeation coefficient [g*mm/m ² *d]	ISO 15106-3	17,3 (at 23° C a. 85% relative humidity) 51,0 (at 38° C a. 90% relative humidity)
Methane transmission rate [cm ³ /m ² *d*bar]	ISO 15105-1	91,5 (at 23° C a. 0% relative humidity)
Resistance to Root Penetration	EN 14416	Passed
Crack bridging abilities [mm] (thickness of the sample 2-3 mm)	DIN EN 1062-7 Procedure C.2	+23° C : > 15,5 -10° C : > 6,8 -20° C : > 6,4
Fire protection classification	DIN 4102-Part 1	B2 (normally inflammable)
Coefficient of sliding friction	DIN 51131	Dry (leather): 0,78 Wet (SBR-rubber): 0,04
Sound absorption	-	Approx. 5 dB / mm DFT
Cathodic Disbondment depth [mm]	DIN EN 10290-2004 Class: A	23° C (28 days): 2,3 ± 0,7 60° C (2 days): 1,7 ± 0,6 80° C (2 days): 3,4 ± 1,1

* DELTA recommends in all applications involving chemicals a pre-test of the lining's suitability in the customer's application is conducted. Consult with DELTA Technical Team.

* DELTAShield HP 400 is an aromatic based system and can display colour shift under UV light. This colour shift will not negatively affect the products physical performance.

PHYSICAL PROPERTIES	DATA	
Impact Resistance [J/mm]	DIN EN 10290-2004 Class: A	23° C: 9,0 -5° C: 7,0
Surface resistance [Ohm]	DIN IEC 60167	≥ 1,0*10 ¹¹
Volume resistance [Ohm]	DIN IEC 60093	≥ 1,0*10 ¹¹
Storage conditions [°C]	DIN EN 12701	10 – 30 (in closed original drums, stored at dry and well-ventilated place; beware of freezing)
Shelf life	-	Approximately 18 months unopened and stored correctly

APPLICATION NOTES

- **DELTAShield HP 400** can only be applied using high pressure heated plural component spray equipment by trained and approved applicators.
- In ambient temperatures below 15°C chemical drums should be pre-heated using band heaters to 30 – 40°C.
- The B-side component should be thoroughly power stirred prior to the commencement of spraying and periodically during the spraying process to ensure there is no settling out of the B-side chemical components.
- The Pigment is always mixed into the B-side using a power stirrer.
- Both the A-side and B-side drums should be fitted with desiccant dryers.
- Compressed air supply should be supplied via an air dryer.
- Primary heaters should be set at between 65-75°C. Adjustments can be made on-site based on environmental conditions, mixing module size and application circumstances.
- Hose heaters should be set at 70C. Adjustments can be made on-site based on environmental conditions, mixing module size and application circumstances.

SAFETY AND HANDLING

- All applicators of **DELTAShield HP 400** should be trained and approved by the manufacturer.
- Spray applicators should wear appropriate PPE including approved breathing equipment, eye wear, Nylux or similar light weight spray suit and appropriate covered footwear.
- Avoid breathing in vapors during spraying or when handling chemicals.
- Avoid eye and skin contact.
- Store chemical drums in a cool dry environment. Avoid storing chemicals for long periods in direct sunlight.
- Do not store chemicals next to food stuffs.
- Ensure chemical drums are kept tightly sealed and avoid ingress of air and moisture.

PACKAGING

DELTAShield HP 400 is supplied in 40 or 425 kg sets.

All guidelines, recommendations, statements, and technical data contained herein are based on information and tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. It is the user's responsibility to satisfy himself, by his own investigations and testing, the suitability of the product for his own intended use, application and job situation and user assumes all risk and liability resulting from his use of the product. Due to the large number of variables that can affect the product and the application process that are out of the control of DELTA Coatings International LLC no warranty of any kind, express or implied is given. The liability of DELTA Coatings International LLC for any claims is limited to the purchase value of the material.

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