



DELTAShield

HIP 1000

TWO COMPONENT

SPRAY APPLIED

BLAST MITIGATION LINING

DESCRIPTION

DELTAShield HIP 1000 (High Impact Protection) is a premium, high performance elastomeric formulation designed to absorb blast shock waves and capture blast fragmentation and shrapnel. This unique formulation provides incredible strength and elongation properties far in excess of standard polyurethane lining systems.

DELTAShield HIP 1000 displays excellent elongation properties and very high tensile strength giving it the ability to “stretch” and absorb shock waves whilst still resisting rupturing.

TYPICAL USES

- ✓ Ammunition storage bunkers / containers.
- ✓ Parliament House and Political offices.
- ✓ Mobile Command and communication centers / structures.
- ✓ Mobile “in field” transportable accommodation buildings.
- ✓ Floors of personnel carriers
- ✓ Embassy buildings and perimeter security walls.
- ✓ Wastewater infrastructure and control centers.
- ✓ Critical power supply installations and distribution control centers.
- ✓ Fuel storage facilities.
- ✓ Court houses, prisons, public buildings.
- ✓ Private residences.
- ✓ Cash storage and transfer facilities

FEATURES

- ✓ Extremely high values for tensile strength even at high elongation levels.
- ✓ Very high Impact and abrasion resistance making it suitable for application in harsh environments.
- ✓ Extremely fast tack free times = Fast return to service.
- ✓ Maintenance free.
- ✓ Excellent adhesion to a wide variety of correctly prepared substrates.
- ✓ Resistant to most aggressive chemicals, solvents, acids and caustics.
- ✓ Can be applied in hot and humid conditions.
- ✓ Spray applied seamless application. No joins.
- ✓ Can be applied to any thickness in one application.
- ✓ 100% solids, VOC-free, solvents free.
- ✓ Excellent sound reduction properties.
- ✓ Excellent thermal stability -20C - +140C



PRODUCT INFORMATION

PROCESSING PROPERTIES	DATA
Mixing ratio of Comp. A to Comp. B	1 : 1 by volume
Recommended thickness [mm]	6 – 20 Depending on application circumstances
Tack Free-Time at 20°C [sec.]	10 - 20
Over coat cycle [h]	0 – 12 (without any pre-treatment)
Curing/loading after [h]	Walkable: 0.25 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 3C 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	≥ 35
Modul [MPa]	IISO 37-2005 / ASTM D-638	100% Elongation: ≥ 10 300% Elongation: 20
Elongation at break [%]	ISO 37-2005 / ASTM D-638	≥ 350 - 400
Hardness [Shore D]	ISO 868-2003 / ASTM D-2240	45 ± 5



PHYSICAL PROPERTIES	DATA	
Rebound resilience [%]	ISO 4662 / ASTM	≥ 38
Tear growth resistance [N/mm]	ISO 34-1 method A	≥ 45
Volume abrasion [mm ³]	DIN ISO 4649	≤ 110
Taber Abrasion [mg]	ASTM D-4060	< 6 (Wheel CS17 / 1.000g / 1000 Cycles) < 85 (Wheel H18 / 1.000g / 1000 Cycles)
Pull off strength [N/mm ²]	DIN EN ISO 4624 / ASTM D-4541	Concrete: ≥ 1,5 Steel: ≥ 6
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
Sound absorption	-	Approx. 5 dB / mm DFT

* **DELTAShield HIP 1000** 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 12 months unopened and stored correctly



APPLICATION NOTES

- **DELTAshield HIP 1000** 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 70°C. Adjustments can be made on-site based on environmental conditions, mixing module size and application circumstances.

SAFETY AND HANDLING

- All applicators of **DELTAshield HP 1000** should be trained and approved by the manufacturer.
- Spray applicators should wear appropriate PPE including approved breathing equipment, eye wear, Nylex 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.

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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