

# DELTA Shield

## HIP 1000



T E C H N I C A L D A T A S H E E T

Two component spray applied blast mitigation protective lining system

### Description

**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.

**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.

### Features

- Extremely high tensile strength even at high elongation levels
- High Impact and abrasion resistance
- Extremely fast tack free times
- Fast return to service
- Maintenance free
- Excellent adhesion most substrates
- Chemical resistance
- Can be applied in high humidity
- Seamless application
- Can be applied to any thickness
- 100% solids, VOC-free, solvents free
- Excellent sound reduction properties
- High thermal stability -20° C to 140° C

### Typical uses

- Ammunition storage areas
- Parliament House and Political offices
- Mobile transportable buildings
- Floors of personnel carriers
- Embassy buildings and perimeter walls
- Critical power supply installations and distribution control centers
- Fuel storage facilities
- Court houses, prisons, public buildings
- VIP private residences
- High value storage facilities
- Mobile Command and communication centers



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### Product information

Processing properties	Data		
Mixing ratio A : B (by volume)	1: 1		
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
Tack Free-Time at 20° C [sec.]	10 - 20		
Over coat cycle (without any pre-treatment) [h]	0 – 12		
Curing/loading after [h]	Walkable: 1	Mechanical: 2	Chemical: 12 - 24
Temperature range for application (ambient) [° C]	-10 - +50		
Temperature range for application (substrate) [° C]	-10 - +50		
Material Temperature (Preconditioning) [° C]	25 – 30		
Material Temperature (Spraying) [° C]	65 – 75		
Maximal relative air humidity for application [%]	98		
Dew point limit	Substrate should be 3° C > dew point		
Storage conditions (closed original drums, dry & covered place) [° C]	10 – 30		
Shelf life (unopened and stored correctly) [year]	1		

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Physical properties	Data	
VOC	ASTM D-1259	0%
Solids [%]	ASTM D-2697	100
Viscosity [mPa*s] @ 25° C	ASTM D-4878	Comp. A: 550 – 800 Comp. B: 500 – 700
Density [g/cm³] @ 25° C	ASTM D-1217	Comp. A: 1.09 – 1.13 Comp. B: 1.01 – 1.05
Tensile strength [N/mm²]	ASTM D-638-22	30 ± 5
Elongation at break [%]	ASTM D-638-22	≥ 300 ± 50
Hardness [Shore D]	ASTM D-2240-15(2021)	50 ± 5
Tear strength[N/mm]	ASTM D624-00(2020)	90 ± 5
Abrasion resistance [mg]	ASTM D-4060-19	< 5.5 (Wheel CS17 / 1000g / 1000 Cycles)
Pull off strength [N/mm²]	ASTM D-4541	Concrete: ≥ 1,5      Steel: ≥ 6

- DELTA recommends in all applications involving chemicals a pretest of the lining’s suitability in the customer’s application is conducted. Consult with DELTA Technical Team
- DELTAShield HIP 1000 is an aromatic based system & can display color shift under UV light. DELTA recommends the use of DELTAShield TC 100 aliphatic top coat for color stability
- All data depends on site conditions. Ambient temperatures, substrate temperatures and humidity will all influence stated data
- Film thickness and application techniques can also affect the stated data
- Cold temperatures will result in slower curing times and high temperatures will increase reactivity and reduce curing times relative to the stated data

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### Application notes

- **HIP 1000** should be applied in strict accordance with project specific application methodologies recommended by the manufacturer.
- **HIP 1000** can only be applied using high pressure heated plural component spray reactors, such as Graco EXP2/3, by professionally trained and approved applicators.
- Substrate should be prepared prior to application of **HIP 1000** according to manufacturer guidelines.
- 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 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 & handling

- All applicators of **HIP 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.

### Technical services

- Detailed technical assistance and further information regarding this system and its relevant application specifications are available from DELTA Technical Services.

### Packaging

- **HIP 1000** is supplied in 40 or 425 kg sets.
  - Component A : 20 or 225 kg
  - Component B : 20 or 200 kg



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.

Version 30012025