



# TECHNICAL DATA SHEET

## FLUID FILM Gel B

Product information is not obligated supports for projects Stand 10/2009

<b>1. Description</b>	One component high build, solvent-free, lanolin based soft coating.																								
<b>2. Color</b>	White, unpigmented, other colors on special order.																								
<b>3. General usage</b>	Single coat material for shipbuilding, dockbuilding, offshore construction, industry and similar objects stressed with sea-, brack- and freshwater, where a permanently soft coating is not objectionable. In ballast water tanks, void spaces, pontoons, dolphins etc., both on new and old constructions. <b>FLUID FILM Gel B</b> has the advantage of not requiring sand blasting or extensive surface preparation giving a protection as long as conventional epoxy coatings.																								
<b>4. Principal characteristics</b>	<ul style="list-style-type: none"><li>• solvent-free, for less environmental pollution during application process, higher safety;</li><li>• highly economical as easily applied, saves labor, time, equipment and material costs;</li><li>• can be applied with adapted high performance airless equipment (&gt; 45 : 1 pump ratio) in one coating process of over 1.000 µm. Can also be applied by brush/gloves for spot repairs;</li><li>• has a great affinity for ferrous metals and old well adhering coatings;</li><li>• outstanding fresh and salt water resistance immediately after application;</li><li>• resistance against temperatures from -45 °C (248 K) to abt. 70 °C (343 K);</li><li>• self-healing in case of mechanical scoring or similar damage;</li><li>• after inspection of the tanks no recoating is required;</li><li>• highly flexible and readily compensating for metal expansion, contraction and flexing;.</li></ul> <p><b>FLUID FILM Gel B</b> meets the United States Military Specification MIL-C-23050.</p>																								
<b>5. Technical data</b>	<table><tr><td>Specific Gravity</td><td>0,924 - 0,934</td></tr><tr><td>Solid content</td><td>100 % (non volatile content)</td></tr><tr><td>Recommended film thickness</td><td></td></tr><tr><td>    • new construction</td><td>1000 µm</td></tr><tr><td>    • in-service construction</td><td>600 - 1000 µm</td></tr><tr><td>Spreading rate</td><td>1 liter per 1 m<sup>2</sup> for 1000 µm</td></tr><tr><td>water resistant</td><td>immediately after application</td></tr><tr><td>Flash point</td><td>ASTM-</td></tr><tr><td>D92 (Cleveland Open Cup)</td><td>207 °C (405 K)</td></tr><tr><td>Color</td><td></td></tr><tr><td>    • unpigmented</td><td>light amber</td></tr><tr><td>    • white (ASTM D1535)</td><td>2,5Y0/2, or lighter</td></tr></table>	Specific Gravity	0,924 - 0,934	Solid content	100 % (non volatile content)	Recommended film thickness		• new construction	1000 µm	• in-service construction	600 - 1000 µm	Spreading rate	1 liter per 1 m <sup>2</sup> for 1000 µm	water resistant	immediately after application	Flash point	ASTM-	D92 (Cleveland Open Cup)	207 °C (405 K)	Color		• unpigmented	light amber	• white (ASTM D1535)	2,5Y0/2, or lighter
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Unworked penetration	210 - 235 (ASTM-D217)
Specific conductivity	less than 10 <sup>-9</sup> mho/cm at 1 MHz
Effect on rubber	none on neoprene, buna-n and most synthetics. Some swelling on natural rubber (ASTM-D471 at 158 °F, 70 hrs)
Dropping point	205 °F (96 °C) ASTM-D566. This value is given for information purposes only and is not to be constructed as a recommendation for max. temperature use.
Toxicity	
• oral	LD <sub>50</sub> greater than 16 ml/kg. (Relatively harmless)
• skin irritation 16 CFR Sect. 1500.41)	(Title score 0.83 (minimally irritating)
• eye irritation 16 CFR Sect. 1500.42)	(Title negative
<u>Salt fog (inches year)</u>	
a. ASTM-D117 (5000 hours)	0,00016
b. MIL-C-23050	0,00020 (max. allowed 0,005)
<u>Simulated ballast tank</u>	
MIL-C-23050	0,00050 (max. allowed 0,005)
<b>6. Certificates and approvals</b>	<p>Certificates : United States Testing Company, Inc. - July 1975 Flame Propagation Hazards of <b>FLUID FILM Gel B</b></p> <p>American Institute of Chemists - August 1976 Ballast water quality in contact with <b>FLUID FILM Gel B</b></p> <p>Niedersächsisches Wasseruntersuchungsamt - Mai 1981 Ballastwasserbelastung durch <b>FLUID FILM Gel B</b> beschichtete Tankwände</p> <p>University of California, Toxicology Research Laboratory - February 1977 Toxicity and Irritation Studies on <b>FLUID FILM Gel B</b></p> <p>Health Ministry USSR - October 1987 Gesundheitsprüfung von <b>FLUID FILM Gel B</b> während der Applikation</p> <p>Deutsches Hydrographisches Institut - April 1984</p> <p>Long term testing of Fe mooring components with <b>FLUID FILM Gel BW</b> lubricants on the Light Vessel "Fehmarnbelt"</p>
	<p>Approvals : for wbt maintenance Germanischer Lloyd</p>

**7. Package**

20 ltr pail  
208 ltr drum (55 US gallons) non returnable

**8. Storage**

Shelflife unlimited. Will not change in original pails and drums.

**9. Technical data for use**

Applied by	Amount of coats	Average film thickness in µm	Theoretical consumption in l/m <sup>2</sup>	Theoretical spreading rate in m <sup>2</sup> /l	Nozzle	
					Ø mm	Mpa
Brush	1	80	0,08	12	-	-
Roller	1	80	0,08	12	-	-
Pneumatical spraying *	1	600-1000	0,6 / 1,0	1,6 / 1,0	0,8	5-6
Airless spraying	1	600-1000	0,6 / 1,0	1,6 / 1,0	0,88	300

\*) with the use of combi air spraying equipment

The durability of a coating system depends among other things on the film thickness. The film thickness should be selected according to the required durability and the corrosive environment. We recommend for ballast water tanks a preferred value over 1000 µm for new construction and for rusted IN-SERVICE construction over 1500 µm. For bigger objects our inspectors are available for on board or on site advice and instruction.

**10. Recommended substrate condition**

New Construction

Steel : hand tool cleaning. Removing of loose mill scale, loose and non-adherent rust, and loose or removable paint, if they can be removed from the steel surface by light hand wire brushing.

Steel with approved shopprimer : pretreated only on damaged areas as described above. On intact shopprimed areas only removal of foreign matter by vacuum cleaner or perhaps brooms.

In-Service-Construction No sandblasting or grit blasting or extensive wire brushing is needed prior to the application. Remove flaking rust and peeling paint. Break all blisters larger than 1 inch (25 mm). Tightly adhering rust can be left. Practicable methods are scraping, hammering, hydroblasting and/or a combination as fits.

The use of cathodic protection in combination with FLUID FILM Gel B is recommended.

During the application of FLUID FILM Gel B it is not necessary that the temperature of the substrate should be above the dewpoint, but no condensation should be visible on the steel surfaces. On areas where high resistance to water abrasion is required, for example on newbuildings areas directly placed under the strainer, the use of a conventional heavy epoxy paint is recommended.

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**11. Instructions for use**

- a. **FLUID FILM Gel B** can be applied at temperatures between -10 °C (263 K) and +40 °C (313 K). For application at low temperature the viscosity of the product may be adjusted for sprayability by warming up to not more than 40 °C. A temperature of 20/25 °C is normally sufficient for airless spraying.
- b. Due to the fact that **FLUID FILM Gel B** is to be applied in a single coat, special care has to be taken on the backsides of bulb bars, stiffeners, edges, openings etc. Precoating by brush is not required.
- c. During application the film thickness has to be controlled to prevent under- or overcoating. The film thickness measured just after spraying should be 10 % higher than the required thickness as air blisters resulting from spraying process will increase the volume until the blisters disappear.
- d. It is not allowed to add any thinners!
- e. When using in closed rooms (tanks, void spaces etc.) ventilation of sufficient capacity has to be assured during spraying application.

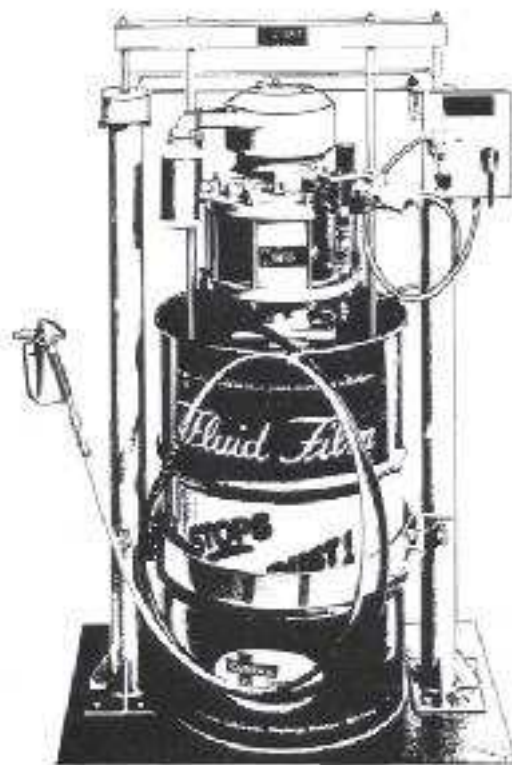
**12. Airless spraying equipment**

For application of the highly-viscous **FLUID FILM Gel B** the use of special heavy duty single feed airless spray equipment, preferable 45/1 ratio, is recommended.

For adapting conventional airless pumps for **FLUID FILM Gel B** application the suction hose should be dismantled, the pump directly mounted on drum rim and immersed in the FLUID FILM. One to four 15 m lengths of material hose  $\frac{3}{4}$  inch usually are used, depending upon the distance of application surface from the pump. Use as few lengths of material hose as possible. A  $\frac{1}{2}$  inch hose is recommended to use between the  $\frac{3}{4}$  inch material hose and the airless spray gun. This  $\frac{1}{2}$  inch hose provides greater flexibility and greater ease with the use of the flow gun. Usually for application to large tank surfaces the nozzle orifice (rotoclean type) is approx. 0,88 mm (= 0,035 inch). For small confined areas, or to apply a thin coat the use of smaller orifice is recommended.

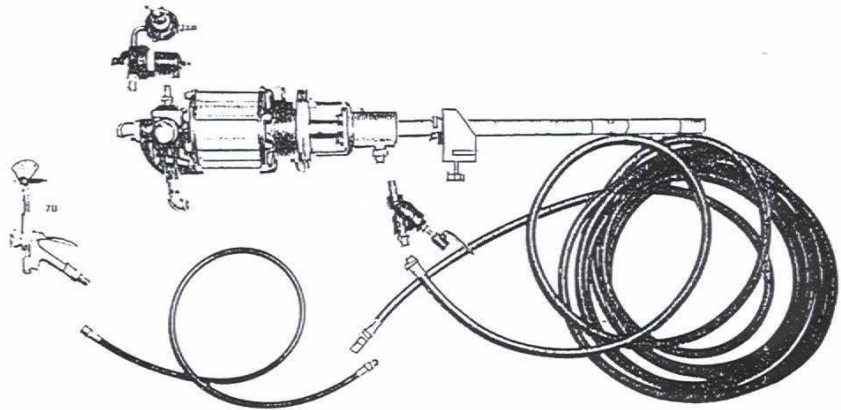
We recommend especially for **FLUID FILM Gel B** designed spray equipment :

- a. WIWA-Airless 45000 Superstar with air operated double-post 0,7 tons rampress (downward force 700 kg)



WIWA-Airless Superstar 45000 (pump ratio 46:1, output per minute 45 ltrs, output per cycle 360cc). The high-performance appliance is predicted for painting large areas and applying thick coats. It combines the high pressure ratio with a large capacity rate. With this pump a 55 US gallon (208 liter) drum may be applied in thirty-five minutes, depending upon the ease of availability of the surface to be coated.

b. ALEMITE Stewart-Warner, Model 7896-A2



The small overall dimensions and weight of the pump predict it for portable use in places where lifting facilities are not available. These heavy duty, double action, bung mounted material pumps (pump ratio 22:1, output per minute 25 ltrs, output per cycle 200cc) are designed to dispense material from 55 gallon drums. For application of **FLUID FILM Gel B** the length of the  $\frac{3}{4}$  inch material hose should usually not exceed 45 m (3 lengths of hoses).

**13. Safety precautions**

During application

- a. While **FLUID FILM Gel B** is not a toxic material and does not contain solvents the spraymist is not harmless. A dust mask should be used during spraying.
- b. Ventilation should be provided in confined spaces to remove the spraymist or vapor-proof lightning should be used during the application.

Burning and welding on FLUID FILM coated surfaces

- a. Under all circumstances verify that tank interior is gas-free.

Maintain adequate fire watch.

While **FLUID FILM Gel B** has a flash point of 405 °F (207 °C) COC, the determination of tank gas-freeness is necessary because materials such as fuels or solvent cleaners inadvertently may have been introduced into a tank. While the usual precautionary measures should be followed in connection with any welding or burning, it is recommended that any tanks in which hot work is to be performed, should be completely ballasted with clean sea water before the ship arrives in port. The gas-freeness of the tank should be confirmed with a standard calibrated explosimeter.

Make certain that no combustible materials, such as wooden staging or rags, are in areas where hot slag could ignite them.

- b. When welding, cutting or burning of steel whose surface, front or back, is coated with FLUID FILM, the coating should be wiped with rags or a wooden tool from the surface for a distance of four feet (1,24 meters) from the point or line of hot work. A squeegee with a flexible rubber or plastic wiper blade is suitable and more rapid for preparation of larger areas. At times it may be desirable to remove the material for a greater distance than four feet, in order to provide additional working area. When extensive hot work is to be done on the tank overhead, it is desirable to cover the tank bottom below the area of hot work with a layer of clean water which will function as a quench for any falling hot slag.

If hot work is to be done on or near a vertical surface where heat-softened FLUID FILM may run down and form a pool near the torch, this pool must be cleaned away before hot work continues.

Likewise, if heating is being performed on a vertical surface and heat conduction causes the coating above to melt and flow down into the path of the flame, hot work must stop until the melted material is removed.

- c. When cutting a section, such as a disc, out of a metal plate coated on the back side with FLUID FILM, a pilot hole should be drilled on the perimeter of the cut to minimize the length of time required for penetration by the torch.

If the section to be removed is not too large, tack a welding rod, or other type of rod, to the section for a handle which can be used to prevent the section from falling into the FLUID FILM coated tank.

- d. The following excerpts are taken from OSHA regulations :
- 29 CRF, Section 1915.23 (b) (2)  
"Flame or heat shall not be used to remove soft and greasy preservation coatings".
- 29 CRF, Section 1915.32 (f)  
"When welding, cutting or heating is performed on tank shells, decks, overheads and bulkheads, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent compartment, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed".
- (g) ... "The gas supply of the torch shall be positively shut off at some point outside the confined space whenever the torch is not to be used or whenever the torch is left unattended for a substantial period of time, such as during the lunch hour".
- 29 CFR, Section 1915.33 (d)  
"Before welding, cutting or heating is commenced in enclosed spaces on metals covered by soft and greasy preservatives, the following precautions shall be taken :
- A competent person shall test the atmosphere in the space to ensure that it does not contain explosive vapors ...
  - The preservative coatings shall be removed for sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heated area may be used to limit the size of the area required to be cleaned".
- e. Before starting hot work, new welds should be cleaned by wire brush or by wiping with wet rags to remove any welding residue which would interfere with adhesion. FLUID FILM should be replaced on the steel by brush application. It is recommended that **FLUID FILM Gel B** be used for this purpose. It is of gel consistency and readily applied with a medium to stiff bristle brush.

The information and recommendations herein are believed to be accurate and reliable. However, when conditions of actual use are beyond our control, any recommendations or suggestions are made without warranty expressed or implied.