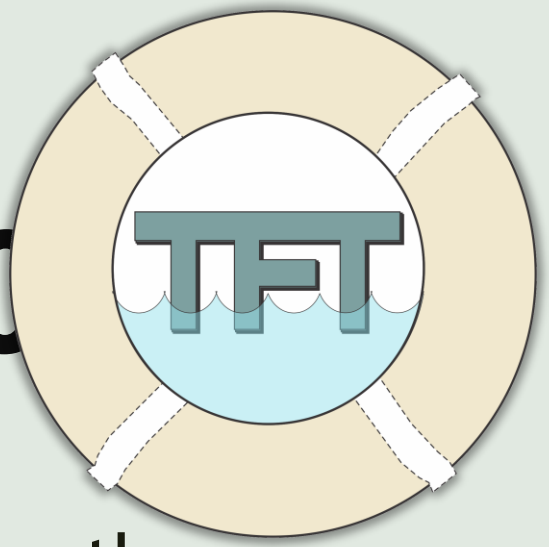
SINK-NOT 350



Void Filling, Floating Roof Polyurethane Foam

- A Thin Film Technology

Presentation

THE SINK-NOT 350 SOLUTION

In recent years, tank owners have tried various methods to address sinking roofs ranging from “ping pong” balls, which can be dissolved by some products, to bladders, which are prone to tears from sharp edges, burrs, or laminations within the pontoons. However, and most importantly, none of these methods result in an actual fix for the root cause. The pontoon continues to leak and the corrosion process can continue unabated.

	WELDING	PLASTIC BALLS	BLADDER	**SINK-NOT 350**
STOPS ROOF FROM SINKING	YES	YES	YES	**YES**
STOPS THE LEAK(S)	YES	NO	NO	**YES**
APPLIED IN SERVICE	NO	YES	YES	**YES**
STOPS VAPOR EMISSIONS	YES	NO	NO	**YES**
REDUCES FIRE THREAT	YES	NO	NO	**YES**
QUICK COMPLETION	NO	YES	YES	**YES**
INCREASE ROOF STABILITY	NO	NO	NO	**YES**

Attributes of SINK-NOT 350

The above is an example of a sunken roof due to leaking pontoons. This is an all too frequent occurrence due to corrosion from rainwater above and product contact below resulting in:

- Costly repairs
- Loss of product
- Environmental fines & cleanup costs
- Health & safety issues and concerns
- Significant loss of revenue

Even minor pontoon leaks can cause a roof to sink when acting in conjunction with clogged drains and heavy rains. Leaking pontoons can also compromise safety and create emission concerns.

Attributes of SINK-NOT 350

SINK-NOT 350 is a closed cell, chemical resistant , flame retardant, polyurethane foam with the following properties:

- ❖Hydrocarbon resistant
- ❖Will not sustain a flame
- ❖Prevents vapors from escaping into the atmosphere

The **SINK-NOT 350** formulation has been used in flotation services, lasting as long as 18 years with no failures in various media including:

- ❖ Crude oil
- ❖ Gasoline
- ❖ Water
- ❖ Naphtha
- ❖ Xylene
- ❖ Jet fuel
- ❖ Diesel
- ❖ toluene

SINK-NOT 350 has also been used in LNG storage and transportation.

Attributes of SINK-NOT 350

SINK-NOT 350

- will not absorb or be dissolved by the media it contacts.
- 350's foam can actually incorporate and "tie-up" small amounts of product leftover or residue.
- will expand into the smallest holes and voids and because of its product resistant properties, will seal them, thus providing another layer of protection from future leaks and corrosion.
- 350's corrosion protection properties ensure maximum tank integrity as well as increasing safety characteristics in the event of an accident.

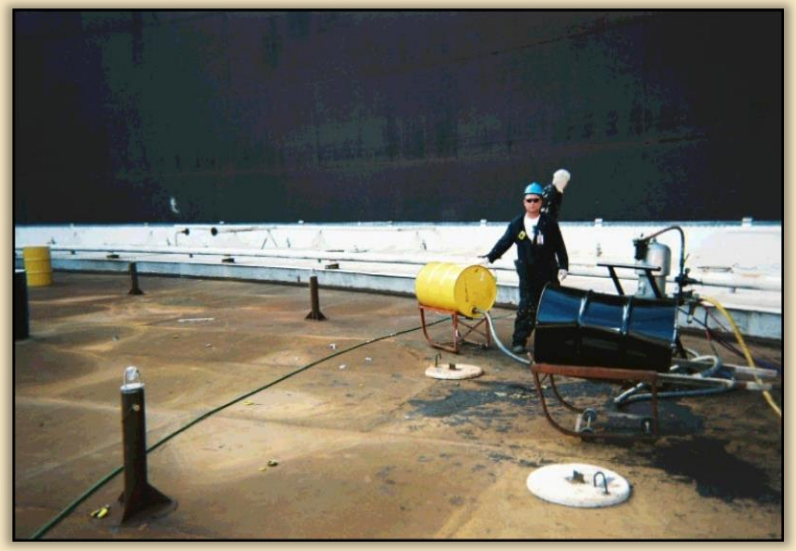
SINK-NOT 350 Around the World

The **SINK-NOT 350** formula has been successfully applied in numerous locations both in the U.S. and internationally. It has been used in fourteen states around the U.S., from North Dakota to Texas and California to New Jersey. **SINK-NOT 350** has international exposure including Europe (UK, Denmark), the Middle East (Israel), and the Caribbean (Aruba, Bahamas, Trinidad and Venezuela), South Africa and Australia. **SINK-NOT 350** has demonstrated its versatility and ease of application across a wide range of environments. Trained installation crews, supervisors and equipment are available for almost any location. SINK-NOT 350 ships worldwide as "Not-Regulated", "NonHazmat" by Air, Ocean or Surface.

Installation of SINK-NOT 350

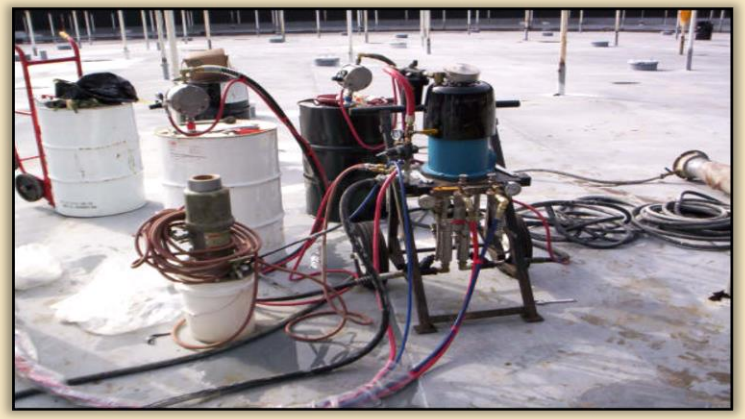
Foam is injected and allowed to rise in several continuous layers until the pontoon is completely filled. When full, any excess is trimmed from the manway. The **SINK-NOT 350** foam will expand into the smallest holes, sealing them against further leakage and corrosion.

Installation of SINK-NOT 350



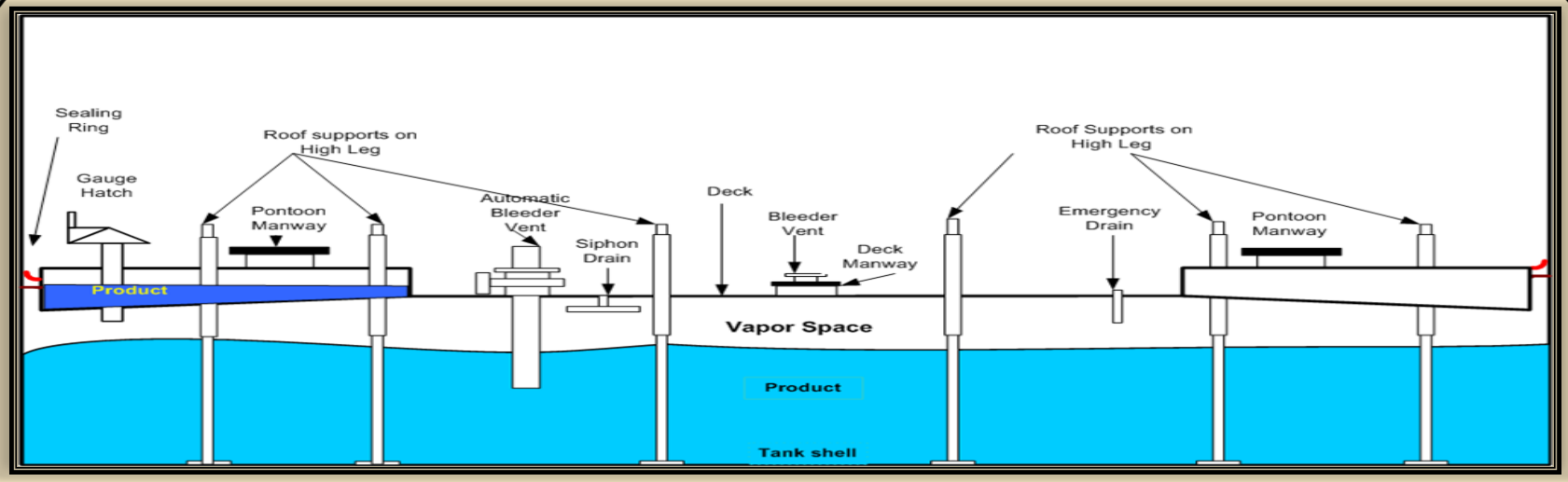
- 1:1 mixing ratio
- Airless plural pump application
- Pumps directly from drum

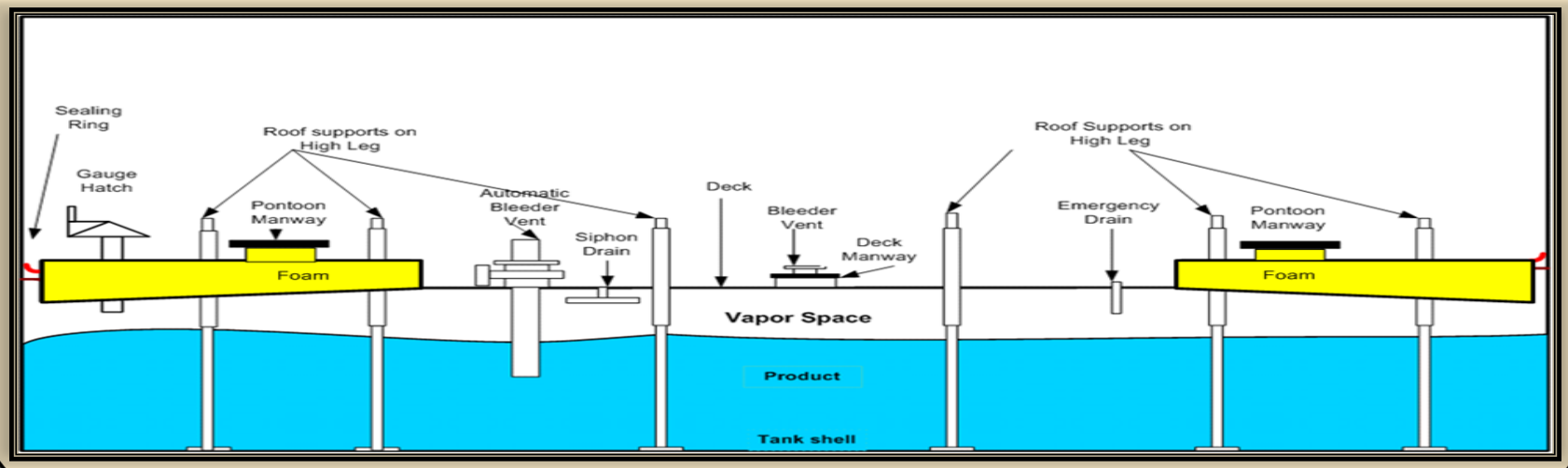
Installation of SINK-NOT 350



Installation of SINK-NOT 350

Leaking Pontoon: Before and After SINK-NOT 350 Installation





Testing SINK-NOT 350

Foamed in naptha

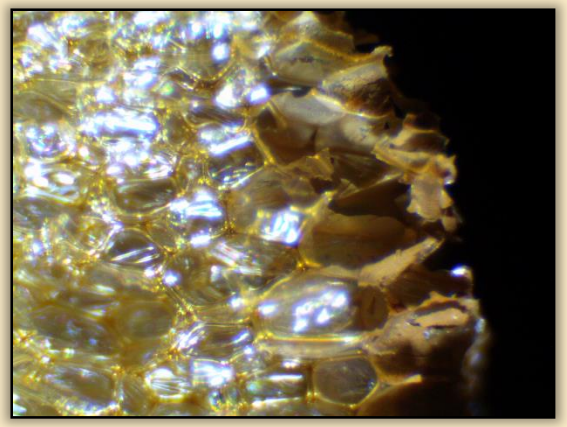
Foamed in diesel

Foamed in gasoline

Foamed in oil

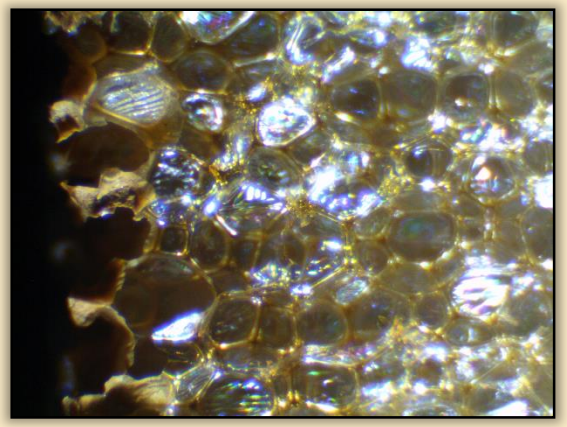
It is always preferable to remove as much contamination within the pontoons as possible. Minor residues of hydrocarbons are swept into the lower parts of the foam without ill effect. Very small amounts of water are acceptable however a layer of standing water may disrupt cell formation over a larger volume and should be removed.

Testing SINK-NOT 350



This sample was subjected to **10 years** of exposure in 10% ethanol/gasoline.

Degradation has not spread past the first layer of intact cells.



This is an image from the opposite face of the sample. Note the exact same result showing exposure of the initially damaged outside cells with ***no*** further penetration into the body of the sample.

Conclusions: **SINK-NOT 350** has been shown to be completely resistant to the aggressive 10% ethanol/gasoline test material over a period of ten years. Based on these results it is anticipated that the **SINK-NOT 350** floatation foam will have an indefinite service life

SINK-NOT 350 – Product Data

Type and Description

Thin Film Technology's **SINK-NOT 350** is a closed cell polyurethane foam used in pontoons-both external and internal-of floating roof storage tanks. The purpose of installing the **SINK-NOT 350** in pontoons is to prevent them from leaking and causing the roof to sink. **SINK-NOT 350** also acts as a fire retardant to hydrocarbons including crude oil, diesel, gasoline and jet fuel. It may also be used in double wall tanks and vessels for LNG product storage and transportation.

Typical Component Properties

	PART A POLYMERIC MDI	PART B POLYOL BLEND
Viscosity at 25 °C (cps)	180 - 220	700 - 900
Specific Gravity at 25°C (g/ml)	1.24	1.14
Mixing Ratio by % Volume	50	50

SINK-NOT 350 – Product Data (cont.)

Typical Foam Properties

Density, ASTM D-1622	
Molded, Overall	3.4
Core, pcf	2.8
Compressive Strength	
10% deflection, ASTM D-1631	
Parallel, psi	25.1
Perpendicular, psi	31.4
Compressive Strength Change	
Mil-P-21929B, % change after humid aging	19.03
Initial K-Factor	
ASTM C-518 BTU in/hr/sq. ft. Degrees F	0.149
Shear Strength	
ASTM C-273,psi	25.9
Tensile Strength	
ASTM D-1623, psi	35.0
Water Absorption	
ASTM D-2842, lbs/sq. ft.	0.076
% by volume	4.4
Tumbling Friability	
ASTM C-421, % loss	9.7

Typical Reactive Properties

Hand Mix Reactivity at 25°C	
Cream Time (sec)	27
String Time (sec)	125
Cup Density, % by weight	2.5

SINK-NOT 350 – Product Data (cont.)

Typical Foam Properties (Cont.)

Close Cell Content	
ASTM D-2856, %	83
Compression Set	
MIL-P-21929B, % loss	0.79
Oil resistance	
ASTM C-471 MIL-P-21929B	PASS
Fire Resistance	
ASTM D-1692 MIL-P-21929B	PASS

Dimensional Stability			
ASTM D-2126, % volume change	At -20°F	At -158°F	At -158°F and 100% RH
1 Day	0.04	1.6	3.3
7 Days	0.07	4.6	5.8
14 Days	-0.02	4.6	6.4
28 Days	0.22	5.4	7.5

Coverage

Theoretical coverage is 2.5 lbs SINK-NOT 350 per cubic foot of space to be filled.

SINK-NOT 350 - Product Data (cont.)

Chemical Resistance

SINK-NOT 350 has been tested against the following media:

▪Gasoline	Pass
▪Crude Oil	Pass
▪Water	Pass
▪Salt Water	Pass
▪Naphtha	Pass
▪Xylene	Pass
▪Toluene	Pass
▪Diesel Fuel	Pass
▪MEK	Fail
▪Ethanol	Fail

Application

SINK-NOT 350 should be applied 1:1 Part A to Part B, preferably with a plural component spray machine. Compartment does not need to be clean or dry, but do not insert into pontoons containing more than approximately ¼" in liquids.

Cleaning solvent: MEK, Acetone or DOP

Safety

Consult the Material Safety Data Sheet for this product prior to use.

Summary of SINK-NOT 350

SINK-NOT 350 offers an excellent solution to leaking pontoons that can result in devastating and costly roof collapses while at the same time providing value-added corrosion protection and the ability to incorporate or “tie-up” small amounts of residual media. **SINK-NOT 350**’s unique sealing characteristics provide the following performance and application features to ensure maximum reliability and storage vessel integrity.

- Addresses the root cause and actually seals the leaks
- Permits installation whether tank is in or out of service
- Provides hydrocarbon resistance and will not sustain a flame
- Prevents emission releases and enhances environmental stewardship
- Does not require complete cleaning nor a burr-free surface
- Eliminates possibility of future roof collapses when an adequate number of pontoons have been filled
- Rapid installation and return to service