

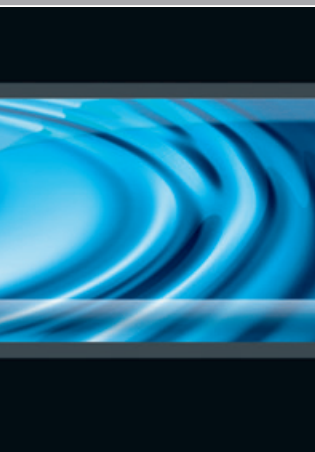
THE SMP PERMEATION BARRIER FROM SCHÜTZ





## **SCHÜTZ SMP: prevents your products from vanishing into thin air.**

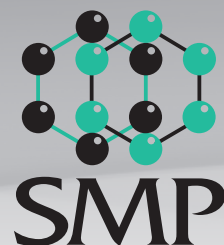
**The SMP method developed by SCHÜTZ effectively seals plastic containers to ensure that leakage of contents (permeation) is reliably prevented.**



### **Impervious with Surface Modified Plastics (SMP).**

The premise of the SMP process lies in the replacement of hydrogen atoms by fluorine atoms, occurring in the chain of carbon atoms of the polyethylene macromolecules. As a result of 3-stage chemical densification of the molecular chain of polymers, a perfectly even layer (PTFE) – similar to Teflon – is formed on both sides of the container, which significantly increases the protective properties of the material. The concentration of fluorine and length of treatment depend on the specific permeation requirements. The result: SMP treated storage and transport packaging minimizes the permeability of container walls.

After adaption to customer-specific requirements, the treatment of plastic containers with fluorine gas is guided and controlled by processors. State-of-the-art production plants and our complete quality control guarantee maximum performance of the SMP permeation barrier.



SCHÜTZ  
HEATING OIL  
TANK SYSTEMS



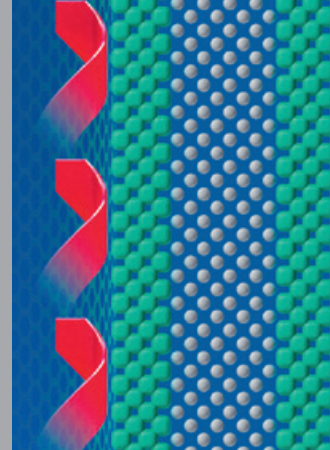
SCHÜTZ  
PE DRUMS



SCHÜTZ IBC



SCHÜTZ PE drum with fluorinated internal and external layer



Schematic of a profile section of a container wall with fluorinated internal and external layer

### Economical, safe and environment-friendly.

SMP treated synthetic containers offer complete safety during transport, economical storage and high resistance to solvents. Double-sided fluorination significantly reduces the permeation of filling goods and improves the chemical resistance of easily flammable, toxic or corrosive substances. In return, the environment benefits from the extremely low rates of permeation. Additionally, SMP fluorination provides an extremely effective odour barrier regarding gasoline, diesel fuel, and fuel oil. The superior mechanical properties of HDPE, including resistance to extension, expansion, hardness, resistance to cracking susceptibility as well as thermal properties and low-temperature behaviours are not influenced by SMP treatment.

Extremely low permeation rates are of benefit to the environment and to living comfortably at home: for example, SMP treated fuel containers indicate significantly reduced rates of air exchange and evaporation from the tanks – and in the heating room of your home this permeation barrier prevents the occurrence of annoying odours.

PERMEATION OF UNTREATED AND SMP FLUORINATED HDPE CONTAINERS		
Weight loss in %	Untreated	SMP fluorinated
petrol	77.2	1.8*
diesel fuel	5.1	0.05*
fuel oil	4.3	0.05*
white spirit	13.0	0.1*
xylol	70.8	4.2*
cyclohexanone	2.9	0.6*
heptane	37.7	0.2**
naphtha	21.2	0.2**
toluol	47.5	0.4**
terpentine	3.9	0.05**

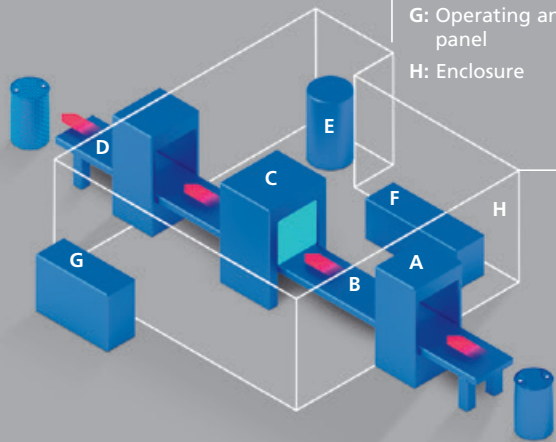
Test conditions:

\* 250 days at 40°C – 5 l canister, 1 mm wall thickness non-pigmented HDPE

\*\* 28 days at 50°C – 473 ml HDPE bottle, non-pigmented



Accessories for SCHÜTZ fuel oil tanks are SMP treated to provide an extremely effective barrier against the odour of fuel oil



A: Preheating chamber  
 B: Product infeed  
 C: Fluorination chamber  
 D: Conveyor belt for unloading  
 E: Scrubber  
 F: Pump unit  
 G: Operating and control panel  
 H: Enclosure

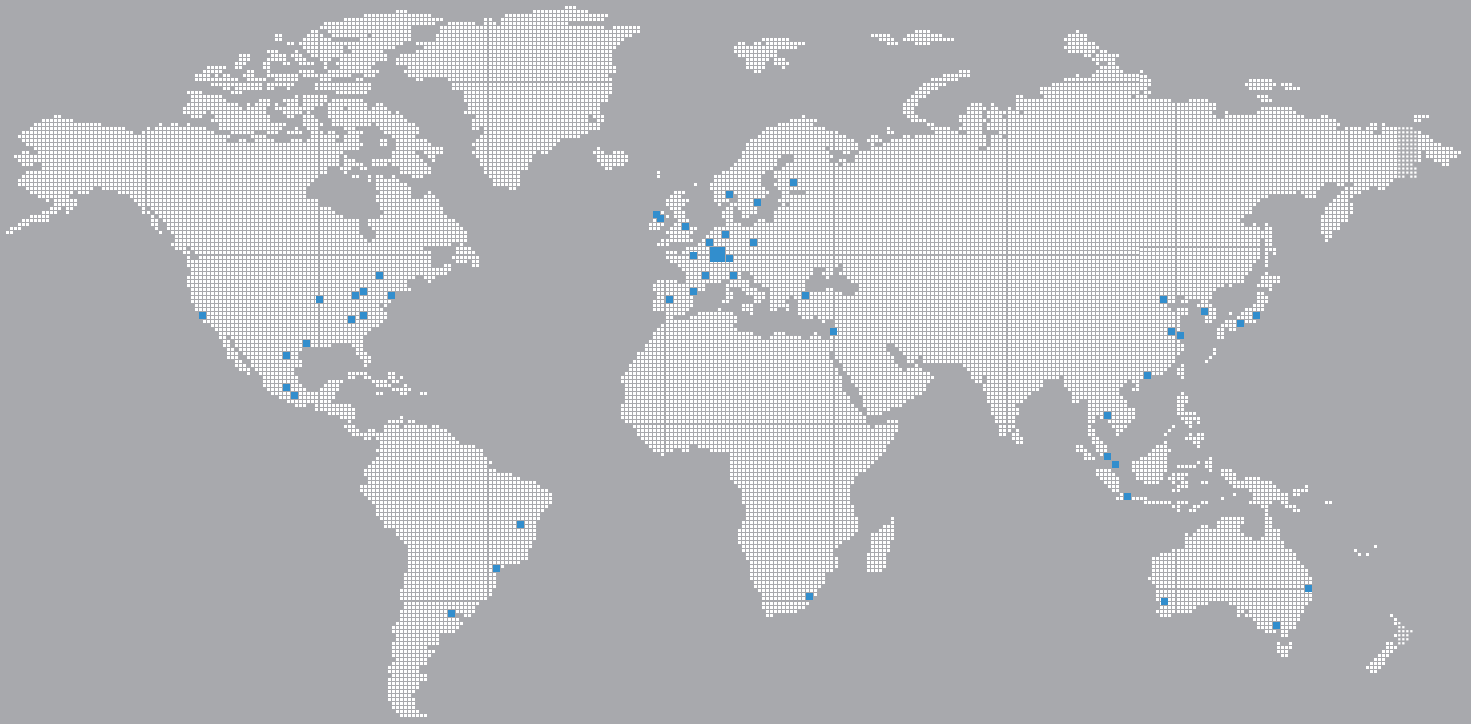


On request, all plastic containers and accessories such as pipes and gaskets from the SCHÜTZ product range can be treated with the permeation barrier SMP.

### The perfect solution for difficult filling goods.

SMP fluorination is perfectly suited for all plastic containers that are used for transporting or storing soluble, aromatic filling goods and aromatic substances. SMP treated packaging is used mainly in the chemical industry, the automobile sector as well as in transport services, for example as:

- Gasoline and fuel oil tanks
- Containers for transporting sensitive substances
- Containers for chemicals



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