A Zotefoams plc brand

T-FIT® Clean

Chemical/Cleaning Agent resistance testing

T-FIT® INSULATION

Fit to perform. **Fit** to last

Clean room and other aseptic environments are often subject to routine deep cleaning processes with industrial strength chemical agents, disinfectants, and sanitisers. These types of products often cause traditional insulation to break down, particularly open cell materials which wick cleaning agents into the structure of the insulation, causing subsequent failure.

T-FIT® Clean is a closed cell product and will not absorb any moisture or cleaning agent. Moulded from polyvinylidene fluoride (PVDF) the product is naturally highly chemical resistant. To provide a higher level of confidence to clean room operators, customers, and users/installers of T-FIT Clean, chemical patch testing was conducted across a range of 6 common cleaning agents over a seven-day period of continuous exposure.

Cleaning Agents tested

The following cleaning products were tested:

- P3-mip GEL caustic gel
- Topaz MDI alkaline foam cleaner
- Topaz AC2 liquid acidic detergent
- Spor-Klenz RTU 6525-08 EC
- CleanGuard 4 Alpha trigger spray sterile
- CleanGuard 3 Beta trigger spray sterile

Samples tested

Sample product and materials under test:

T-FIT Clean 4” ASME straight moulded from ZOTEK® F 42 HT LS foam sheet prepared as:

a) 75mm x 25mm cut sheets
b) ISO 527-3 type 5 tensile specimens
c) 180-degree peel test specimens, where 90mm of Solvay PVDF tape was adhered to the sample, tape width 25mm

Test method/process

Prior to chemical patch testing, each specimen was visually examined, followed by tensile and 180-degree peel strength testing to establish reference data. Peel strength testing was conducted at a rate of 50mm/min from which average force over a 75mm peel length was calculated

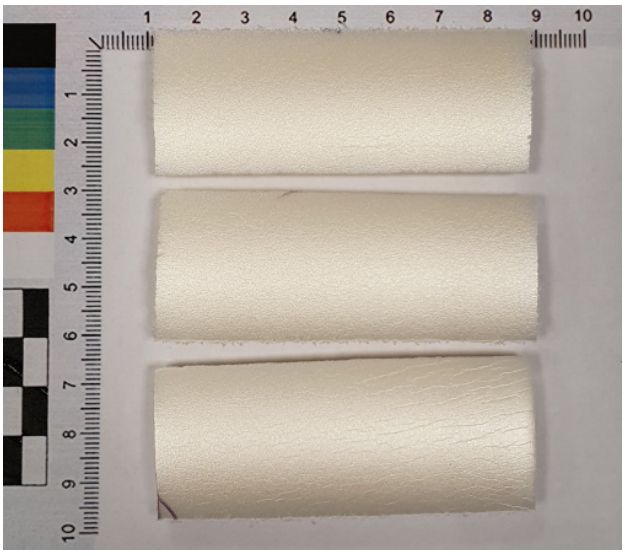
Figure 1: Schematic of 180° peel test

Each specimen a), b) and c) were then covered by a cotton cloth soaked in the relevant test fluid. The cloths were re-wetted daily to ensure they did not dry out.
After seven days, the cloths were removed and the specimens were examined for signs of discolouration, cracking, blistering etc, followed by tensile and peel strength testing.

Summary of results

	Ave. Weight Change %	Tensile Strength kPa	Elongation at break %	Ave Peel Strength 75mm (N/mm)
Reference		**1040**	**46.4**	**0.435**
Changes in measurement following chemical patch test vs reference				
P3 gel	+1.14%	+3.8%	+15.7%	-14.5%
MD1	-0.07%	-24.3%	-35.3%	-9.0%
AC2	+0.04%	+4.8%	+19.8%	+0.9%
Spor-Klenz	-0.21%	-4.7%	+6.9%	-4.1%
Alpha	-0.09%	-7.0%	-8.0%	+8.3%
Beta	-0.10%	+8.7%	+19.2%	+3.4%

The samples showed no visible evidence of degradation such as softening, cracking, blistering or discoloration after patch testing with any of the six chemicals (Figure 2 shows an example of samples after 7-day chemical exposure).



While there is some variation in the tensile strength and elongation at break, it is considered to be typical for specimens cut from foam materials rather than due to chemical exposure.

Variation in peel strength is also considered typical of foam materials rather then due to chemical exposure. It was highlighted that none of the peel samples exhibited separation of the tape from the substrate over the duration of chemical exposure. When the peel test was conducted with these samples, it was apparent that the tape was still well adhered to the foam, with a thin layer of the foam surface remaining adhered to the adhesive tape.

Above information abbreviated from independent test documentation, full report available upon request.

Figure 2: T-FIT® Clean tube sections after 7-day exposure to Topaz AC2 liquid acidic detergent

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