



Constantly seeking better ways to be the best®

Milcut 491630 ESF Explosion Suppressant Foam

491630 is an open pore reticulated polyurethane foam for explosion suppression applications that prevents catastrophic fuel vapor explosions.

Property	Specification	Measurement
Color	Light Blue	Light Blue
Density range (lb/ft³)	1.20-1.45	1.20-1.40
Porosity (pores per in.)	20-30	25
Air Pressure Drop (in. wg.)	0.270-0.370	0.32
Tensile Strength (psi)	15 min	19
Ultimate Elongation (percent)	100 min	220
Tear Resistance (ppi)	3 min	4.5
Constant deflection compression set (percent)	30 max	15
<i>25% deflection</i>	0.35 min	0.55
<i>65% deflection</i>	0.60 min	0.8
Fuel displacement (volume-percent)	2.5 max	<1.0
Fluid retention (volume-percent) Fuel	4.5 max	4
Flammability (in./minute)	15 max	13
Extractable materials (weight-percent)	3.0 max	2.3
Volume increase after fluid age (volume-percent)		
<i>Type I Fluid</i>	0-15	8
<i>Type III Fluid</i>	0-37	27
<i>JP-4 turbine fuel</i>	0-25	17
Low temperature flexibility	No cracking or breaking of strands	
Entrained solid contamination (milligrams/cubic foot)	11.0 max	9.3
Steam autoclave exposure (max tensile loss in percent)	30 max	17

491630 contains a network of skeletal strands with 98% void space at any pore size. The material functions essentially as a three dimensional fire screen similar to a safety screen over a lighted Bunsen burner. In a fuel tank, the empty space above the fuel level may readily contain an explosive mixture of fuel vapor and air. It is in this area where an explosion can occur, should it be ignited by any source. Since the liquid fuel itself does not explode, a completely full tank is far less likely to explode than one that is not full. The lower the fuel level in the tank, the greater amount of explosive vapor is present. When an ignition source is present, the vapor adjacent to the spark ignites rapidly. This ignition, in turn, ignites the vapor around it, creating a chain reaction as the ignition gets larger and moves faster as it propagates through the vapor. The rapid ignition and propagation of the flame results in an ever growing compression wave in front of it, compressing the unignited vapor, thus adding even greater force to an explosion. This sequence occurs in milliseconds. 491630 prevents this chain reaction from occurring; instead, vapor ignition is confined to the area immediately around the ignition source. Flame and wave propagation are mitigated by the foam to below propagation levels, thus preventing a catastrophic explosion.

*Certified to QPL-83054 (Baffle and Inerting Material, Aircraft Fuel Tank), Mil-DTL-83054C

“Constantly seeking better ways to be the best”