

# Versatill® ZT Designed Fluid

US patent 9,816,057 and 10,934,507

## Description

Versatill® Designed Fluid is a proprietary blends of fluids based on fluorinated (HFE) carbons, chlorinated (t-DCE) carbons and alcohol. Versatill® Designed Fluid covers a large spectrum of applications, ranging from elastomer and plastic cleaning, to cleaning-defluxing of electronic components and assemblies to precision-cleaning of any metal parts to heavy duty degreasing of metals, either in cold-immersion or vapor-degreasing processes. All members of this family are non-flammable, environmentally sound, user friendly and economical. Versatill® fluid replaces ANY non-flammable solvent in use today whether brominated, chlorinated or fluorinated solvents. Versatill® fluids outperforms most other non-flammable solvents while saving the user time and money.

Versatill® ZT has azeotropic properties and. Versatill® ZT is an aggressive cleaner, aimed at degreasing and cleaning metal and ceramic surfaces from oils, greases and other soils. It can be utilized in existing vapor degreasing equipment after minimal adjustments. It is an excellent replacement option for solvents such as CFCs, PFCs, HFEs, HCFCs (HCFC-141b, HCFC-225) and aqueous cleaners, in terms of performance and cost.

## Features

- Ideal for use in vapor degreasers and immersion cleaning. Can be accommodated in existing vapor degreasers.
- Outstanding performance with the highest solvency in its class and low surface tension
- Designed for cleaning heavy greases, oils, waxes, silicones and non-polar contaminants with high soils loading capacity
- Maintenance-free use in vapor degreaser, stable composition. No need for additives.
- Non-flammable and low in odor and toxicity for an excellent safety profile
- Environmentally sound - low global warming potential (GWP<16) and zero ozone depletion potential (ODP)
- Replacement for nPB, TCE, ozone-depleting HCFC and other expensive or high GWP HFC
- Faster cycle times, fast drying, lower energy usage.

## Applications

- Cleaner-Degreaser of oil and grease.
- Vapor degreasing and cold cleaning.
- Defluxing printed circuit boards.
- Precision cleaning.
- Metal cleaning
- Carbon removal
- Silicone stripping
- Drying agent

# Technical Data Versatill® ZT

## Physical Properties

Table 1.

	Versatill® ZT	Novec™ 73DE	Opteon™ SE79	FLO™ ZT	HCFC-141b	TCE	HCFC- 225
Boiling Point °C (°F)	<b>47 (118)</b>	48 (119)	47 (117)	46 (116)	32 (90)	87 (188)	54 (129)
Liquid Density g/cm <sup>3</sup> (Kg./L)	<b>1.27</b>	1.28	1.29	1.28	1.24	1.44	1.55
Kauri Butanol Value	<b>112</b>	83	103	106	56	129	31
Viscosity, @25°C, cps	<b>0.41</b>	0.38	0.42	0.41	0.43	0.54	0.59
Surface Tension dyne/cm, @25°C	<b>20</b>	20	21	21	19	32	16
Vapor Pressure mmHg, @25°C	<b>352</b>	360	335	348	518	NA	216
Heat of Vaporization cal/gm	<b>59.5</b>	54.2	66.9	58.8	52.3	56.4	34.6
Flammability Point, TOC	None	None	None	None	None	None	None
Flammability limits, v%	<b>7-15</b>	6-14.5	7.2-15.2	4-7.8	7.6-17.7	8.3-12.5	NA
ODP	<b>0</b>	0	0	0.0	0.1	0	0.03
GWP	<b>3</b>	47	15	24	782	0	400
PEL	<b>200</b>	200	200	194	500	10	50

Data compiled from publicly available sources. Not for specification purposes.

## Conformity

Versatill® ZT Designed Fluid conforms to the following specifications:

- **AMS1526B** Aircraft exterior surfaces (except for ASTM F484 Acrylic Stress Cracking)
- **ARP 1755B** Aircraft engine cleaning
- **ASTM-F-945** Stress corrosion of Titanium alloys (aircraft engine).
- **Boeing D6-17487P** Exterior and general cleaner.

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## Compatibility

Various plastics, elastomers and metals have been tested for compatibility with Versatill® ZT. Metals - in accordance with Mil-T-81533A, the metal corrosion test. Plastics and elastomers were tested for changes in weight, dimensions and appearance after immersion in boiling temperatures for 5 minutes followed by an hour drying.

Table 2.

Metal		Plastics		Elastomers	
Compatible	Incompatible	Compatible	Incompatible	Compatible	Incompatible
Aluminum		Acetal	ABS	PTFE	Silicone
Brass		Epoxy	Acrylic	Perfluoroelastomers	Fluorosilicone
Carbon steel		Nylon	Polycarbonate	Parfluor™	Buna N
Copper		PEEK	Styrene	Viton™ (perfluor)	Viton™ Non-fluor
Inconel		Polyester	PolySulfone	PTFE with EPDM	EPDM
Magnesium		Polyethylene			Butyl rubber
Monel		Polypropylene		PTFE with Neoprene	Neoprene
Stainless Steel		PTFE			
Titanium					

## Safety

- Versatill® ZT is not a reportable chemical under SARA 313.
- Versatill® ZT is not regulated as a hazardous waste under RCRA.
- Versatill® ZT is not regulated as a hazardous air pollutant under NESHAP.

For complete safety information, please refer to Versatill® ZT Safety Data Sheet.

## Packaging

Versatill® ZT is available in 250 Kg. (551 Lb.) drums and 22 Kg. (50 Lb.) pails.

The product should be stored in the original containers in a cool, dry and ventilated place. Do not expose to temperatures higher than 120°F.