



Why use **3M™ Novec™ Fluids** as alternatives to aqueous cleaning?

1 Novec™ Fluids features

- Non-flammability.
- Low toxicity.
- Non ozone depleting.
- Not affected by CMR and F-gas regulations.

2 Size and cost of equipment

Aqueous systems are by necessity larger, more complex and more labour-intensive than solvent-based systems. In addition, the rise of cell manufacturing has made the use of low-volume/small-footprint vapour degreasers a more attractive option than large centrally-located aqueous cleaning systems. Smaller, simpler solvent equipment is therefore lower cost than equivalent aqueous equipment.

3 Energy consumption

Energy consumption for aqueous cleaning is typically more than double the energy required for cleaning with Novec fluids.

4 Drying

The low heat of vapourisation of Novec fluids ensures fast spot free drying without additional energy requirements.

5 Waste water

Aqueous cleaning uses copious amounts of water, which is a hidden cost. Water must be processed with deionization or reverse osmosis equipment prior to use. Extra cost is associated with disposal of wastewater contaminated with oils, heavy metals, etc...

6 Cycle time

Solvent cleaning requires fewer steps than aqueous cleaning – normally 1 wash, 1 rinse, 1 vapour dry with a typical cycle time of 8 minutes compared to usual aqueous cleaning cycle time of 20 minutes due to multiple rinsing stages and slower drying.

7 Cleaning performance

Novec fluids are ideal for many cleaning applications where high purity and low contamination levels on finished parts are critical.

8 Improved cleaning of complex geometries

The extremely low surface tension of Novec fluids makes them excellent for the removal of particulate contamination and also aids cleaning by allowing better penetration of tight clearances in complex parts.

9 Corrosion/Materials compatibility

When selecting a cleaning solvent, materials compatibility is as important as the solvent's cleaning ability. Novec fluids demonstrate excellent materials compatibility with a wide range of substrates used in aerospace materials, medical devices, optical components, electronics and other parts requiring very clean, spot-free finishes.

10 Cost-effective cleaning solution

The combination of a high molecular weight fluid and a low heat of vapourisation has been shown to be beneficial in controlling fluid losses, making Novec fluids economical to use in vapour degreasing operations. Unlike most aqueous cleaning processes, Novec fluids offer faster cleaning and quick spot free drying with lower energy consumption and lower capital equipment cost.

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