



**3M**

**Novec™**

Brand



**3M™ Novec™ Engineered Fluids  
For Medical Device Manufacturing**

**Safe.  
Sustainable.  
Effective.**

Advanced solvent technology  
for precision cleaning, lubricant  
deposition, tube swelling - and more.



3M Science. Applied to Life.™

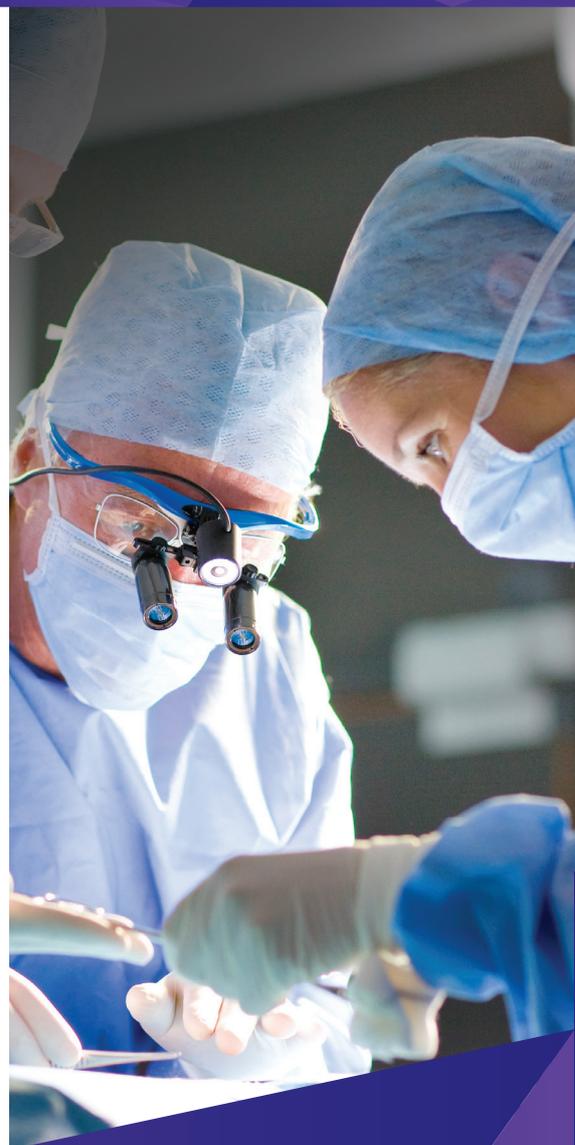
# Sustainable solvent technology for today's emerging needs

Growing public concern about the effects of chemicals on human health, safety and the environment have led to restrictions on the use of many kinds of process solvents used by the medical device industry.

In evaluating alternatives, users of these materials must balance the need for cost-effective performance with that of a sustainable, long-term solution – a solution that will still be viable for many years to come.

3M™ Novec™ Engineered Fluids were designed to help you achieve that balance. Based on 3M's proprietary segregated hydrofluoroether (HFE) chemistry, Novec fluids combine proven performance with an outstanding environmental and safety profile:

- ▶ Zero ozone depletion potential
- ▶ Low global warming potential
- ▶ Non-flammable
- ▶ Low in toxicity
- ▶ HAP-free



## Engineered for performance, safety & the environment

3M™ Novec™ Engineered Fluids remain acceptable by regulatory agencies around the world as alternatives to HCFC-225 and HCFC-141b. And, because they are non-flammable, low in toxicity and are generally recognised as sustainable replacements for those solvents targeted for phase-out by international bodies, Novec fluids are ideal candidates to replace materials such as trichlorethylene (Trike), methylene chloride (dichloromethane) and n-propyl bromide (nPB).

### The versatile solvent solutions

Novec fluids are available in “neat” form – for light duty cleaning, tube swelling, deposition and other applications – and as azeotropes or blends of azeotropes, which offer higher solvency for more difficult-to-remove soils. Novec fluids are also used as rinsing agents in conjunction with low volatility solvating agents. This co-solvent cleaning process is effective for the removal of the most challenging soils, such as heavy oils, greases and waxes.

# Applications

## Precision cleaning

3M™ Novec™ Engineered Fluids offer a number of advantages for manufacturers of medical devices and equipment. They have demonstrated excellent compatibility with sensitive materials such as acrylic and polycarbonate, as well as a wide range of other plastics, elastomers and metals. Their low surface tension, low viscosity and high liquid densities make Novec fluids ideal for use in vapour degreasing equipment. They are fast-drying, and typically offer lower drag-out losses than conventional degreasing solvents.

What's more, Novec fluids easily penetrate tight spaces on complex parts, then drain off easily so they don't become trapped in small spaces. Unlike aqueous solutions, Novec fluids do not support biological growth, and are less equipment and energy-intensive. In addition, parts cleaned in Novec fluids dry quickly and spot-free, with less chance for corrosion. *(See box below for more benefits.)*

## Solvent cleaning vs. aqueous cleaning

Advantages of solvent cleaning with 3M™ Novec™ Engineered Fluids vs. aqueous systems

- ▶ Easier to use with cellular manufacturing
- ▶ Can be used for silicone deposition
- ▶ Better solvency for organic soils
- ▶ No need for waste water treatment
- ▶ Reduced power consumption
- ▶ No anti-corrosion additives required
- ▶ Does not promote growth of bioburden
- ▶ Smaller equipment "footprint"
- ▶ No water spotting
- ▶ No drying equipment needed

## Deposition

3M™ Novec™ Engineered Fluids can disperse a wide variety of coatings, including silicone, PTFE and heparin. These coatings can be successfully deposited on many different types of surfaces, including metals, plastics and elastomers. Specific deposition applications include hypodermic needles, surgical and cutting blades, blood bags, filters and PVC tubing. Novec fluids have low surface tension for uniform coating, and evaporate rapidly to potentially speed your drying process.

## Tube swelling

Novec fluids can rapidly swell silicone tubing and other elastomers, which then recover to their original dimensions on exposure to air or in a drying oven. Novec fluids evaporate quickly, leaving little or no residual solvent behind.

## Reaction media

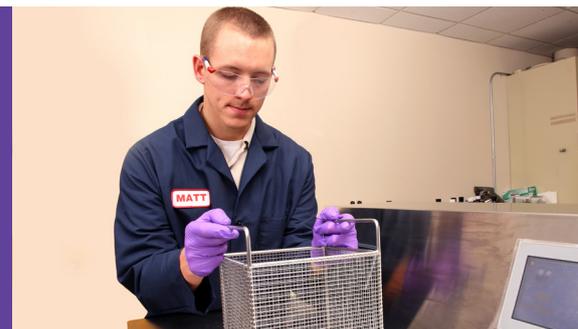
Oxygen and other gases are highly soluble in Novec fluids, making them suitable for use as reaction media. The inertness and non-flammability of Novec fluids are especially useful properties for extractions, separations and anhydrous reactions.

## Other medical applications

Novec fluids can be used as an inert media to separate samples going for diagnostic analysis.

## Cleaning with 3M™ Novec™ Engineered Fluids

Parts	Substrates	Soils
Artificial Hearts	Polycarbonate	Machining Oils
Heart Valves	Silicone Rubber	Particulate
O-Rings	Plastics	Mould Releases
Eyeglass Lenses	Stainless Steel	Mounting Wax
Catheters	Titanium	Skin Oils
Needle Caps	Nickel/Cobalt	Buffing Compound
Endoscope Parts	Aluminum	
Gel Capsules		
Needles		
Stents		
Wires		
Cables		
Capillary Tubes		
Orthopedic Implants		
Dental Implants		
Spinal Implants		



## Deposition with 3M™ Novec™ Engineered Fluids

Materials	Substrates	Application
Lubricants	Stainless Steel	IV Needles
- Silicones	Polycarbonate	Catheters
- Fluorochemicals	Silicone Rubbers	Blades
	Foams	Blood Filters
Heparin	Non-wovens	Tubing
PTFE Antifoams	Metals	Plungers
	PVC	Filters
		Staples
		Bags



# Let's get started – together.

3M is more than a brand – we're people who share your passion for solving problems and improving lives. We have significant experience in the medical device industry, understand the regulatory landscape and have a global supply and support network ready to help you find solutions to your most critical challenges.

## Not sure which solution is right for your application? We're here to help!

Contact us for answers to any questions you may have, including guidance on choosing the correct product from our range of 3M™ Novec™ Engineered Fluids. We also offer general application advice, product data, information on purchasing test samples and more.

Visit [3M.co.uk/Novec](https://www.3m.co.uk/Novec) or contact your local 3M representative to get started today.

## Conversion assistance and equipment optimisation

3M™ Novec™ Engineered Fluids may act differently than your previous fluid in certain key areas. We'll provide suggestions for converting and optimising your existing equipment or processes for use with the appropriate Novec fluid.

## 3M Medical Device Policy

3M™ Novec™ Engineered Fluids are intended for use as process solvents in applications, such as cleaning and coating, that historically used CFCs and HCFCs. They are not intended, nor approved, for incorporation into medical devices or for use in pharmaceuticals. 3M will not support applications that involve temporary or permanent implantation of Novec fluids.

For a complete statement of 3M's Medical Device Policy, contact your 3M representative.

Safety data sheet: Consult Safety Data Sheet prior to use. Product SDS are available at [3M.com/SDS](https://www.3m.com/SDS).

Regulatory: For regulatory information about this product, contact your 3M representative.

Technical information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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