



3M

Novec[™]

Brand

Solvent cleaning – the regulatory environment

**What you need to know
now and moving forward**

A best practice guide

3M Science. Applied to Life.™

Choosing a sustainable path

The precision cleaning of metals and electronic components is subject to a growing amount of regulation. Certain cleaning solvents are being phased out or banned entirely, yet the variety and number of products continues to rise. The risk of significant fines or damage to reputation makes it increasingly important to keep up to date with the market place and the changing regulatory landscape. To help you here's a summary of recent and ongoing changes affecting the cleaning solvents industry.

Cleaning solvents

Several types of cleaning solvents commonly used during the past 20 years are being phased out, have toxicity concerns, or have been banned. They include: Methylene Chloride, Perchloroethylene (Perc), Trichloroethylene (Trike), Hydrofluorocarbon (HFC) based Solvents, n-propyl bromide (nPB), and flammable solvents such as Isoparaffins. Notably, aqueous based cleaning, segregated hydro-fluoro-ethers (HFES) and HFO based solvents have not been phased out or banned, and have high margins of safety.

Risk phases

The UK Health and Safety Executive has applied 'risk phases' on CMR-classed (Carcinogenic, Mutagenic or toxic for Reproduction) solvents. If a company uses less than one tonne of CMR solvents per annum, that solvent is exempt from the Solvent Emissions Directive. But predicting volumes in advance can be difficult, so those responsible for purchasing solvents may want to consider alternatives.



F-gas regulation, REACH and ACGIH

The F-gas Regulation aims to reduce the emission of fluorinated greenhouse gases, including HFCs used in solvent cleaning applications. The 2014 update prohibits the sale of some HFCs, phasing down all other HFCs to only 21% of 2009–2012 levels by 2030.

REACH regulations covering the registration, evaluation, authorisation and restriction of chemicals have had a direct impact on nPB. In 2015, the European Chemicals Agency (ECHA) recommended the inclusion of various substances including nPB in Annex XIV of REACH. In September 2016, nPB was included on the REACH draft authorisation list which, if formalised, could imply a phase-down similar to that of Trike. Prior to that REACH had already deemed nPB as a Substance of Very High Concern (SVHC).

nPB has also come to the attention of the American Conference of Governmental Industrial Hygienists (ACGIH). Tasked with advancing occupational and environmental health, this US based organisation can't enforce legislation in UK or mainland Europe, but it does have worldwide influence. The ACGIH has lowered their exposure guidelines from 10 parts per million (ppm) to 0.1ppm. As a result, nPB may no longer be viable for some industry applications, including vapour degreasing. The ACGIH has also reclassified nPB as a 'Confirmed Animal Carcinogenic with Unknown Relevance to Humans.'

What are the alternatives?

It makes sense to choose a solution that is unlikely to be affected by future legislation and which offers safe, sustainable properties, such as segregated HFE-based and aqueous systems. But changing over will mean new factors to take into account, such as overall cost of ownership, ongoing maintenance, disposal of contaminated water (for aqueous systems), energy consumption, machine footprint, and the maintenance and consumption of fluid. For solvent-based systems, users must also check what equipment is required, and whether the solvent is only suitable for closed systems or if 'open-top' systems can still be used.

Finally, does the fluid provide effective cleaning and penetrate those hard-to-reach spaces? Do surfaces dry fast and spotless? As you can see, the changes to the legislation can have far-reaching implications to your processes.



Summary

Finding the right cleaning solvent for your application can be a challenge. The ideal solution should not only offer powerful cleaning performance but also low environmental impact and a high safety margin. Don't settle for a solvent that satisfies just one of these needs. 3M™ Novec™ Engineered Fluids offers all three without compromise.

A cost-effective solution for your toughest cleaning challenges, Novec engineered fluids are best used in traditional vapour degreasing systems providing fast cycle times and continuous recycling of fluid. They're also effective in immersion systems and hand wiping applications, cleaning without damaging sensitive components or leaving residue, no matter what the application. Novec fluids have an outstanding environmental profile with zero ozone depletion potential and low global warming potential. A safe, sustainable choice for your components, your workers, our planet.



Powerful cleaning performance



High safety margin



Low environmental impact

The 3M™ Novec™ Brand Family

The Novec brand is the hallmark for a variety of proprietary 3M products. Although each has its own unique formula and performance properties, all Novec products are designed in common to address the need for safe, effective, sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, protective coatings, immersion cooling, advanced insulation media replacement solutions and several specialty chemical applications.

3M™ Novec™ Engineered Fluids ■ 3M™ Novec™ Aerosol Cleaners ■ 3M™ Novec™ 1230 Fire Protection Fluid ■ 3M™ Novec™ Electronic Grade Coatings ■ 3M™ Novec™ Electronic Surfactants ■ 3M™ Novec™ Insulating Gases

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

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Electronics Materials Solutions Division

3M United Kingdom PLC, 3M Centre, Cain Rd, Bracknell RG12 8HT, United Kingdom

0800 0320841

www.3M.co.uk/novec

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