

Achieving Compliance with the
SOLVENT EMISSIONS DIRECTIVE
(SED) 1999/13/EC

using 3M™ Novec™ Engineered Fluids
and Microsolve Cleaning Systems

This document includes material kindly supplied by 3M



THE SOLVENT EMISSIONS DIRECTIVE (SED)

The Jargon Explained

THE PURPOSE of the SED is to reduce the quantity of **VOCs** (Volatile Organic Compounds) used in industry.

- Some VOCs have tighter regulations placed upon their use : these are **CMRs** (Carcinogens, Mutagens and Reproductive Toxins) and they are designated by **Risk Phrases** R40, 45, 46, 49, 60, or 61.

RISK PHRASES

- R40** Limited evidence of a carcinogenic effect
- R45** May cause cancer
- R46** May cause heritable genetic damage
- R49** May cause cancer by inhalation
- R60** May impair fertility
- R61** May cause harm to the unborn child

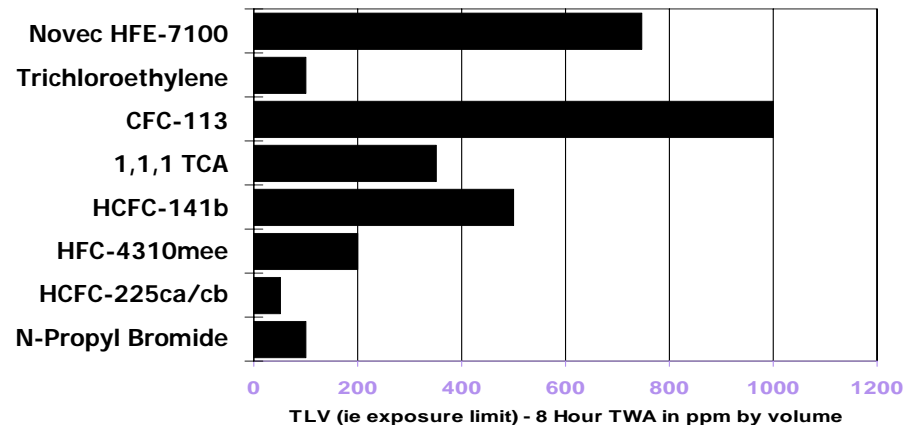
- Most of the cleaning solvents commonly used – eg Trichloroethylene, Methylene Chloride, Perchloroethylene, nPropyl Bromide - have one or more of these Risk Phrases.
- 3M™ Novec™ Hydrofluoroethers (HFEs)** have **NONE** of these Risk Phrases, so can be used at the highest threshold limits.

Risk Phrases and Threshold Limit Values¹ (TLVs)

	R40	R45	R60	TLV ² ppm
Trichloroethylene	(●)→	●		10-100
Perchloroethylene	●			50
Methylene Chloride	●			50-100
nPropyl Bromide			● ³	25-50
3M™ Novec™ HFE-72DE	None			200 ⁴
3M™ Novec™ HFE-7100	None			750 ⁴

¹ This term has replaced Operator Exposure Limits (OELs)

² May vary from country to country ³ To be ratified ⁴ 8hr TWA (Time Weighted Average)





Novec HFEs and MICROSOLVE SYSTEMS

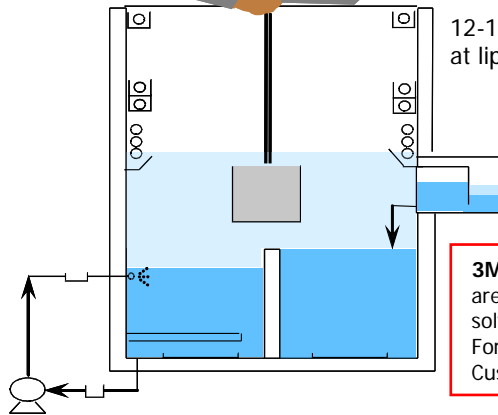
Typical operator exposure levels from Microsolve processes

5 ppmv
Novec HFE-7100
in operator zone



- Novec HFE-7100 TLV = 750 ppmv, 8 Hour TWA
- No Ceiling Limit
- Acute Lethal Concentration₅₀ = > 100,000ppmv

12-18 ppmv Novec HFE-7100
at lip of machine



3M Organic Vapour Monitoring Badges are available to assess the concentration of solvents in the working environment. For information please contact Guyson Customer Service on +44 (0)1756 799911.

KERRY MICROSOLVE ultrasonic cleaning systems :

- use minimum amounts of Novec HFEs
- provide a solution which totally complies with SED - and is proven to be cost effective

Guyson KERRY MICROSOLVE ultrasonic cleaning systems combine :

- LOW solvent emissions
- LOW solvent usage
- LOW running costs with the highest cleaning standards. For a demonstration or cleaning trials at one of our Demonstration Centres please call Guyson on 01756 799911.

GLOBAL WARMING POTENTIAL

Comparing Novec HFE-7100 and HFC-4310

	Novec HFE-7100	HFC-4310
Ozone Depletion Potential ¹	0	0
Atmospheric Lifetime (years)	4.1	17.1
Global Warming Potential ²	320	1,700

¹ CFC-11 = 1.0 ² GWP – 100 year Integrated Time Horizon

GWP, Novec HFEs and MICROSOLVE Processes

Novec Hydrofluoroethers :

- Short Atmospheric Lifetime*
 - Low Global Warming Impact
 - Non Hazardous Air Pollutant
 - Excellent stability (unlike chlorinated solvents)
 - Zero Ozone Depletion
- * complies with Kyoto protocol

Microsolve cleaning processes :

- Engineered to minimise solvent usage and emissions
- With Novec HFE technology, engineered for efficient solvent distillation and recycling during use
- **SED-compliant** and **cost-effective**

SED – AIMS AND REQUIREMENTS

- Prevents or reduces emissions of VOCs into the environment.
- Prevents or reduces potential risks to human health.
- Outlines specific actions and procedures to be adopted (includes a VOC Reduction Scheme).
- For CMRs there is a requirement to use less harmful substitutes within the shortest possible time.
- For other VOCs there is a requirement to :
 - meet Emission Limit Values (ELVs), *or*
 - implement a solvent reduction plan with an equivalent impact

The Effect on Industry

- Sets solvent Threshold and Emission Levels for individual manufacturing activities
 - eg precision engineering – surface cleaning <1 tonne P/A
- Authorisations/permits are issued by Local Environmental Health Departments.
- Emission Level Values must be met.
- There are stricter controls on more harmful substances – eg Trichloroethylene, nPB and Methylene Chloride.

When will it apply?

- Existing activities – 31st October 2007
- Certain VOCs – CMRs – are to be replaced as far as possible by less harmful substances within the shortest possible time.
- To use the VOC Reduction Scheme – Local Environmental Officer was to be notified by 31st October 2005.

SED - ACHIEVING COMPLIANCE

Technical support and solutions from 3M and Guyson :

- Analytical support
- Toxicology support
- Expert product knowledge
- Understanding of industries' needs resulting from long experience with extensive customer bases using Novec HFE solutions



Kerry Microsolve 350 co-solvent system with solvent usage monitoring and auto top-up device

CONTACT US

For further information or assistance, or if you would like to attend the presentation on which this document has been based, please contact Guyson Customer Service on 01756 799911 or email info@guyson.co.uk.

NOVEC HFEs from 3M and the MICROSOLVE from Guyson – the ideal, SED-compliant cleaning solution for your long term needs!