

NOVEC™ 71DE



FEATURES

Used for all industries, **NOVEC™ 71DE** has been developed as a specialty solvent to **degrease, dewax, clean, rinse** and **dry** for many applications.

NOVEC™ 71DE is a proprietary azeotropic formulation of the methoxynonafluorobutane (C₄F₉OCH₃) and transdichlorethylene, clear, colourless and a slight odour, designed to replace the existing solvents having an ODP and to be used for the cleaning operations with ultrasonics. Its medium range boiling point and its very low surface tension, provide to the **NOVEC™ 71DE some outstanding degreasing characteristics when used neat into a vapour degreaser.**

This High-Tech fluid has no ODP, its thermal and chemical stability, its non flammability and its very low toxicity provide the best compromise for the safety in use and the environment.

Other NOVEC™ hydrofluoroethers, azeotropics or mixtures

	Formulation	Boiling temperature	Application
NOVEC™ 7100	Methoxy-nonafluorobutane	61 °C	Light cleaning, heat transfer, formulations
NOVEC™ 7200	Ethoxy-nonafluorobutane	76 °C	Film cleaning and heat transfer
NOVEC™ 71DA	7100 with Trans-1, 2-dichlorethylene and Ethanol	40 °C	Degreasing + flux removal
NOVEC™ 71IPA	7100 with isopropylic alcohol	55 °C	Light cleaning, Rinsing of co-solvent

SPECIFICATIONS

Characteristics	Unit	Method	Value
Aspect		Visual	Transparent, colourless
Non volatile residues	ppm		< 20
Trans- 1,2-dichloroethylene	% weight		< 50
Methyl nonafluoroisobutyl ether	% weight		10 - 40
Methyl nonafluorobutyl ether	% weight		10 - 40

CHARACTERISTICS

Properties @ 25 °C	Units	71DE	CFC-113	HCFC-141b	Trichlor-ethylen	Methylene Chloride
Boiling point	°C	41	48	32	87	39.8
Freezing point	°C	-135	-35	-103	-86	-96.7
Flash point		None	None	None	None	None
Density	g/cm ³	1.37	1.56	1.23	1.46	1.32
Surface tension	mN/m	16.6	17.3	19.3	22	25.5
Solubility of solvent in water	ppm	< 10	110	2700	1100	19000
Heat transfer						
Vapour pressure	kPa	63.0	44.1	75.9	10	73.6
Dynamic viscosity	mPa.s	0.45	0.68	0.43	0.62	0.425
Latent heat of vaporization	kJ/kg @ bp	201	146	223	265	391
Specific heat	kJ/kg.K	not calculated	0.92	1.26	0.93	1.3

PACKAGING TYPE

Packaging types of 27 kg and drums of 250 kg available.

STORAGE & VALIDITY

The hydrofluoroether **NOVEC™ 71DE** is not flammable in the standard conditions of use or storage. This fluid is highly stable to thermal and chemical reaction when used or stored in normal conditions. Some more procedures are detailed into the safety data sheet available on request. This product does not sustain combustion according to the norm : ASTM D4206-86 (< 1 second).

To ensure the best product performance it is recommended to store the products in closed packaging types. Shelf life: 24 months under these conditions.

USE CONDITIONS

Material compatibility

As with the most fluorinated liquids, the NOVEC™ are absorbed by the plastics and the fluorinated elastomers in case of a prolonged exposure.

Metals	Plastics	Elastomers
Aluminium	Epoxy resin	Butyl rubber*
Copper	Polyethylene	Natural rubber*
Carbon steel	Polypropylene	Polysulphide
Stainless steel 302	Polyester	EPDM
Brass	Nylon	Chlorosulphonated PE
Molybdenum	PTFE	Buna-S*
Zinc		
Tungsten		
Titanium		
Tantalum		
Alloy Cu/Be C172		
Alloy Mg AZ32B		

* *swelling*

Tested compatibility for an exposure of 1 hour at boiling temperature.

*Butyl rubber is preferable for a prolonged exposure > 1 month

Exceptions: swelling of PTFE and silicon rubber

The compatibility tests of **NOVEC™ 71DE** show a good compatibility with a large range of metals, plastics and elastomers, similar to the performance of perfluorinated liquids. Nevertheless the end-users should be testing long period specific materials.

Applications

NOVEC™ 71DE is a special degreasing agent for most of the parts needing a good cleaning. Its solvency power allows the removal of most hydrocarbonated and fluorinated oils and greases. The cleaning operation can be made under immersion with ultrasonics or simply in the vapour phase:

- cleaning agent, rinsing and drying.
- Removal of oils, greases and waxes.

For more information, please contact your local distributor INVENTEC.

HSE

Properties	Units	71DE	CFC-113	HCFC-141b	Trichlor-ethylen	Methylene Chloride
Environmental data						
Ozone depletion pot.	ODP	0.00	0.80	0.10	<0.005	<0.005
Global warming pot.	GWP	160	5000	630	<10	<100
Atmospheric lifetime	Years	4.1	85	9.4	8	0.5
Toxicity						
Exposure average: 8h	ppm	750/200	500	500	25	50
VOC		YES	YES	YES	YES	YES

Phrases R :

- R 18** : In use, may form flammable/explosive vapour-air mixture.
- R 52/53** : May cause long-term adverse effects in the aquatic environment.

Please read carefully the safety data sheet of the product **NOVEC™ 71DE** before use. All safety measures should be taken. In all kind of handling or exposition to the product, the individual protection recommended by the safety data sheet should be taken. The typical figures used here above can be changed without notice.

Although the conformity to ROHS 2002/95CE applies EQUIPMENT put on the market and not a component in particular, we warranty that this product contains less than 0.1% of mercury, lead, chromium VI, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) and less than 0.01% for the cadmium, in accordance with the decision of The European Commission dated 18/08/2005, fixing the maximal concentration values.

This data is based on information that the manufacturer believe to be reliable and offered in good faith. In no event will INVENTEC be responsible for special, incidental and consequential damages. The user is responsible to the Administrative Authorities (regulations for the protection of the Environment) for the conformity of his installation.

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