

NOVEC™ 72DE



FEATURES

Used for all industries, **NOVEC™ 72DE** has been specially formulated as a cleaning solvent for the precision applications to degrease and dewax difficult materials.

NOVEC™ 72DE is a proprietary versatile azeotropic formulation of ethoxy-nonafluorobutane (C₄F₉OC₂H₅), 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™ 72DE** 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™ 71DE	7100 with Trans-1,2-dichlorethylene	41°C	Degreasing + wax removal
NOVEC™ 71IPA	7100 with isopropylic alcohol	55°C	Light cleaning, rinsing of co-solvent

SPECIFICATIONS

Characteristics	Units	Values	Methods
Appearance	-	transparent, colourless	visual
NOVEC™ 7100 (CuF ₉ OCH ₃)	% weight	10	-
NOVEC™ 7200 (CuF ₉ OC ₂ H ₅)	% weight	20	-
Trans-1, 2-dichloroethylene	% weight	70	-

CHARACTERISTICS

Properties	Units	72DE	CFC-113	HCFC-141b	Trichloroethylene	Methylene chloride
Boiling point	°C	43	56	32	87	39.8
Freezing point	°C	N/A	- 35	- 103	- 86	- 96.7
Flash point		none	none	none	none	none
Density	g/cm ³	1.28	1.56	1.23	1.46	1.32
Surface tension	mN/m	19	17.3	19.3	22	25.5
Heat transfer						
Vapour pression	kPa	46.7	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	218	146	223	265	391

PACKAGING TYPE

Packaging types of 4.54 kg, 22.7 kg and drums of 249,5 kg available.

STORAGE & SHELF LIFE

The hydrofluroether **NOVEC™ 72DE** 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.

PROCESS PARAMETERS

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	Buna-S*
Stainless steel 302	PTFE	EPDM
Brass	Polyester	Chlorosuphonated PE
Molybdenum	Nylon	Polysulphide
Tantalum		
Tungsten		
Titanium		
Alloy Cu/Be C172		
Alloy Mg AZ31B		

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

Copper oxidation can be noticed while testing

The compatibility tests of **NOVEC™ 72DE** 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

Used in all industries, **NOVEC™ 72DE** has been specially formulated to clean and degrease most of the common material with a very high solvency power Kauri Butanol equivalent to usual chlorinated solvents, while not being toxic.

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	72DE	CFC-113	HCFC-141b	Trichlor-ethylene	Methylene chloride
Environmental data						
Ozone depletion pot.	ODP	0.00	0.80	0.10	< 0.005	< 0.005
Global warming pot.	GWP	41	5000	630	< 10	< 100
Atmospheric lifetime	years	4.1	85	9.4	8	0.5
Toxicity						
Exposure average : 8h	ppm	200/750	500	500	25	50
VOC		YES	YES	YES	YES	YES

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

S phrases : **S 61 :** Avoid release to the environment. Refer to special instructions/safety data sheet.

Please read carefully the safety data sheet of the product **NOVEC™ 72DE** 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.

The information contained in this product sheet is given for indicative purposes and in no way incurs the liability of INVENTEC. All users are liable, with respect to Administrative Authorities (regulation of facilities classified for the protection of the environment) for the compliance of their installation.

FPW.SV.10303 005 – EK 24/04/2013