

NOVEC™ 71DA



FEATURES

Used in the mechanical industry, **NOVEC™ 71DA** is a specially formulated fluid **to degrease parts of production for most of the industrial materials into a vapour phase equipment.**

NOVEC™ 71DA is a proprietary azeotropic formulation of the methoxynonafluorobutane (C4F9OCH3), transdichloroethylene and ethanol, 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™ 71DA some outstanding degreasing characteristics when used neat or with a co-solvent 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™ 71DE	7100 with Trans-1,2-dichloroethylene	41 °C	Degreasing + wax removal
NOVEC™ 71IPA	7100 with isopropylic alcohol	55 °C	Light cleaning, Rinsing of co-solvent

SPECIFICATIONS

Characteristics	Units	Values	Methods
Aspect	-	Transparent, colourless	Visual
Non volatile residues	ppm	< 5	-
Trans-1, 2-dichloroethylene	% weight	< 50	-
Methyl nonafluoroisobutyl ether	% weight	10 - 40	
Methyl nonafluorobutyl ether	% weight	10 - 40	
Ethanol	% weight	2.4 - 3	

CHARACTERISTICS

Properties @ 25 °C	Units	71DA	CFC-113	HCFC-141b	Trichlor-ethylene	Chlorure de méthylène
Boiling point	°C	40	48	32	87	39.8
Freezing point	°C	- 135	- 35	- 103	- 86	- 96.7
Flash point		none	none	none	none	none
Density	g/cm³	1.33	1.56	1.23	1.46	1.32
Surface tension	mN/m	16.4	17.3	19.3	22	25.5
Heat transfer						
Vapour pressure	kPa	55	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	209	146	223	265	391

PACKAGING TYPE

Packaging types of 5.44 kg, 15 kg and drums of 272 kg available.

STORAGE & SHELF LIFE

The hydrofluoroether **NOVEC™ 71DA** 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	Polysulphide
Stainless 302	Polyester	EPDM
Brass	Nylon	Chlorosulphated PE
Zinc	PTFE	Buna-S*
Molybdenum		
Titanium		
Tungsten		
Alloy Cu/Be C172		
Alliage 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.

The compatibility tests of **NOVEC™ 71DA** 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™ 71DA is a special product developed for the mechanical precision cleaning. It is highly recommended to use it into a vapour degreaser chilled with some performing cooling coils. It can be used with or without ultrasonics, filtered and/or sprays under immersion.

The equipments for **NOVEC™ 71DA** are similar to the standard vapour phase degreasers, but a higher freeboard zone 100% - 125% is recommended to prevent excessive losses. This product is also recommended for the final cleaning degreasing operations before any surface treatment.

HSE

Properties	Units	71DA	CFC-113	HCFC-141b	Trichlor-ethylene	Chlorure de methylene
Environmental data						
Ozone depletion pot	ODP	0.00	0.80	0.10	< 0.005	< 0.005
Atmospheric lifetime	GWP	170	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

- 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™ 71DA** 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.

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