

PROMOSOLV™ 70ES



FEATURES

Cleaning and flux removal solvent for electronic assembly.

PROMOSOLV™ 70ES has been developed as a specialty solvent to clean the residues from solder pastes and solder fluxes.

PROMOSOLV™ 70ES of **INVENTEC** is a pseudo-azeotropic formulation of the methoxynonafluorobutane (C₄F₉CH₃), 1,2-trans-dichloroethylene and ethanol. **PROMOSOLV™ 70 ES** is clear, colourless and has a slight odour. It is designed to replace the existing solvents having an ODP and to be used with ultrasonic cleaning. Its medium range boiling point and its very low surface tension provide the **PROMOSOLV™ 70ES** with outstanding flux removal and drying characteristics when used in vapour phase unit.

The **PROMOSOLV™ 70ES** formulation provides an increased solvency power over the **PROMOSOLV 70**, in particular for most of polar and ionic compounds.

This High-Tech fluid has no ODP. Its chemical stability and its very low toxicity result in a product which is safe and which is environmental friendly.

Other azeotropic mixtures **PROMOSOLV™**

	Formulation	Boiling Temperature	Application
PROMOSOLV™ RN1	Pentafluorobutane and NOVEC™ 7100	44°C	Film cleaning and heat transfer
PROMOSOLV™ RN2	Pentafluorobutane, NOVEC™ 7100 and isobutanol	43°C	Degreasing cleaner with co-solvents
PROMOSOLV™ NDE	Pentafluorobutane, NOVEC™ 7100 and 1,2 TDE	40°C	Degreasing and flux removal
PROMOSOLV™ DS2	NOVEC™ 7100 and isobutanol + additive	58°C	Spot free drying after detergent cleaning

SPECIFICATIONS

Characteristics	Units	Methods	Values
Color	-	visual	clear
Purity	%	-	> 99,0
Non Volatile Residues	ppm	-	< 100
Methoxynonafluorobutane	% weight	-	> 10
1,2-transdichlorethylene	% weight	-	> 50
Ethanol	% weight	-	< 2.9

CHARACTERISTICS

Properties	Units	PROMOSOLV™ 70 ES	CFC-113	HCFC-141b	Trichlor- ethylene	Methylene chloride
Boiling point	°C	43	48	32	87	39.8
Freezing point	°C	-100	-35	-103	-86	-96.7
Flash point		Aucun	Aucun	Aucun	Aucun	Aucun
Density	g/cm ³	1.28	1.56	1.23	1.46	1.32
Surface tension	mN/m	14	17.3	19.3	22	25.5
Flammable limits % volume	LII LSI	3.5 15	- -	5.6 17.7	- -	15.5 66.4
Solubility of solvent in water	ppm	< 200	110	2700	1100	19000
Heat transfer						
Vapour pressure	kPa	65	44.1	75.9	10	73.6
Dynamic viscosity	mPa.s	0.50	0.68	0.43	0.62	0.425
Latent heat of vaporization	kJ/kg@bp	330	146	223	265	391
Specific heat	kJ/kg K	1.15	0.92	1.26	0.93	1.3

PACKAGING TYPE

Packaging types of 30 kg and drums of 230 kg available.

STORAGE & SHELF LIFE

PROMOSOLV™ 70ES is not flammable in the standard conditions of use or storage. This fluid is highly stable to thermal and to chemical reaction when used in normal conditions. Some more procedures are detailed in the safety data sheet available upon 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 of the product : 18 months under these conditions.

APPLICATION

Material compatibility

As with the most fluorinated liquids, **PROMOSOLV™ 70ES** is absorbed by the plastics and the fluorinated elastomers in case of a prolonged exposure.

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

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.

Tests of **PROMOSOLV™ 70ES** show a good compatibility with a large range of metals, plastics and elastomers, similar to the performance of perfluorinated liquids.

A good compatibility with plastics particularly sensible as the polycarbonate and the PMMA indicate a possible use in the cleaning unit containing numerous components.

Applications

PROMOSOLV™ 70ES formulation provides an outstanding solvency power versus **PROMOSOLV™ 70**.

PROMOSOLV™ 70ES is a pseudo-azeotropic agent for electronic cleaning and flux removal.

PROMOSOLV™ 70ES is a replacement agent for the CFCs, HCFCs or other solvent blends.

HSE

Properties	Units	PROMOSOLV™ 70 ES	CFC-113	HCFC-141b	Trichlor- ethylene	Methylene Chloride
Environmental data						
Ozone depletion pot.	ODP	0	0.80	0.10	< 0.005	< 0.005
Global warming pot.	GWP	264	5000	630	< 10	< 100
Atmospheric lifetime	years	4,1	85	9.4	8	0.5
Toxicity						
Exposure average : 8h	ppm	200	500	500	25	50
VOC		yes	yes	yes	yes	yes

- R Phrases :**
- R 20 : Harmful by inhalation.
 - R 18 : In use, may form flammable/explosive vapour-air mixture.
 - R 52/53 : Very toxic to aquatic organisms, may cause long-term adverse in the aquatic environment.
- S Phrases :**
- S 7 : Keep the container tightly closed.
 - S 23 : Do not breathe vapour.
 - S 24/25 : Avoid contact with skin and eyes.
 - S 61 : Avoid release to the environment. Refer to special instructions/safety data sheet.

Please read carefully the safety data sheet of the product **PROMOSOLV™ 70ES** 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. This product contains a high purity transdichlorethylene with a TLV of 200 ppm (TWA 8 h exposure). The concentration of cis-dichlorethylene is certified lower than 300 ppm. This product is then complying with the regulation and is authorized by the INRS. The typical figures used here above can be changed without notice.

Although the conformity to ROHS 2002/95CE applies to EQUIPMENT put on the market and not to 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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