



Novec™

Brand

3M™ Novec™ 5110 Insulating Gas

Introduction

3M™ Novec™ 5110 Insulating Gas is a sustainable alternative to sulfur hexafluoride (SF₆). This is an advanced insulation medium combining excellent electrical insulation performance with desirable environmental properties. Novec 5110 gas in pure form has a relative dielectric strength 1.4 times greater than SF₆ at a given pressure. With a GWP of less than 1 and strong dielectric properties, Novec 5110 gas is a sustainable SF₆ alternative for arc quenching and insulation applications leading to dramatic environmental impact reductions in gas insulated equipment. Novec 5110 gas is non-flammable and has a wide safety margin for workers when used as designed for intended applications.

Product description

Not for specification purposes. All values @ 25°C unless otherwise specified

Composition of 3M™ Novec™ 5110 Insulating Gas

Chemical Formula	CF ₃ C(O)CF(CF ₃) ₂
2,3,3,3-tetrafluoro-2-(trifluoromethyl)-propanenitrile	99.3 mole %, minimum

Typical physical properties

Not for specification purposes. All values at 25°C unless otherwise specified

3M™ Novec™ 5110 Insulating Gas

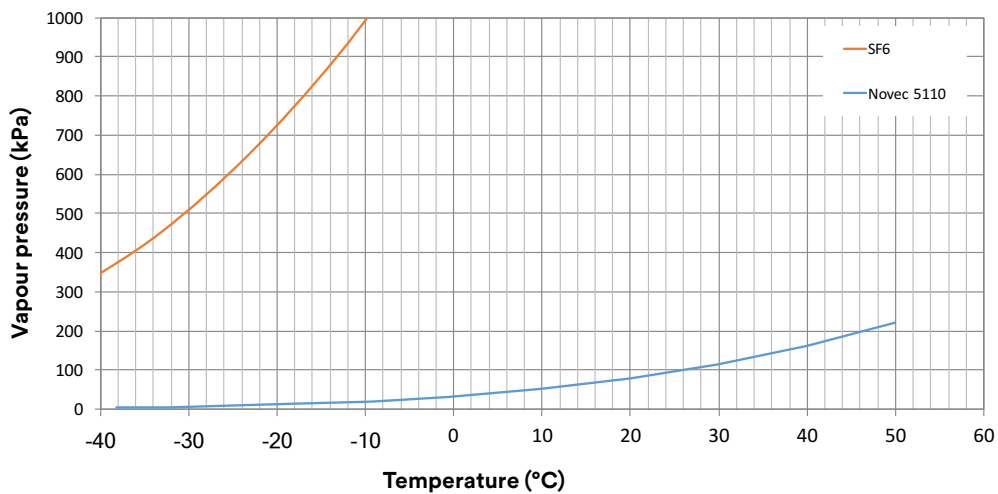
Molecular Weight (g/mol)	266
Flash Point (°C)	Non-flammable
Boiling Point (°C)	26.9
Freezing Point (°C)	-110
Critical Temperature (°C)	146
Critical Pressure (MPa)	2.14
Gas Density at 1 bar (kg/m ³)	10.7
Vapour Pressure (kPa)	94
Dielectric Strength at 1 bar, disk electrodes, 2.5 cm gap (kV)	18.4 at sat'n

Key features and benefits

- ▶ Excellent dielectric properties for medium and high voltage applications
- ▶ Global warming potential (GWP) of less than 1
- ▶ When used in a gas mixture, the greenhouse gas (GHG) impact can be reduced by up to 99.99% compared with SF₆
- ▶ Non-flammable
- ▶ Non-ozone depleting
- ▶ Wide safety margin for workers when used as designed for intended applications
- ▶ Compatible with a wide range of equipment components

Vapour pressure of Novec 5110 Insulating Gas compared to SF₆

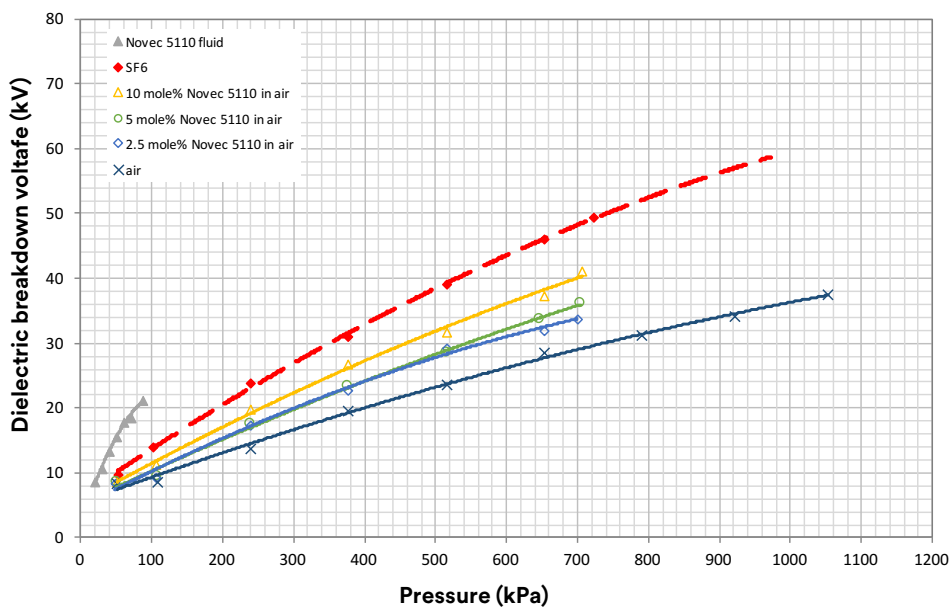
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Dielectric breakdown voltage: mixtures of Novec 5110 Gas in air

(Uniform field using parallel disk electrodes with 2.5cm gap)

Not for specification purposes. All values at 25°C unless otherwise specified



Typical applications

- ▶ Versatile insulating gas for medium and high voltage applications including gas insulated lines, gas insulated switchgear and circuit breakers
- ▶ Mix with inert gases for electric power industry applications
- ▶ Ideal for indoor applications

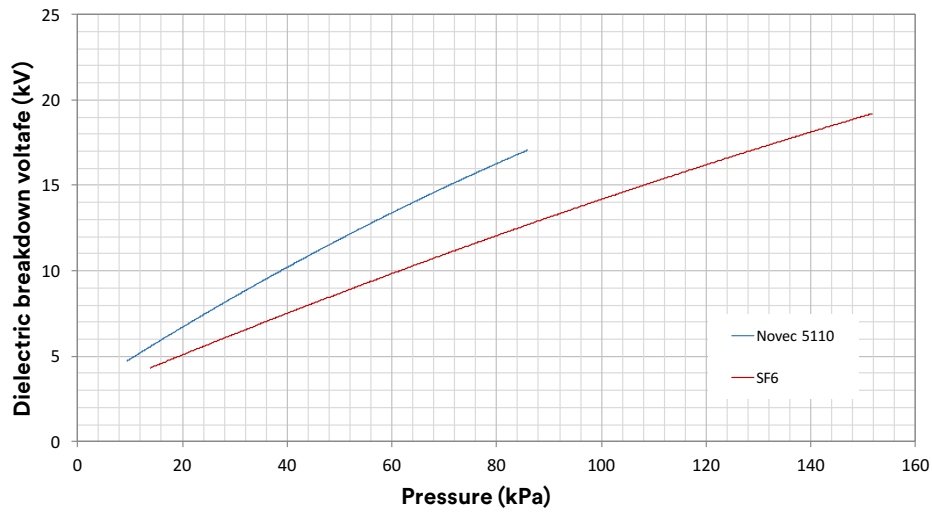
Safety and handling

Before using this product, please read the current Safety Data Sheet (available at 3M.com/SDS or through your 3M sales or technical service representative) and the precautionary statement on the product package and labels. Follow all applicable precautions and directions.

Dielectric breakdown voltage of Novec 5110 Gas Compared to SF₆

(Uniform field using parallel disk electrodes with 2.5cm gap)

Not for specification purposes. All values at 25°C unless otherwise specified



Environmental properties

	3M™ Novec™ 5110 Insulating Gas	SF ₆
Atmospheric lifetime (years)	0.04	3,200
Global Warming Potential (100-yr ITH, IPCC 2013 method)	< 1	23,500
Ozone Depletion Potential (CFC-11 = 1)	0	0

Materials compatibility

In practice, 3M™ Novec™ 5110 Insulating Gas differs somewhat in materials compatibility compared to SF₆. While the product is compatible with most common metals, it can be affected by some of the components found in lubricating greases and the elastomers used in gaskets and o-rings.

Many materials have been found to be compatible with the product. However, material compatibility is best evaluated using the specific materials of construction being considered for contact with the Novec 5110 gas. 3M research scientists are available to assist with material compatibility evaluations. Contact your local 3M sales representative for additional information.

Regulatory status

Novec 5110 gas is a single constituent product and has been REACH registered (Annex VII) in Europe and TSCI registered in Taiwan. It is currently under TSCA research and development status in the United States (pre-manufacture notice (PMN) in progress). It is under low volume exemption in China and Japan. Registration and notification are in progress in other regions and countries. Contact your local 3M sales representative for additional information.

The 3M™ Novec™ brand family

The Novec brand is the hallmark for a variety of proprietary 3M products. Although each has its own unique formula and performance properties, all Novec products are designed in common to address the need for smart, safe and sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, protective coatings, immersion cooling, advanced insulation media replacement solutions and several specialty chemical applications.

3M™ Novec™ Engineered Fluids ■ 3M™ Novec™ Aerosol Cleaners ■ 3M™ Novec™ 1230 Fire Protection Fluid ■ 3M™ Novec™ Electronic Grade Coatings ■ 3M™ Novec™ Electronic Surfactants ■ 3M™ Novec™ Insulating Gases

UK 3M Electronics Materials Solutions Division 0800 032 0841	Germany 3M Germany 49 2131 140	Belgium 3M Belgium 32 3 250 7521	Czech Republic 3M Czech Republic 420 2 61380111	3M East 41 4179 94040	France 3M France 33 1303 16161	Israel 3M Israel 972 9 9561490	Spain 3M Spain 34 91 3216000
Russia 3M Russia 7 495 7847474	Hungary 3M Hungary 36 1 270 7777	Romania 3M Romania 40 21 202 800	Italy 3M Italy 39 2 70351	Poland 3M Poland 48 22 739 6000	Switzerland 3M Switzerland 41 17249090	Lithuania 3M Baltics 370 5216 0780	

Regulatory: For regulatory information about this product, contact your 3M representative.

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