

# Fluoridrop 40 oil



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Part No.	Part Description	#
3200421	Fluoridrop 40, 1 litre	1
3200422	Fluoridrop 40, 500ml	1
3200423	Fluoridrop 40, 100ml	1

## Description

Fluoridrop 40 is a clear, colourless and odourless perfluorinated oil with a viscosity similar to water. It is non-flammable, thermally and chemically stable and is compatible with most sensitive materials, including metals, plastics and elastomers.

Containing no chlorine or hydrogen atoms, the strength of the carbon-fluorine bond contributes to the extreme stability and inertness of Fluoridrop 40. This chemical structure also results in very low intermolecular forces, low surface tension and essentially no solvent action on non-fluorinated compounds. This makes Fluoridrop 40 ideal for use as a fluorocarbon carrier oil to generate aqueous solution-in-oil droplets for molecular biology assays. Its composition will not shift or fractionate with time, which keeps fluid loss to a minimum and ensures that transport properties are stable. It is ideal for use with the Mitos Dropix® Droplet Generation System (Mode 1) for filling the Dropix® Fluid Reservoir. In this instance, Fluoridrop 40 acts as a carrier fluid for droplet-on-demand sequencing. It requires no modification for this purpose.

Fluoridrop 40 can be used together with fluorophilic microfluidic chips. Use your own fluorophilic chip or contact us to enquire about a custom-made chip. **When using Fluoridrop 40 we always recommend using chips with a fluorophilic surface coating.** For any droplet-based application, surfactants such as Picosurf™ are also necessary for droplet stabilization. Moreover, surfactants such as Picosurf™ ensure that biomolecules do not adsorb to the interface.

Picosurf™ is composed of either FC-40™ or Novec™ 7500 – fluids with an added surfactant. Further, the surfactant has two types based on which two forms of Picosurf™ are produced – Picosurf™ 1 and Picosurf™ 2. Picosurf™ surfactants are sold exclusively by Dolomite.

**Fluoridrop 40 is ideal for diluting FC-40™ based Pico-Surf™.**

Pico-Surf™ is sold in 5% and 2% concentrations. For users interested in using a diluted form, care should be taken that only FC-40™ based Pico-Surf™ is diluted with Fluoridrop 40.

Fluoridrop 40 may also be used in combination with customers' own surfactant chemistry for emulsion production.

**Fluoridrop 40 contains FC-40™ from 3M company.**

**FC-40™ is a trademark of 3M Company.**

## Benefits

- Can be used together with Dolomite's range of fluorophilic microfluidic chips
- Can be used directly in the Mitos Dropix® Fluid Reservoir with the Mitos Dropix® Droplet Generation System (Mode 1) to act as the carrier fluid for droplet formation
- Can be used to dilute FC-40™ based Pico-Surf™ to achieve different concentrations
- Can be used in combination with customers' own surfactant chemistry for emulsion production

## Typical Physical Properties

Below is a table comparing Fluoridrop 40 with another Dolomite carrier fluid, Fluoridrop 7500.

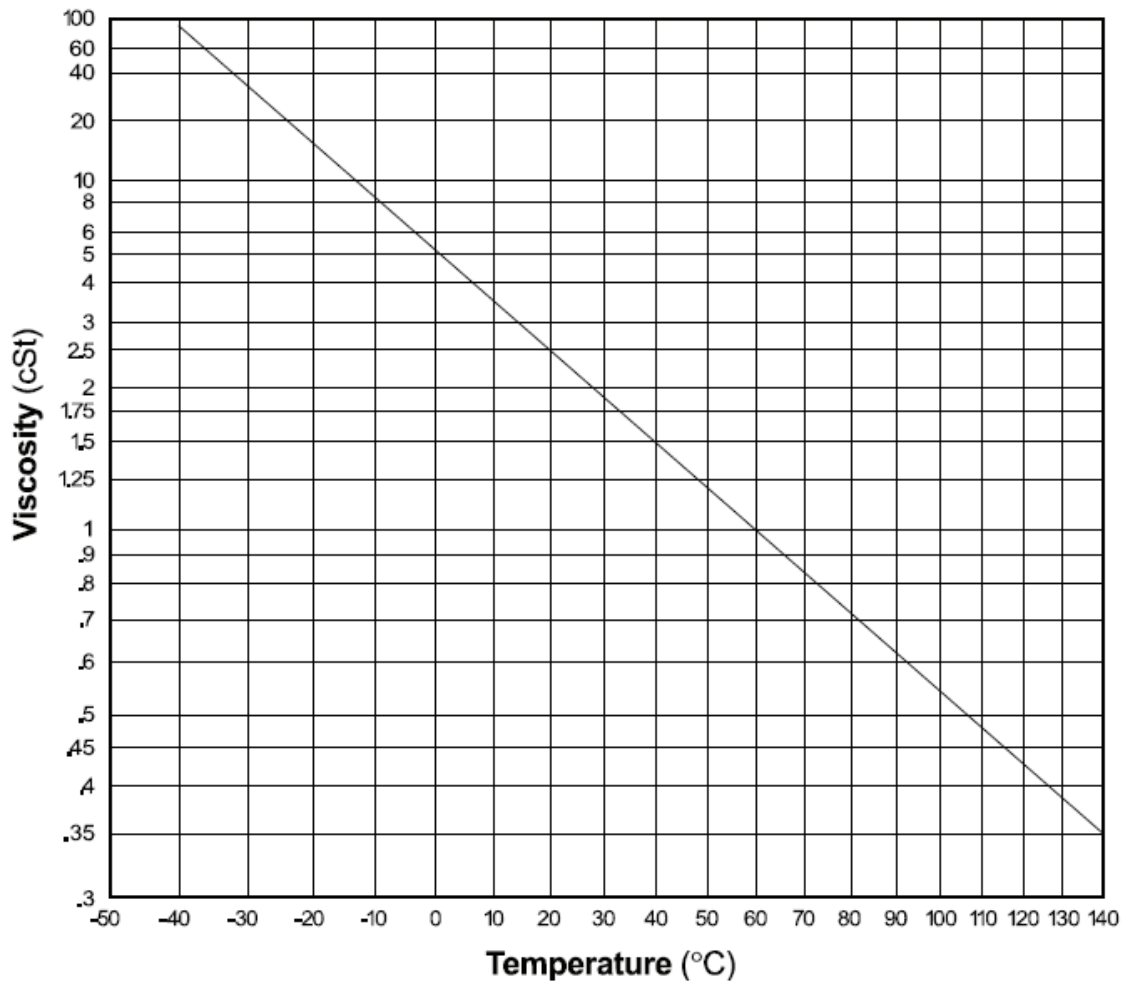
Properties	Fluoridrop 40	Fluoridrop 7500
Average Molecular Weight (g/mol)	650	414
Boiling Point (°C)	155	128
Pour Point (°C)	-57	-100
Critical Temperature (°C)	270	261
Estimated Critical Pressure (Mpa)	1.18	1.55
Vapor Pressure (kPa)	0.43	2.1
Heat of Vaporization (kJ/kg)	68	88.5
Liquid Density (kg/m <sup>3</sup> )	1855	1614
Kinematic Viscosity (cSt)	1.8	0.77
Absolute Viscosity (cP)	3.4	1.24
Liquid Specific Heat (J/kg-K)	1100	1128
Liquid Thermal Conductivity (W/m-K)	0.065	0.065
Coefficient of Expansion (K <sup>-1</sup> )	0.0012	0.0013
Refractive Index	1.290	Not available
Water Solubility (ppm by weight)	<7	45
Solubility in Water (ppm by weight)	<5	<3
Ozone Depletion Potential	0	0
Flammability	Nonflammable	Nonflammable
Dielectric Strength, 0.1" gap (kV)	>40	~40
Dielectric Constant @ 1kHz	1.9	5.8
Surface Tension (mN/m)	16	16.2
Solubility of Air (ml gas/100ml liquid)	27	48
Volume Resistivity (Ohm-cm)	1015	108



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

**Note:** Because of the high air solubility of Fluoridrop 40, we recommend degassing microfluidic systems before use, and also in some applications using helium as the pressurizing gas to use with this fluid.

**Fluoridrop 40 Viscosity (cSt) vs. Temperature (°C)**





## Toxicity Profile

In general, Fluoridrop 40 is non-irritating to the eyes and skin, and is practically non-toxic orally. It also demonstrates very low acute and sub-chronic toxicity and is not a mutagen (ames). Please see the Material Safety Data Sheet for more information.

## Environmental, Health and Safety

Before using this product, please read the Material Safety Data Sheet. Follow all precautions and directions. Fluoridrop 40 is non-flammable and is highly resistant to thermal breakdown and hydrolysis in storage and during use. Recommended handling procedures are provided in the Material Safety Data Sheet.

Fluoridrop 40 has zero ozone depletion potential. The material is exempt from the U.S EPE and most State definitions of a volatile organic compound (VOC), and does not contribute to ground-level smog formation.

Fluoridrop 40, a perfluorocarbon (PFC), has a high global warming potential and a long atmospheric lifetime. As such, it should be carefully managed so as to minimize emissions.

It is recommended that users of Fluoridrop 40 further limit emissions by employing good conservation practices, and by implementing recovery, recycling and/or proper disposal procedures.

## Materials Compatibility

Fluoridrop 40 is compatible with most metals, plastics and elastomers.



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