

# TF2000 Series

## Thermal Field-Flow Fractionation

High Resolution Polymer Separator



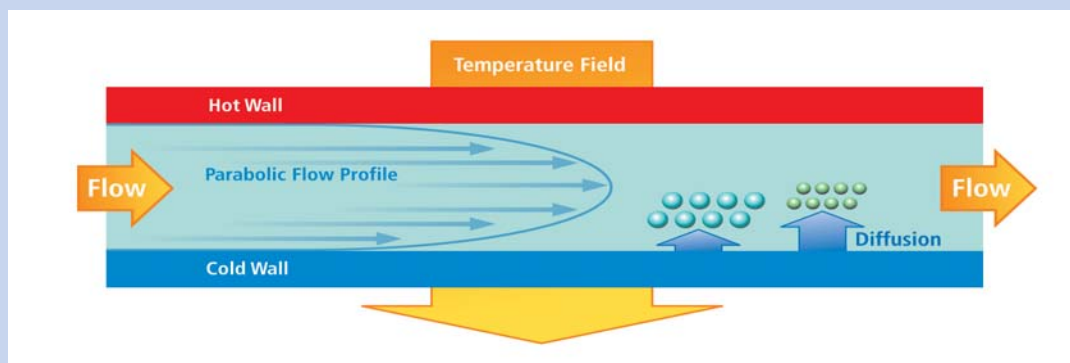
# TF2000 SERIES

## Specifications

- General Sample Size and Molar Mass Range:  
Polymers: 10 kDa-100 MDa  
Particles: 10 nm-1000 nm
- Analysis Time:  
Typical 10-120 min, no software limitation
- Channel Dimensions:  
Volume: 1.14 mL  
Length: 456 mm  
Breadth: 20 mm  
Thickness: 130 µm
- Channel Flow Rates:  
Typically 0.01-2.0 mL/min
- Carrier Liquids:  
Compatible with most organic solvent systems
- Detectors:  
UV, RI, laser light scattering, fluorescence detection, etc. multiple detectors inline
- Thermal-Field Strength:  
Maximum DT up to 120°C  
Hot wall maximum: 180°C  
Cold wall maximum: 60°C  
(THF, 220 V, coolant water at 20°C, 12 L/min)
- Temperature Control:  
PC controlled for accurate, constant and programmed field options
- Channel Pressure:  
Up to 250 psi (approx. 14 bar) to pressurize the channel for any analysis at higher temperatures
- System Requirements:  
220-230 V, 50/60 Hz; 12 A for basic set-up  
max. power consumption 3.5 kW  
Coolant/water at 20°C, 12 L/min, max. 2 bar
- System Software:  
NovaFFF TF2000
- Maintenance:  
Rugged reusable channel with no special maintenance required
- Injection Volume:  
1-1000 µL  
Standard 20 µL  
optional > 1000 µL
- Injected Sample Mass:  
Up to 500 µg and more; depending on sample characteristics; typical injection mass 20-100 µg
- Injection Method:  
Via Rheodyne® manual injections valve or autosampler with different options

The TF2000 system is a new and efficient analysis method to separate and characterize polymers and particles. The system is able to separate polymers and particles at the same time without the limitations associated with GPC/SEC. The separation takes place according to molecular weight AND chemical composition, thus making the TF2000 Series the ideal choice for co-polymer separation. The system can be coupled with different standard detectors such as Light Scattering, RI, UV, etc.

The system has a large separation range and can fractionate polymers as low as 10 kDa up to 100 MDa including microgels and nanoparticles. The separation itself is very gentle and ruled by thermal diffusion and Brownian motion in a laminar flow channel without using any stationary phase as in chromatography.



## Software

Unique Software platform for the TF2000 and detectors.

Setting and programming flow and temperature profile.

Data acquisition and calculation of molar masses and sizes of sample are based upon the static light scattering (SLS).

Optional Software available for branching calculation with MALS.

## Applications

Latex coatings, nanoparticles and high-tech materials, technical/industrial polymers, starches, paints. Polymers and particles from approx. 10 kDa up to 100 MDa and more in organic/aqueous solvents.

## Extended Safety Features

PC controlled for accurate, constant and programmed field option.

Temperature safety shut-offs included. Temperature limits for hot and cold wall programmable.

Redundant mechanical shut-off for cold wall at 60°C.

Leak sensor and alarm for the cooling system.

Gas sensor and alarm for organic and flammable vapors.

Automatic emergency pressure shut-down.

## Top 12 Reasons for the TF2000

1. Advanced channel design, sample introduction method and new cooling system provide 30-50 % superior resolution and faster separation time.
2. Direct sample injection, no sample preparation steps necessary.
3. Flexible and gentle separation conditions, organic and aqueous solvents.
4. Large and easily accessible molar mass and size range.
5. Low shear forces during separation protect sample integrity.
6. Professional and integrated system from one manufacturer.
7. Completely automated system by using an autosampler. Total system control using the NovaFFF windows software.
8. Various additional Postnova Analytics modules and components available: autosamplers, degassers, pumps etc.
9. Dynamic (DLS) and static (SLS) laser light scattering detectors available.
10. Special safety features for temperature, pressure and leakage.
11. Software for characterization and calculation of polymer branching with MALS.
12. Made and supported by the people who invented Field-Flow Fractionation.



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