In-Situ Spectroscopy

ReactIR Sampling Technologies

In-Situ Analysis for Process Understanding

Choosing the Right Sampling Technology for Your Chemistry

At the heart of ReactIR™ is in-situ sampling technology with the utmost in probe robustness and reproducibility to assure usability in a wide range of batch and continuous reaction conditions. Consider the following parameters to select the configuration that best matches your chemistry and application. The table on the following page can be used to locate sampling technology specifications and options (we recommend that new users contact a METTLER TOLEDO representative for guidance).

1. Choose the Series

Consider chemistry and application.

DST Fiber Conduit
Best choice for liquid-based reaction monitoring in the lab and plant. Maximum flexibility of use in a wide range of lab vessels and plant reactors without need for optical alignment. Widest range of analytical performance and compatible with all ReactIR base units.

DS Fiber to Sentinel
Liquid based reaction monitoring of high temperature and pressure chemistry in the lab and plant. Maximum flexibility of use in a wide range of lab vessels and plant reactors without need for optical alignment.

DS Micro Flow Cell
Best choice for continuous flow chemistry monitoring in the lab. Simple connection to all ReactIR base units without the need for optical alignment.

K4/Sentinel
Liquid based reaction monitoring of high temperature and pressure chemistry in the plant. Maximum mid-infrared optical window for tracking complete fingerprint of reaction components.

2. Choose the Sensor (located at probe tip)

Consider pH, chemical compatibility, and mid-infrared optical window.

DiComp™
pH range: 1 to 14. Optimized throughput in the fingerprint region and diamond is extremely robust.

SiComp™
pH range: 1 to 9. Wide optical window (including 2250 to 2000 cm^{-1}) however, silicon is susceptible to abrasion and chemical attack.

3. Other Considerations*

Consider temperature, pressure, material compatibility, and probe and vessel dimensions.

Probe Dimensions
Check the reaction vessel volume for insertion specification.

Temperature and Pressure
Check the chemistry requirements against the probe specification.

Material Compatability**
Wetted materials are the probe tube (alloy C22), sensor (diamond or silicon), and seal (gold or PTFE), for standard probes.

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*Contact METTLER TOLEDO for information about special requirements including custom sizing, extreme-temperature, high-pressure, or hazardous area applications

**Test kits of wetted materials are available to validate material compatibility under reaction conditions

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		Sensor		Seal		Fiber Length					Probe Length			Probe Diameter (mm)	Optical Window	Temperature Range	Pressure Limit
		DiComp™	SiComp™	Gold	PTFE	1.0 m	1.5 m	2.0 m	3.0 m	4.0 m	203 mm	305 mm	457 mm				
DST Series 9.5 mm AgX Fiber Conduit	14474504	•		•			•					•		9.5	2000 to 650 cm^{-1}	-80 to 180 °C	1000 psi (69 barg)
	14474506	•		•				•				•		9.5			
	14474507	•		•				•					•	9.5			
	14474552	•		•					•			•		9.5			
	14474553	•		•					•				•	9.5			
	14474554	•		•						•		•		9.5			
	14474555	•		•						•			•	9.5			
	14474505		•	•			•					•		9.5	2500 to 650 cm^{-1}	-80 to 180 °C	1000 psi (69 barg)
	14474508		•	•				•				•		9.5			
	14474509		•	•				•					•	9.5			
	30649825	•			•		•					•		9.5	2000 to 650 cm^{-1}	-80 to 150 °C	1000 psi (69 barg)
	30649826	•			•			•				•		9.5			
	30649827	•			•			•					•	9.5			
	30649858	•			•				•			•		9.5			
	30649859	•			•				•				•	9.5			
	30649860	•			•					•		•		9.5			
	30649861	•			•					•			•	9.5			
	30649862		•		•		•					•		9.5	2500 to 650 cm^{-1}	-80 to 150 °C	1000 psi (69 barg)
	30649863		•		•			•				•		9.5			
	30649864		•		•			•					•	9.5			
DST Series 6.3 mm AgX Fiber Conduit	14474510	•		•			•				•			6.3	2000 to 650 cm^{-1}	-80 to 180 °C	1000 psi (69 barg)
	14474512	•		•			•					•		6.3			
	14474514	•		•				•				•		6.3			
	14474511		•	•			•				•			6.3	2500 to 650 cm^{-1}	-80 to 180 °C	1000 psi (69 barg)
	14474513		•	•			•					•		6.3			
	14474515		•	•				•				•		6.3			
	30649865	•			•		•				•			6.3	2000 to 650 cm^{-1}	-80 to 150 °C	1000 psi (69 barg)
	30649866	•			•		•					•		6.3			
	30649867	•			•			•				•		6.3			
	30649878		•		•		•				•			6.3	2500 to 650 cm^{-1}	-80 to 150 °C	1000 psi (69 barg)
	30649869		•		•		•					•		6.3			
	30649870		•		•			•				•		6.3			
DS Micro Flow Cell	14430688	•		•		—					—			—	4000 to 2250 cm^{-1} 2000 to 650 cm^{-1}	ambient to 60 °C	500 psi (35 barg)
	14430689		•	•		—					—			—	4000 to 650 cm^{-1}	ambient to 60 °C	500 psi (35 barg)
Sentinel Sensor	14130019	•		•		Couple with Fiber or K4 Conduit					29 mm			25	4000 to 2250 cm^{-1} 2000 to 650 cm^{-1}	-80 to 200 °C	1500 psi (107 barg)
	14130119		•	•							29 mm			25	4000 to 650 cm^{-1}	-80 to 200 °C	1500 psi (107 barg)
DST Series Fiber to Sentinel	14474765	—		—		•					Conduit Only (Couple with Sentinel)				2500 to 650 cm^{-1}		
	14474766						•										
	14474767							•									
K4 Conduit to Sentinel	14106912	—		—		17″ (44 cm) Articulated arm									4000 to 650 cm^{-1}		

Contact METTLER TOLEDO for information about special needs including custom sizing, extreme temperature, high-pressure, or hazardous area applications.

METTLER TOLEDO Group
Automated Reactors and In-Situ Analysis
Local contact: www.mt.com/contacts

www.mt.com/ReactIR
For more information