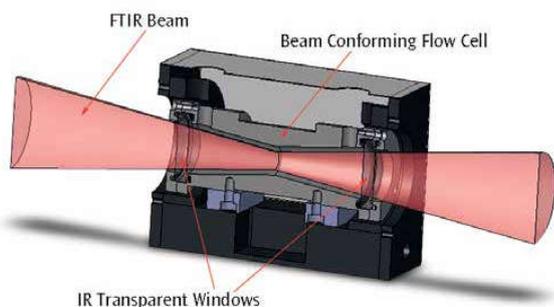


TGA/FTIR Accessory – Identification and Quantification of Evolved Gases from Thermogravimetric Analyzer

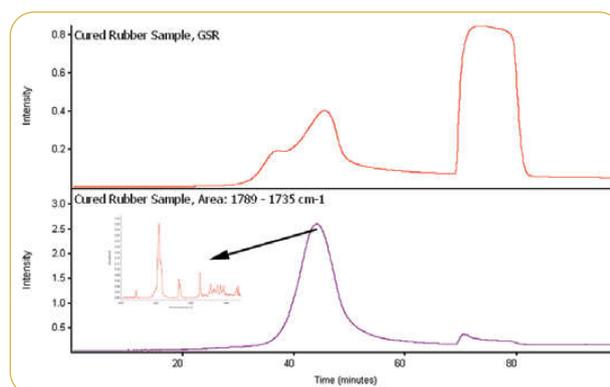


- Gas cell design conforming to IR beam geometry – maximizes IR throughput with minimum cell volume
- 100-mm IR beam pathlength for maximized FTIR sensitivity
- Baseplate-mounted in your FTIR for flexible sampling
- Temperature control settable up to 300 °C for flow cell and transfer line
- User-changeable IR transparent windows to minimize cost of operation
- Heated, glass-lined stainless steel transfer line for inert transfer of TGA effluent



IR beam conforming optical design of PIKE Technologies TGA/FTIR Accessory.

The PIKE Technologies TGA/FTIR Accessory is designed to be an interface for evolved gas analysis from a thermogravimetric analyzer (TGA) to your FTIR spectrometer. Evolved gases from the TGA pass through a heated transfer line into the beam conforming flow cell in the FTIR sample compartment. As these evolved gases travel through the flow cell, FTIR spectra are collected and stored for further processing. Qualitative and quantitative measurements are doable from sample masses – typically in the low milligram range. The PIKE TGA/FTIR Accessory is compatible with most FTIR spectrometers and most TGA instruments.



TGA/FTIR data for cured rubber sample. Upper trace is the Gram-Schmidt reconstruct of the TGA evolved gases. Lower trace is a carbonyl reconstruction and an FTIR spectrum from this data set.

During the TGA analysis sample mass is lost through a combination of volatilization and degradation of the sample material. The heated TGA/FTIR system maintains the vapor state of the evolved gases throughout the FTIR analysis. Typical samples include polymers, epoxies, fibers and laminates for investigating deformation, thermal stability or comparative study applications.

Typically, the FTIR spectrometer is set to collect spectra at 10-second intervals during the evolved gas analysis using the kinetics software package for your FTIR. With this software you can generate reconstructions of total IR response versus time or temperature (Gram-Schmidt) or specific IR band reconstructions to isolate points of unique component evolutions. FTIR spectra are extracted from the data set and an identification is made by comparing these unknown spectra to vapor phase spectral libraries.

SPECIFICATIONS

Temperature Range	Ambient to 300 °C
Accuracy	+/- 0.5% of set point
Voltage	24 VAC
Sensor Type	3 wire Pt RTD (low drift, high stability)
Controllers	
Input Voltage	115/230 V, switchable
Output Voltage	10 A/24 VAC
Dimensions (W x D x H)	91 x 140 x 121 mm (excludes baseplate mount)

TGA/FTIR ACCESSORY FLOW CELL

PART NUMBER	DESCRIPTION
162-24XX	TGA/FTIR Accessory Flow Cell <i>Includes mount for your FTIR, exhaust line and high-temperature O-rings</i>

Notes: Replace **XX** with your spectrometer's Instrument Code listed on page 191. Complete accessory requires selection of IR transparent windows, heated transfer line and temperature controller. The TGA/FTIR accessory requires installation by a trained service representative – please consult with your FTIR manufacturer.

IR TRANSPARENT WINDOWS FOR TGA/FTIR ACCESSORY

(must select 2 or more)

PART NUMBER	DESCRIPTION
160-1320	Window, KBr, 38 x 6 mm
160-1329	Window, ZnSe, 38 x 6 mm

Notes: For window compatibility please consult our Materials Properties table on page 128 of this catalog. ZnSe windows should not be used above 250 °C.

HEATED TRANSFER LINE FOR TGA/FTIR ACCESSORY

(must select one)

PART NUMBER	DESCRIPTION
115-0001	Heated Transfer Line for Shimadzu TGA50 <i>Includes evolved gas port modifications</i>
115-0005	Heated Transfer Line for Mettler 851 TGA
115-0006	Heated Transfer Line for Mettler 851e/LF or TGA-DSC1/2/3 TGA
115-0007	Heated Transfer Line for TA Instruments Q600 TGA
115-0008	Heated Transfer Line for TA Instruments Discovery/Q5000R
115-0009	Heated Transfer Line for TA Instruments Q50/Q500 TGA
115-0010	Heated Transfer Line for TA Instruments 2050/2950
115-0011	Heated Transfer Line for Netzsch TGA
115-0012	Heated Transfer Line for PESTA6/4000 110V TGA
115-0013	Heated Transfer Line for SETARAM
115-0014	Heated Transfer Line for PESTA6/4000 220V TGA
115-0017	TGA Universal Transfer Line <i>Includes the following adapters; 1/8" to 1/8" union, 1/4" to 1/8" reducing union, 3-mm to 1/8" union, 6-mm to 1/8" reducing union and 6-mm PTFE ferrules</i>
115-0018	PTFE TGA Transfer Line, 230 °C max. <i>Recommended for TGAs with evolved gas ports made of ceramic or moving furnace heads</i>

Notes: We will need to know the make and model number of your TGA. Please consult your TGA supplier to ensure compatibility with evolved gas analysis. Contact PIKE Technologies about interfacing to other TGA instruments. Unless noted otherwise, all PIKE transfer lines are 1/8" OD, silica-lined stainless steel, 48" in length and offers a maximum temperature of 300 °C .

TEMPERATURE CONTROLLERS FOR TGA/FTIR ACCESSORY

(must select one)

PART NUMBER	DESCRIPTION
076-1120	Dual Digital Temperature Control Module
076-1130	4-Zone Digital Temperature Control Module for Shimadzu TGA

Note: These temperature controllers provide setting for the heated gas cell and the heated transfer line.

REPLACEMENT PARTS AND OPTIONS

PART NUMBER	DESCRIPTION
162-2309	High-Temperature O-Rings, max temp 325 °C, (1 ea.)
162-2308	High-Temperature O-Rings, max temp 325 °C, (4 ea.)

Note: Gas cell requires 4 O-rings. For high-temperature purge tubes and other options, please contact PIKE Technologies.