

## Gas Combinations for the AutoChem

The following is a list of typical gas combinations used with the AutoChem; recommended flow rates are also provided.

Test	Gases			Flow Rate (mL/min)	Other
	Preparation	Carrier	Loop		
TPR Experiment	Argon	10% H <sub>2</sub> in Argon	N/A	50	
Calibration	N/A	10% H <sub>2</sub> in Argon	Argon	50	TCD Level Calibration
TPD Ammonia	15% NH <sub>3</sub> in Helium*	Helium	N/A	50	
	N/A	Helium	15% NH <sub>3</sub> in Helium*	50	TCD Level Calibration
*May require use of Kalrez seals in mass flow controller if use of NH <sub>3</sub> is extended					
TPD Pyridine	Helium	Helium	Helium	50	Pyridine in Vapor Generator
Calibration	N/A	Helium	Helium	50	User-defined Pyridine in Vapor Generator
TPD Hydrogen	10% H <sub>2</sub> in Argon	Argon	N/A	50	
Calibration	N/A	Argon	10% H <sub>2</sub> in Argon	50	TCD Level Calibration
TPD Oxygen	10% O <sub>2</sub> in Helium	Helium	N/A	50	
Calibration	N/A	Helium	10% O <sub>2</sub> in Helium	50	TCD Level Calibration

Test	Gases			Flow Rate (mL/min)	Other
	Preparation	Carrier	Loop		
TPO Experiment	Helium	10% O <sub>2</sub> in Helium	N/A	50	
Calibration	N/A	10% O <sub>2</sub> in Helium	Helium	50	TCD Level Calibration
H <sub>2</sub> Pulse Chemisorption	10% H <sub>2</sub> in Argon	Argon	10% H <sub>2</sub> in Argon	50	
CO Pulse Chemisorption	10% H <sub>2</sub> in Argon	Helium	10% CO in Helium	50	
Calibration	Not required				
BET Surface Area	Helium	30% N <sub>2</sub> in Helium	N/A	50	
Calibration	N/A	30% N <sub>2</sub> in Helium	N/A	50	User-defined manual injections of N <sub>2</sub> (0.5, 1.0, 1.5, and 2.0 mL)