

www.adeeco.ir

Catalyst Characterization Analyzer- BET

Catalyst Characterization Analyzer is an automated chemisorption's analysis instrument. which is capable of evaluation of a variety of catalyst properties including:

- B.E.T. Surface Area
- TPD: Temperature Programmed Desorption
- TPR: Temperature Programmed Reduction
- TPO: Temperature Programmed Oxidation
- Pulse Titration

Straight forward operation, PC interface and accessibility of controllers make it an ideal choice for routine metal area/dispersion measurements in industries, universities and colleges. This device is one of the most commonly used device for determination of nanostructured materials properties such as metallic nanoparticles, metallic oxides, sulphureous oxides, nanotubes, and other nanostructures.

The most important characteristics of the materials which can be measured by this device are BET Surface area, adsorptive properties of nanoparticles, reduction properties of metallic nano oxides, and reaction parameters such as activation energy. One of the advantages of this device is its ability to be connected to other detectors, which provides the use of complementary and precise spectroscopic methods.

Features:

- High-precision electronic mass flow controllers provide extremely accurate gas control and determination of gas volume.
- A highly sensitive linear micro volume thermal conductivity detector (TCD) assures that the volume calibration remains constant over the full range of peak amplitudes so the area under the peak is directly proportional to the volume of gas reacted.
- Cylinderical furnace can heat the quartz sample reactor to 1100°C. Any number of ramp rates and sequences facilitate customized experiments.
- Five gas inlets provide the capability to perform sequential experiments, such as TPR/TPD cycles.
- Low internal plumbing volume assures high resolution, fast detector response and reduces error when calculating gas volumes.



Application

Pharmaceutical industry

 Characterization of pharmaceutical products performance

Cement industry

• determination of the inner surface of hardened cement paste

Oil and gas industry

- Evaluation of gas storage materials like Activated carbon/Hybrids
- Study of Zeolitic Materials utilized as adsorbents/catalysts for oil refining

Catalytic processes

- Catalytic Reforming
- Hydrocracking, Hydrodesulfurization (HDS),hydrodenitrogenation (HDN)
- ♀ No.78, 16 Azar St, Keshavarz Blv, Tehran, IRAN
- 📞 (+98 21) 88 980 173 🖨 (+98 21) 88 980 827



www.adeeco.ir () info@adeeco.ir

· Mass spectrometer port and software integration allow virtually simultaneous detection of both the thermal conductivity detector and mass spectrometer.



Catalysts







SPECIFICATIONB.E.T. Specific Surface AreaTemperature Programmed Oxidation, Desorption and Reduction (TPO-TPD-TPR) (Pulse Titration)(Pulse Titration)Specific Surface Area > 0.001 m²/gAccuracy, Volume: ± 1% Reproducibility: 0.5%Compatible with: H₂, O₂, CO, CO₂, NO, N₂O,NO₂, SO₂, NH₃, N₂, Ar, Kr, HeGasesGase Flow Rate : 0-20 sccm Input Pressure (gauge): Up to 2 bar Gas Lines: 1/8', Stainless steelVoltage: 115- 230 V Power: 1800 WMantle, Max Temp : 450 °C- Furnace, Max Temp: 1100 °C Mantle Power: 500 W- Furnace Power: 800 WController Type : PID via PC Program Steps : Multiple Ramp, hold (soak) Furnace Heating Rate: 1-20 °C/minAmbient Temperature: 15-50 °C Relative Humidity: 20-80%	SEM of Zeolites		Active Carbon + Zeloites	Catalysts	
B.E.T. Specific Surface AreaTemperature Programmed Oxidation, Desorption and Reduction (TPO-TPD-TPR)(Pulse Titration)PerformanceSpecific Surface Area > 0.001 m²/gAccuracy, Volume: ± 1%Reproducibility: 0.5%Compatible with: H₂, O₂, CO, CO₂, NO, N₂O,NO₂, SO₂, NH₃, N₂, Ar, Kr, HeGas Flow Rate: 0-20 sccmInput Pressure (gauge): Up to 2 barGas Lines: 1/8", Stainless steelVoltage: 115- 230 VPowerFrequency: 50/60 HzPower: 1800 WHeating SystemMantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W - Furnace Power: 800 WPorter Signer Sig			SPECIFICATION		
CapabilityTemperature Programmed Oxidation, Desorption and Reduction (TPO-TPD-TPR) (Pulse Titration)PerformanceSpecific Surface Area > 0.001 m²/g Accuracy, Volume: ± 1% Reproducibility: 0.5% compatible with: H₂, O₂, CO, CO₂, NO, N₂O,NO₂, SO₂, NH₃, N₂, Ar, Kr, He Gas Flow Rate : 0-20 sccm Input Pressure (gauge): Up to 2 bar Gas Lines: 1/8″, Stainless steelPowerVoltage: 115- 230 V Power: 1800 WPower: 1800 W Mantle, Max Temp : 450 °C- Furnace, Max Temp: 1100 °C Mantle Power: 500 W- Furnace Power: 800 WHeating SystemController Type : PID via PC Program Steps : Multiple Ramp, hold (soak) Furnace Heating Rate: 1-20 °C/minEnvironmentalAmbient Temperature: 15-50 °C Relative Humidity: 20-80%	Capability	B.E.T. Specific	Surface Area		
PerformanceSpecific Surface Area > 0.001 m²/gAccuracy, Volume: ± 1%Reproducibility: 0.5%compatible with: H₂, O₂, CO, CO₂, NO, N₂O, NO₂, SO₂, NH₃, N₂, Ar, Kr, HeGasesGas Flow Rate : 0-20 sccmInput Pressure (gauge): Up to 2 barGas Lines: 1/8", Stainless steelVoltage: 115 - 230 VPowerFrequency: 50/60 HzPower: 1800 WHeating SystemMantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W - Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Temperature Programmed Oxidation, Desorption and Reduction (TPO-TPD-TPR)			
PerformanceSpecific Surface Area > 0.001 m²/gAccuracy, Volume: ± 1%Reproducibility: 0.5%Gasescompatible with: H₂, O₂, CO, CO₂, NO, N₂O, NO₂, SO₂, NH₃, N₂, Ar, Kr, HeGas Flow Rate : 0-20 sccmInput Pressure (gauge): Up to 2 barGas Lines: 1/8", Stainless steelGas Lines: 1/8", Stainless steelPowerVoltage: 115- 230 VPower: 1800 WMantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W- Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		(Pulse Titration)			
PerformanceAccuracy, Volume: ± 1% Reproducibility: 0.5%Gasescompatible with: H2, O2, CO, CO2, NO, N2O, NO2, SO2, NH3, N2, Ar, Kr, HeGas Flow Rate : 0-20 sccmGas Flow Rate : 0-20 sccmInput Pressure (gauge): Up to 2 barGas Lines: 1/8", Stainless steelPowerGas Lines: 1/8", Stainless steelPowerVoltage: 115-230 VPower: 1800 WPower: 1800 WMantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W - Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minAmbient Temperature: 15-50 °CRelative Humidity: 20-80%	Performance	Specific Surfa	ce Area > 0.001 m²/g		
Reproducibility: 0.5%Gasescompatible with: H2, O2, CO, CO2, NO, N2O, NO2, SO2, NH3, N2, Ar, Kr, HeGas Flow Rate : 0-20 sccmInput Pressure (gauge): Up to 2 barGas Lines: 1/8", Stainless steelPowerVoltage: 115- 230 VPower: 1800 WPower: 1800 WMantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W - Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Accuracy, Volume: ± 1%			
Gasescompatible with: H2, O2, CO, CO2, NO, N2O, NO2, SO2, NH3, N2, Ar, Kr, HeGas Flow Rate : 0-20 sccmInput Pressure (gauge): Up to 2 barGas Lines: 1/8", Stainless steelVoltage: 115- 230 VPowerFrequency: 50/60 HzPower: 1800 WMantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W - Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minEnvironmentalAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Reproducibili	ty: 0.5%		
GasesGas Flow Rate : 0-20 sccmInput Pressure (gauge): Up to 2 barGas Lines: 1/8", Stainless steelGas Lines: 1/8", Stainless steelPowerVoltage: 115- 230 VPower: 1800 WPower: 1800 WMantle, Max Temp : 450 °C- Furnace, Max Temp: 1100 °CMantle Power: 500 W- Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minEnvironmentalAmbient Temperature: 15-50 °CRelative Humidity: 20-80%	Gases	compatible w	compatible with: H_2 , O_2 , CO, CO ₂ , NO, N_2 O, NO ₂ , SO ₂ , NH ₃ , N_2 , Ar, Kr, He		
Input Pressure (gauge): Up to 2 barGas Lines: 1/8", Stainless steelVoltage: 115- 230 VPowerFrequency: 50/60 HzPower: 1800 WMantle, Max Temp : 450 °C- Furnace, Max Temp: 1100 °CMantle Power: 500 W- Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minEnvironmentalAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Gas Flow Rate	e : 0-20 sccm		
Gas Lines: 1/8", Stainless steelPowerVoltage: 115- 230 VFrequency: 50/60 HzPower: 1800 WMantle, Max Temp : 450 °C- Furnace, Max Temp: 1100 °CMantle Power: 500 W- Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minEnvironmentalAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Input Pressur	e (gauge): Up to 2 bar		
PowerVoltage: 115- 230 VFrequency: 50/60 HzPower: 1800 WMantle, Max Temp : 450 °C- Furnace, Max Temp: 1100 °CMantle Power: 500 W- Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minEnvironmentalAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Gas Lines: 1/8	3", Stainless steel		
PowerFrequency: 50/60 HzPower: 1800 WMantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W - Furnace Power: 800 WMantle Power: 500 W - Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minAmbient Temperature: 15-50 °CRelative Humidity: 20-80%	Power	Voltage: 115-	230 V		
Power: 1800 WMantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W - Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Frequency: 5	0/60 Hz	•	
Mantle, Max Temp : 450 °C - Furnace, Max Temp: 1100 °CMantle Power: 500 W- Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Power: 1800	N		
Heating SystemMantle Power: 500 W- Furnace Power: 800 WController Type : PID via PCProgram Steps : Multiple Ramp, hold (soak)Furnace Heating Rate: 1-20 °C/minEnvironmentalAmbient Temperature: 15-50 °CRelative Humidity: 20-80%	Heating System	Mantle, Max	Mantle, Max Temp : 450 °C- Furnace, Max Temp: 1100 °C		
Heating System Controller Type : PID via PC Program Steps : Multiple Ramp, hold (soak) Furnace Heating Rate: 1-20 °C/min Ambient Temperature: 15-50 °C Relative Humidity: 20-80%		Mantle Power: 500 W- Furnace Power: 800 W			
Program Steps : Multiple Ramp, hold (soak) Furnace Heating Rate: 1-20 °C/min Environmental Ambient Temperature: 15-50 °C Relative Humidity: 20-80%		Controller Type : PID via PC			
Furnace Heating Rate: 1-20 °C/min Environmental Ambient Temperature: 15-50 °C Relative Humidity: 20-80%		Program Steps : Multiple Ramp, hold (soak)			
EnvironmentalAmbient Temperature: 15-50 °CRelative Humidity: 20-80%		Furnace Heating Rate: 1-20 °C/min			
Relative Humidity: 20-80%	Environmental	Ambient Tem	perature: 15-50 °C		
		Relative Humidity: 20-80%			
Micro Volume Thermal Conductivity Detector: Dual-filament	Hardware	Micro Volume	Micro Volume Thermal Conductivity Detector: Dual-filament		
TCD Filament Material: Oxidation and Ammonia Resistant		TCD Filament Material: Oxidation and Ammonia Resistant			
Filament Type: Nickel-Iron		Filament Type: Nickel-Iron			
Gas Input Ports: 5 ports		Gas Input Ports: 5 ports			
Loop Volume: 500 μL		Loop Volume: 500 μL			
Mass Flow Controller: Two MFCs with flow rate of 0-20 sccm		Mass Flow Controller: Two MFCs with flow rate of 0-20 sccm			

♀ No.78, 16 Azar St, Keshavarz Blv, Tehran, IRAN

📞 (+98 21) 88 980 173 🖨 (+98 21) 88 980 827