

Rare metal dispersion rate measurement

BEL-METAL-3



[Features]

Rate metal support catalyst is used for automobile exhaust gas catalyst, alteration catalyst of naphtha and etc. It is important in catalyst procurement how much rare metal atom is exposed on solid surface as the reaction mainly happens on noble metal surface. Measuring the chemical adsorption amount on rare metal is one of the methods to measure the degree of the exposure. BEL-METAL-3 measures chemical adsorption amount of 3 samples by pulse injection method, and pretreatment and measurement are automatically carried out. Also, the following data can be analyzed from the chemical adsorption amount measured:

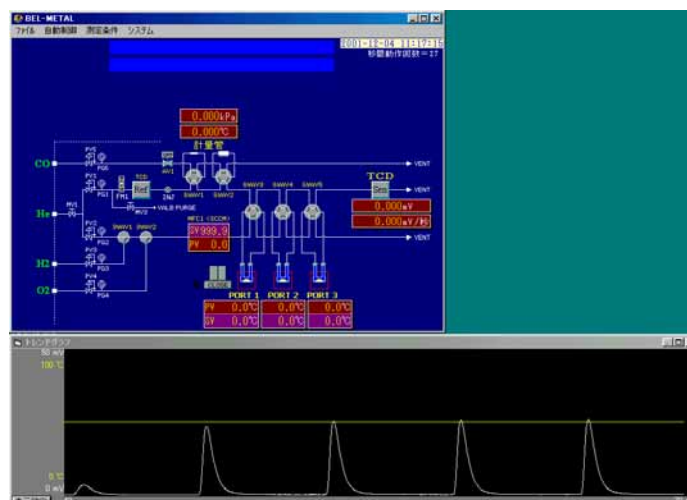
(1) metal dispersion rate, (2) metal surface area, (3) average metal particle size.

Measurement complies with "Metal surface area measurement method by CO pulse method", a standard manual by Reference catalyst committee of Catalyst Society of Japan. Chemical adsorption amount of ammonia and H₂S can be measured by a special specification, corrosive gas resistance model (optional).

[Method]

Pulse injection chemical adsorption measurement method (detector: TCD)

[Software screen]



[Specifications]

Material used inside the measuring system	SUS316, SUS304, brass, Pyrex, Teflon, Viton
Dosing gas port	1) Carrier gas : He and Ar : 2 port 2) Pretreatment gas : H ₂ , O ₂ , etc. : 3 ports 3) Adsorption gas : CO and H ₂ : 2 port
Pulse injection	Measuring tube (volume: 0.5, 1.0ml) : 2 loops With automatic volume calibration system by pressure and temperature measurement
Reaction	Measurement port : 3 ports Pyrex glass sample tube : 6 tubes Catalyst amount : 3ml (Max.) Max. catalyst diameter : 3.5mm (Max.) Electric furnace : 3 units Max. temperature : 1200°C
Detector	TCD detector : 1 unit Filament : Rhenium tungsten 4 element Temperature : 100°C
Measurement program	Report on temperature, gas type, pulse injection control and analysis results (chemical adsorption amount, metal dispersion rate, metal surface area and average particle size) from pretreatment to measurement
Security system	Security stop by the temperature failure or external input (flammability, toxic gas alarm and etc.) Emergency stop button
Dimension	Main unit : W600 x H720x D700mm
Weight	Main unit : 120kg

[Utilities]

Precision balance	Max. weighing capacity: 100g Resolution: 0.1mg
Gas used for measurement	Carrier, pretreatment, adsorption gas Total 7 ports Purity more than 99.99% (connection port: 1/8" SWG)
System controller	Personal computer (Windows) 17" display, printer
Driving air	Dry air or nitrogen, 5 bar (connection port: 1/8" SWG)
Power	Main unit AC100V-120, 200-240V/15A



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