

Commodity Description

종목 번호 Item No.	관세분류 번호 HSK No.	정부물품분류번호(8자리) Korean Government Commodity Classification Code(eight-digit)	품 명 Description	단 위 Unit	수 량 Q'ty
1	9027.80.1000	41113009	Magnetic Suspension Balance	set	1

I. End-user's Use

1. The Equipment enables precise gravimetric measurements over a wide temperature and pressure range, as well as in chemically reactive or corrosive atmospheres.
2. The equipment is the available system that can measure adsorption isotherms of gases on porous materials up to very high pressure (500 Bar) using a gravimetric technique.
3. The equipment are mainly used in the following applications: Carbon capture and storage shale gas exploration. Porous material characterization, hydrogen storage / fuel cells, ionic liquid characterization membrane studies, other gas sorption studies, Catalyst research and others.
4. The equipment must be perated in agreement with national and international standards, ASTM E914, ASTM E1131, ASTM E1868, DIN 51006, ISO 7111, ISO11358.

II. Configurations of Goods

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| 1. Balance unit with Electromagnet and Permanent Magnet | 1 set |
| 2. Sample Chamber with Glass Version | 1 set |
| 3. Automatic Gas flow control and Vacuum systems | 1 set |
| 4. Data Analysis software and Control system | 1 set |

III. Performance & Specification

1. Balance unit with Electromagnet and Permanent Magnet 1set
 - 1) MSB weights a sample in closed (sealed) reactor cell with a external microbalance.
 - 2) A PID (proportional- integral- differential) Controller controls the electromagnetic force so that the position of the floating magnetic is kept stable.
 - 3) An extend electromagnetic is controlled to attract the internal permanent magnetic and continues to apply attractive force until the system reaches a constant measuring point height.

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| 2. Sample chamber with Glass Version | 1set |
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- 1) Temperature range : ambient (-196 °C , 2400 °C : optional)

- 2) Minimun pressure range : vac ~ 1.1 bar (500 bar : optional)
- 3) Resolution and Mass range of MSB : < 10 µg and ≥ 5 g or better
- 4) reproducibility : ±0.02 µg ~ ±2 µg
- 5) relative error : less than 0.0 1% of measured value
- 6) Baseline stability: 5 µg/h or better
- 7) Sample crucible volume: 0.3ml or 3ml
- 8) Max. Sample dimension: 0.3ml (Diameter 6mm, Height 8mm), 3ml (Diameter 16 mm Height 15 mm)

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| 3. Automatic Gas flow control and Vacuum systems | 1set |
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- 1) Automatic Gas flow control system
 - Inert gas : corrosive gases, HNO₃, SO_x, NO_x, HF, HCl, etc
 - Type of gas connection : 6mm Sertor or better
 - Type of pressure connection : 6mm Swagelok
 - Number of gas connections : 20 ea or better
 - Number of inlet and outlet connections : 20ea or better
 - Number of purge gas connections : 1ea
 - The system can be coupled with gas analysis tools such as GC, MS or FT-IR
 - The gas safety system such as hydrogen or carbon dioxide ensuring secure operation and user safety could be connected with this system and also, the system can be connected with a humidity and water vapor to regulate the humidity and water vapor during the measurement.
- 2) Vacuum control system
 - Type of pump : two stage rotary pump
 - peak pumping speed : 2.3 cfm or faster
 - ultimate pressure : 2x10⁻³mbar or better
 - Nominal rotation speed of Motor : 1800 rpm or better
 - Noise level : 48 dB or better

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| 4. Data Analysis software and Control system | 1set |
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- 1) Data analysis software
 - program capable of text editing
 - Data security in case of power failure
 - Thermocouple break detection
 - Repetition measurements with minimum parameter input
 - Evaluation of current measurement

- curve comparison up to 32 curves
- Export and import of data ASC11
- Data export to MS Excel
- Multi- methods analysis (DSC, TG, TMA, DIL)
- programmable gas control
- Mass change in % and mg
- Rate controlled mass loss
- Evaluation of mass loss
- optional Kinetic and lifetime prediction software packages

2) Data Control System (Desktop version)

CPU: Intel core i5

•RAM : 8GB

•SSD: 256GB

•Monitor : 24" LCD

•Interface : USB

•O/S : Window 11 professional

•Keyboard and mouse

IV. Remarks

- 1) Warranty : one year after installation and test-run.
- 2) Delivery term : FCA (Free Carrier).
- 3) Delivery : Within 8 months after receipt of the L/C or PO sheet.
- 4) Installation and technical training: It should be performed by a qualified engineer who trained from a manufacturer at an end-user site free of charge.
- 5) Inspection: It should be inspected by a manufacturer before shipment.