

High-Concentration Carbon Analyzer

EMIA-20XC

The EMIA-20XC from EMIA-Expert Series is designed for the analysis of high-carbon-content materials, such as tungsten carbide, delivering accurate and highly repeatable results. It is equipped with switching function, which allows analysis of lower ppm level concentrations of carbon and sulfur.



Main unit

Detection unit (XC unit)

Purifier/Oxidizer unit

Proprietary Technology for High-Repeatability Measurement

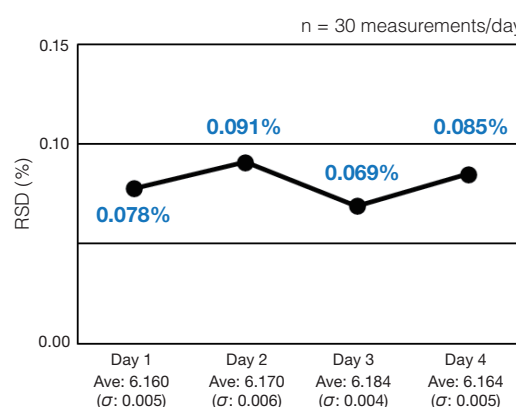
The detection unit (XC unit), specialized for measuring high-carbon-content materials, minimizes the effects of atmospheric pressure and room temperature fluctuations, enabling high-repeatability measurements in a short time.

- **Relative standard deviation (RSD) $\leq 0.15\%$,**
demonstrating outstanding reproducibility, for high-carbon-content materials, such as tungsten carbide.
- **Approximately 160 seconds**
from measurement start to results display: high-repeatability measurement mode (XC mode).

Repeatability test using tungsten carbide sample

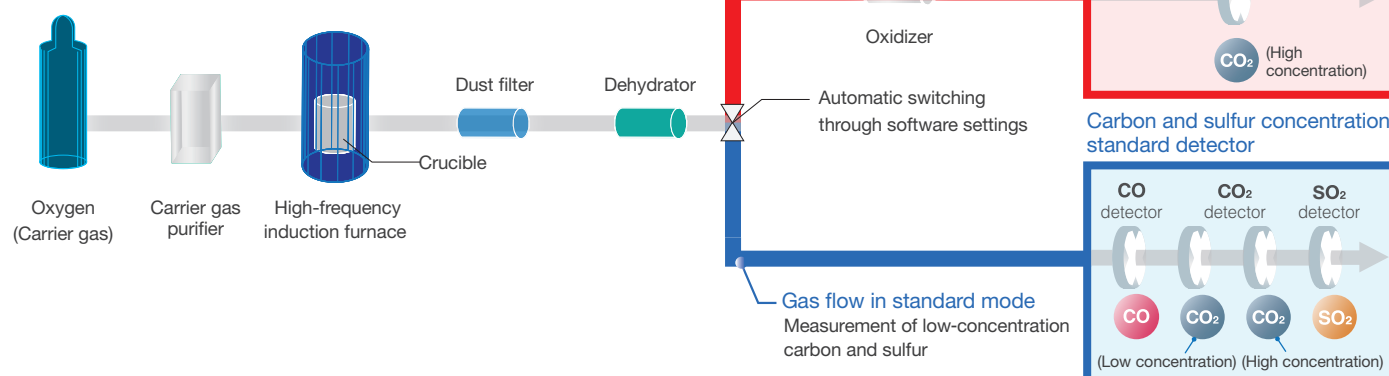
Sample	Measurement results % (m/m)
Standard sample (ECRM 783-1) Labeled value: 6.188% n = 10	6.187
	6.185
	6.193
	6.190
	6.183
	6.185
	6.182
	6.185
	6.182
	6.190
Average	6.186
Standard deviation (σ)	0.004
RSD (%)	0.060

Reproducibility test using tungsten carbide sample (ECRM 783-1)



The Gas Flow

The EMIA-20XC enables switching between high-repeatability measurement of high-concentration carbon and measurement of low-concentration carbon and sulfur.



Applications*

XC Mode

Cemented carbides

- Tungsten carbide
- Titanium carbide



High-carbon materials

- Silicon carbide
- Graphite-based materials (graphite, carbon fiber, activated carbon, carbon black)
- Battery materials (cathodes/anodes)
- Aerospace materials (CFRP)
- Chemical-related materials (activated carbon catalysts)



Standard Mode

Steel

- Automotive steel sheets
- Tools/construction materials



Minerals

- Coke
- Limestone
- Coal



Chemicals

- Catalysts
- Rubber



Non-ferrous metals

- Copper/nickel
- Aluminum alloys
- Titanium alloys



Rare metals

- Lithium
- Cobalt
- Tungsten



Electronic materials

- Solder
- Lithium-ion battery materials
- MLCCs (multilayer ceramic capacitors)



* Application examples are based on representative evaluations conducted with EMIA-20XC and/or EMIA-Pro/Expert. Results and repeatability depend on sample composition, homogeneity, concentration, particle size, pretreatment, calibration, and other measurement conditions. The specified RSD $\leq 0.15\%$ applies only under the specified measurement conditions and is not guaranteed for all sample types. Please contact HORIBA before purchase to confirm the feasibility of your application and recommended measurement conditions.

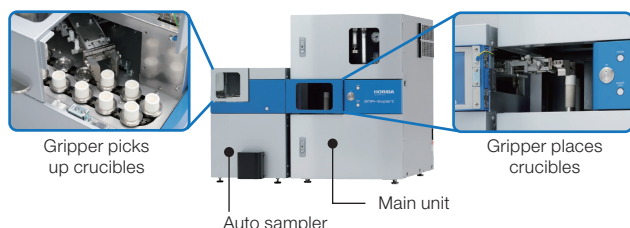
Options

Auto Sampler

Up to 20 samples can be loaded. The system automatically places crucibles in the furnace and disposes of them after measurements. Measurements can also be manually interrupted when necessary.



Video



Gripper picks up crucibles

Gripper places crucibles

Auto sampler

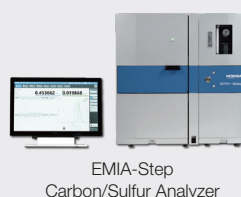
Main unit

Halogen Trap Unit HT-03

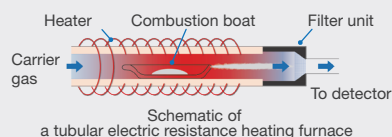
Traps halogen derived from sample, allowing analysis with minimized influence.



Available with tubular electric resistance heating furnaces



The XC unit can be combined with the tube furnace-type EMIA-Step for temperature-controlled measurement.



EMIA-Expert Series: EMIA-20XC Specifications by Operating Mode

		XC Mode	Standard Mode
Measurement Principle		High-frequency induction furnace combustion – infrared absorption method	
Sample Mass		Max 0.50 or less than 0.49 $\pm$ 0.01 g	Less than 1.00 $\pm$ 0.10 g
Measurement Time (Average) *1		Approx. 160 seconds	Approx. 60 seconds
Carbon	Measurement Range *2	1.0% - 20.0%	0.6 ppm - 10.0%
	Reproducibility *3	RSD $\leq 0.15\%$	$\sigma \leq 3$ ppm (Sample less than 20 ppm), $\sigma \leq 10$ ppm or RSD $\leq 0.5\%$ (Sample more than 20 ppm)
Sulfur	Measurement Range *2	-	0.6 ppm - 1.0%
	Reproducibility *3	-	$\sigma \leq 3$ ppm (Sample less than 20 ppm), $\sigma \leq 10$ ppm or RSD $\leq 0.75\%$ (Sample more than 20 ppm)

*1 Varies depending on the sample, measurement conditions, and options.

*2 Maximum range is extended by reducing the sample mass.

*3 Guaranteed values apply and are limited to the following conditions: When using reliable standards and using official consumables (accelerators, crucible, reagents, others)

Utility

Carrier Gas	Oxygen (Purity: 99.5% or higher, 0.30 - 0.33 MPa)
Operation Gas	Nitrogen (Purity: 99.5% or higher, 0.40 - 0.45 MPa)

Dimensions (W x D x H mm) and Mass (kg)

Main Unit	500 x 725 x 710 mm/approx. 134 kg *4
Purifier/Oxidizer	160 x 560 x 512 mm/approx. 28 kg
XC Unit	260 x 560 x 513 mm/approx. 37 kg

*4 Excludes protrusions on the rear panel

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Bulletin: HRE-3784A