

# CoMo

Portable contamination monitors with plastic scintillation detector

## Innovative Measuring equipment

for

### nuclear technology

clearance measurements

research centers

nuclear medicine

civil protection

industry



SEA

Strahlenschutz- | Entwicklungs- | und Ausrüstungs-  
Gesellschaft mbH

# CoMo 170 / 300

**Portable contamination monitor with thin-layer plastic scintillation detector for high-sensitive measurement of  $\alpha$ - and  $\beta/\gamma$ -contaminations**

## Use and function

Working with open radioactive material can lead to contaminations of persons and e.g. surfaces. The German radiation protection ordinance therefore requires, e.g. if you leave a controlled area, to check for the presence of surface contaminations and defines nuclide-related limit values. For direct and indirect contamination measurement (via smear test sample), mobile contamination monitors like the CoMo-170 and CoMo-300 are used.

## System characteristics

- innovative detector technology with plastic scintillation detector
  - no gas-filled or gas flow proportional detectors required. Therefore no gas supply is required. High repair costs of gas-filled detectors (Xenon detectors) are avoided.
  - $\alpha$ - and  $\beta/\gamma$ -contamination measurement with only one detector. No detector change required.
  - simultaneous, selective  $\alpha$ - and  $\beta/\gamma$ -contamination measurement
  - measuring system automatically detects and signalizes the presence of  $\alpha$ -radiation
  - typical efficiencies s. table



CoMo-170  
with smear test station



CoMo-300

- standard version CoMo-170 with 170 cm<sup>2</sup> detector surface, special version CoMo-300 with 300 cm<sup>2</sup> detector surface
- low weight, only approx. 750 g for CoMo-170 and approx. 1,000 g for CoMo-300
- battery-operated, 2 standard batteries AA mignon, 1.5 V, operation time approx. 25 h
- ergonomic housing design with large graphic LCD display
- automatic display illumination in case of darkness
- $\mu$ -controller measuring electronics
- measuring value display in cps or nuclide-related in Bq, q/cm<sup>2</sup>
- nuclide selection menu (preset nuclides, additionally freely definable nuclides)
- also double nuclide display with definable nuclide vectors possible
- digital and analogue (bar) measuring value display
- measuring value as gross or net value with background subtraction
- special graphic measuring value display (count rate as a function of time) e.g. for clearance measurements of surfaces
- user-friendly menu structure, operation by means of 5 function buttons
- settings and measuring value parameters protected by code
- measuring value storage (750 data records) with print function
- software for read out and further processing of measuring data
- possibility to connect external detectors e.g. for dose rate measurement or contamination measurement in pipes, automatic probe identification, various probes available
- serial interface RS 232 C for PC-system / printer
- operating temperature till -10°C without restrictions, special version till -20°C
- software update via PC possible
- stationary use in wall station to check the hands, with integrated charge and definable measuring time
- combination with smear test station possible for evaluation of smear test samples
- possibility to connect additional display for external indication
- various accessories (case, test source ...)



pipe detectors



## Technical data

Detector type:	thin-layer plastic scintillation detector with ZnS coating, with mylar foil and honeycomb grid
Detector size:	CoMo-170: 170 cm <sup>2</sup> CoMo-300: 300 cm <sup>2</sup>
Background:	CoMo-170: $\alpha$ : approx 0.1 cps $\beta/\gamma$ : approx 15 – 25 cps CoMo-300: $\alpha$ : approx 0.1 cps $\beta/\gamma$ : approx 20 – 30 cps
Background subtraction:	net or gross measurement selectable, automatic BG-subtraction BG-measuring time definable
Measuring electronics:	$\mu$ -controller-based electronics
Keyboard:	foil keyboard, 5 function buttons
Alarm:	separately definable for each nuclide and/or for count rate, acoustical and optical alarm



CoMo with external dose rate detectors

Meas. value display:	as desired in cps or nuclide-related in Bq or Bq/cm <sup>2</sup> . As an alternative: graphic display of count rate as a function of time. with dose rate probes measuring value display in n/µ/mSv/h
Nuclides:	25 nuclides, preset calibration factors, user-specifically changeable, also double nuclide definable, integrated autocalibration function
Measuring time:	continuous measurement with automatic or definable time constant

as an alternative:  
fixed measuring time selectable  
or calculated measuring time  
according to definable error  
limit in stationary mode  
(wall station/smear test station),  
measuring time definable in s

Display: large-area, graphic LCD display  
128 x 64 pixels, with illumination,  
automatically switched on via  
photocell (LDR),  
definable illumination duration

Power supply: 2 batteries (AA mignon LR 6) or  
corresponding rechargeable  
batteries (NiMH), approx. 25 h  
operation time, rechargeable via  
charging adapter or wall station



CoMo in floor control bogey

Temperature range: - 10° C till + 40° C,  
no condensation  
special version till - 20° C

Dimensions: CoMo-170:  
280 x 125 x 135 mm  
(L (with handle) x W x H)  
CoMo-300:  
318 x 157 x 172 mm  
(L (with handle) x W x H)



CoMo with external flat detector

Weight: CoMo-170: approx 750 g  
CoMo-300: approx 1,000 g  
(incl. batteries)

Housing: ergonomically shaped  
plastic housing

Interfaces:

- serial interface RS 232  
(PC, printer)
- boost charge / line operation
- external detectors
- active wall station /  
smear test station

Special versions:

CoMo-170 F  
type tested for use by  
fire brigade K/FW/IdF 110213

CoMo-170 D  
with additional GM-counter  
tube for dose rate measurement,  
integrated in the front surface

#### Radionuclide efficiency

Average values from measurements with  
100 cm<sup>2</sup> sources

C-14	approx	14 %
F-18	approx	18 %
P-32	approx	25 %
S-35	approx	12 %
Cl-36	approx	42 %
K-40	approx	30 %
Co-57	approx	7 %
Co-60	approx	23 %
Sr-89	approx	27 %
Sr-90 / Y-90 (related to Sr-90)	approx	42 %
Tc-99m	approx	3 %
In-111	approx	8 %
I-123	approx	7 %
I-125	approx	12 %
I-131	approx	21 %
Cs-137	approx	35 %
Au-198	approx	23 %
Tl-204	approx	43 %
Am-241 $\alpha$	approx	18 %
Pu-238 $\alpha$	approx	18 %
U-238 $\alpha$	approx	22 %



CoMo with special detector (4 active detector surfaces)  
for contamination check of FE-storage shafts



CoMo in wall station



type tested for use by fire brigades