

**Technical data sheet**

## **SpeedDigester K-439**

The SpeedDigester K-439 combines all advantages of IR and block heating digestion systems and is revolutionizing Kjeldahl digestion. It is the only IR digestion system with an integrated temperature sensor, so that fast IR digestion is achievable at precise temperatures.

## Scope of delivery

The SpeedDigester matches different and changing needs, and is available ready to be used with 100 mL, 300 mL, 500 mL, ground joint or 250 mL 3<sup>rd</sup> party sample tubes.

The delivered rack and suction module type is depending on the sample tube size. For all configurations with 300 mL sample tubes three different suction module variants are available (standard, with condensate trap and for H<sub>2</sub>O<sub>2</sub> addition). The configuration "only digester" does not contain any accessory, and can be used for individual configurations like micro-Kjeldahl, or reflux digestion (e.g. COD or aqua regia).

The scope of delivery is not valid for the configuration "only digester" and depends on the ordered instrument configuration:

| K-439                                       |    |
|---|----|
| Insulation plate                            | 2  |
| Hose set (EPDM)                             | 1  |
| Rack  | 2  |
| Connector to suction module                 | 2  |
| Suction module (incl. FKM seals)            | 2  |
| Sample tubes (300 mL)*                      | 12 |
| Sample tubes (500 mL)*                      | 10 |
| Micro sample tubes (100 mL)*                | 12 |
| Rubber plug for connector to suction module | 1  |
| Weighing Boats                              | 20 |

\* either 100 mL, 300 mL or 500 mL

## Order code

Choose the configuration according to your needs:

1 1 5 4 3 9 2 0 0

SpeedDigester K-439 configuration

- 0 Only digester (without any accessory for individual configuration)
- 1 300 mL sample tubes and standard suction module
- 2 300 mL sample tubes and suction module with condensate trap
- 3 300 mL sample tubes and suction module for H<sub>2</sub>O<sub>2</sub> addition
- 4 Suction module for 250 mL 3<sup>rd</sup> party sample tubes
- 5 500 mL sample tubes and suction module with condensate trap
- 6 100 mL sample tubes (micro-Kjeldahl) and standard suction module

## Sample tube configurations and max. number of samples

| Sample tube configuration                   | Max. number of samples<br>K-439 |
|---|---------------------------------|
| 100 mL tubes (micro-Kjeldahl)               | 12                              |
| 300 mL tubes (standard Kjeldahl)            | 12                              |
| 500 mL tubes (TKN)                          | 10                              |
| Ground joint tubes (NS 29/32; COD / reflux) | 12                              |
| 3rd party tubes                             | 12                              |

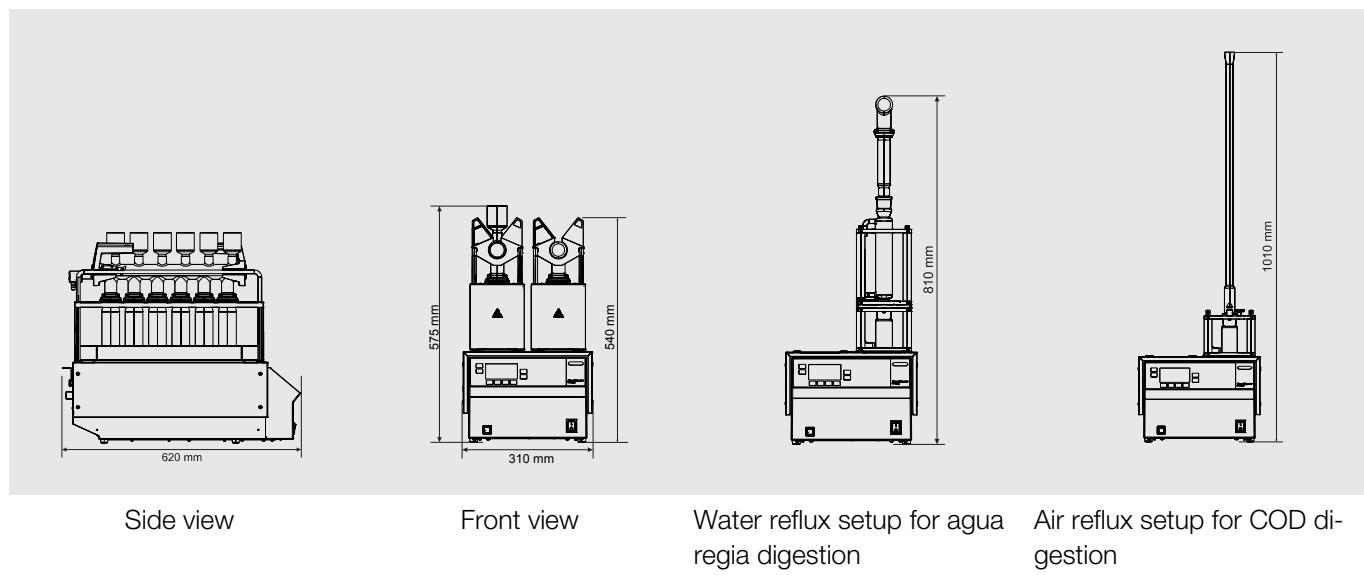
## Technical data

### SpeedDigester

#### K-439

|                        |                                    |
|------------------------|------------------------------------|
| Dimensions (W x D x H) | 310 mm x 620 mm x 540 mm           |
| Weight                 | 15.5 kg                            |
| Operating voltage      | 220–240 V ±10 %                    |
| Frequency              | 50 / 60 Hz                         |
| Power consumption      | 2,200 W                            |
| Temperature range      | 50 - 580 °C                        |
| Temperature error      | ±5 °C at 200 °C / ±10 °C at 550 °C |
| Temperature resolution | 1 °C                               |
| Display                | QVGA 240 x 320 pixels              |
| IP Code                | IP20                               |
| Certificate            | CE / CSA                           |

## Dimensions



## Ambient conditions

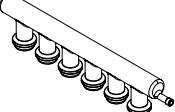
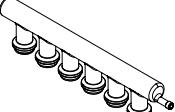
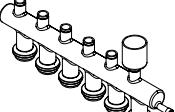
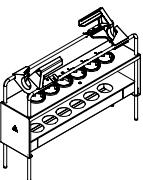
For indoor use only.

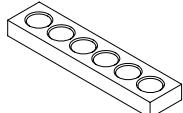
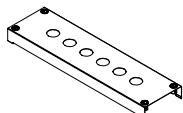
| Specification                   | Value   |
|---------------------------------|---|
| Max. altitude above sea level   | 2,000 m   |
| Ambient and storage temperature | 5–40 °C   |
| Max. relative humidity          | 80% for temperatures up to 31 °C<br>decreasing linearly to 50% relative humidity at 40 °C |

## Spare parts and accessories

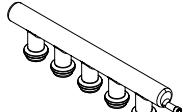
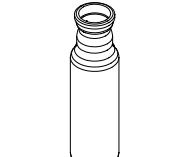
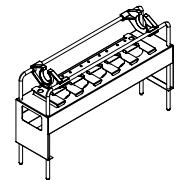
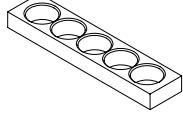
### Accessories

#### For 300 mL tubes

|  | Order no. | Image   |
|--|-----------|---|
| Suction module standard<br>Suitable for most applications  | 11055849  |    |
| Suction module with condensate trap<br>For aqueous samples, prevents backflow of condensate into the sample tube | 11055865  |  |
| Suction module for H2O2 addition   | 11055853  |  |
| Sample tubes 300 mL, 4 pcs.<br>For sample volumes up to 200 mL or 5 g in weight                                  | 037377    |  |
| Sample tubes 300 mL<br>20 pcs.   | 11059690  |  |
| Rack for 300 mL/micro tubes  | 11055248  |  |

|   | Order no. | Image   |
|---|-----------|---|
| Insulation plate for 300 mL tubes   | 11055142  |  |
| Bed-plate to rasing the sample tubes<br>For raising the 300 mL sample tubes in the rack, for easier removal                                 | 11055943  |  |
| Insulation cap for unused positions<br>To cover individual unoccupied positions of the insulation plate, for 300 mL and 500 mL sample tubes | 11056024  |  |

## For 500 mL tubes

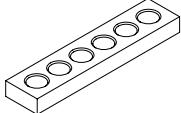
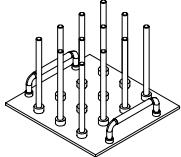
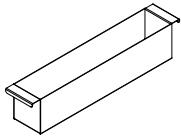
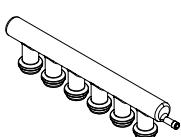
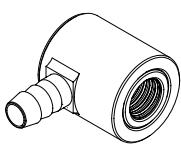
|   | Order no. | Image   |
|---|-----------|---|
| Suction module with condensate trap   | 11055851  |   |
| Sample tubes 500 mL, 4 pcs.<br>For sample volumes up to 400 mL in volume or more than 4 g in weight   | 043982    |  |
| Rack for 500 mL tubes (incl. base and interlock spring)   | 11056966  |  |
| Insulation plate for 500 mL tubes   | 11055143  |  |
| Insulation cap for unused positions<br>To cover individual unoccupied positions of the insulation plate, for 300 mL and 500 mL sample tubes | 11056024  |  |

## For micro-Kjeldahl tubes

|  | Order no. | Image |
|--|-----------|-------|
| Suction module standard<br>Suitable for most applications  | 11055849  |       |
| Sample tubes micro (100 mL), 4 pcs.<br>For sample volumes up to 3 mL in volume or 0.2 g in weight. Reduction of chemicals of approx. 80% compared to the 300 mL tubes. | 11057442  |       |
| Rack for 300 mL/micro tubes  | 11055248  |       |
| Insulation plate for micro tubes   | 11055204  |       |

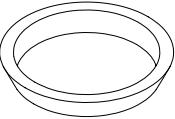
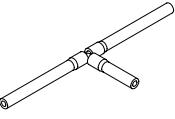
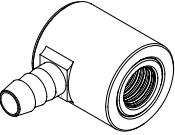
## For reflux and COD digestion

|   | Order no. | Image |
|---|-----------|-------|
| Reflux rack<br>For reflux digestion and COD digestion   | 11058226  |       |
| Air reflux condenser, 6 pcs.<br>For COD digestion, length 700 mm, NS 29/32  | 11058300  |       |
| Water reflux setup<br>For reflux digestion, incl. holder with 6 water condensers, 6 absorption vessels and silicone hoses with quick coupling<br>Add insulation plate for reflux (11055877) and reflux rack and ground joint sample tubes (11058697) for complete set | 11058227  |       |

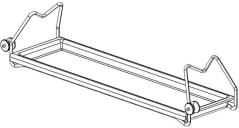
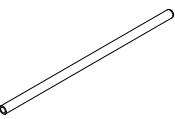
|   | Order no. | Image   |
|---|-----------|---|
| Absorption vessels for water reflux<br>For reflux digestion                           | 11058377  |    |
| Insulation plate (reflux and 3rd party tubes)   | 11055877  |    |
| Sample tubes ground joint (NS 29/32)<br>For reflux digestion and COD digestion        | 11058697  |    |
| Stand for air reflux condensers<br>For COD digestion, stand for 12 condensers         | 11058700  |    |
| Cooling tray<br>For COD digestion, to cool the sample tubes when adding the chemicals | 11058701  |  |
| Suction module standard<br>Suitable for most applications                             | 11055849  |  |
| Connector to suction module (PVDF)  | 11056804  |  |

## High resistance parts

For digestions using nitric acid, hydrochloric acid or aqua regia, special system requirements are necessary.

|                                    | Order no. | Image   |
|------------------------------------|-----------|---|
| Sealing (PTFE)                     | 022442    |  |
| Hose set (FKM)                     | 11056891  |  |
| Connector to suction module (PVDF) | 11056804  |  |

## General accessories

|   | Order no. | Image   |
|---|-----------|---|
| Weighing boats  | 11060522  |   |
| Nitrogen-free weighing paper 58 x 10 x 10 mm, 100 pcs.  |           |   |
| Glass caps, 4 pcs.<br>For occupying empty sample positions, to close the suction circuit  | 040049    |  |
| Stand with drip tray (for suction manifold)   | 11055216  |  |
| Connection cable to digester<br>The Scrubber is controlled by the digester by the cable connection (already incl. at Scrubber ECO models) | 030973    |   |
| Digestion rods<br>To prevent boiling delays, 10 pcs.  | 043087    |  |
| Scrubber K-415<br>For the corresponding order number see Technical Data Sheet K-415   |           |   |

## Spare parts

|   | Order no. | Image |
|---|-----------|-------|
| Set welding spring holder<br>6 pcs.     | 11055984  |       |
| Set welding spring holder<br>4 x 6 pcs. | 11085445  |       |
| Hose coupling                           | 11055367  |       |
| Hose coupling<br>4 pcs.                 | 11085450  |       |
| Set gasket Viton<br>6 pcs.              | 038122    |       |
| Set gasket Viton<br>4 x 6 pcs.          | 11085452  |       |

## Kjeldahl tablets

|   | Order no. |
|---|-----------|
| Kjeldahl Tablets Titanium   | 11072627  |
| For efficient digestions, 1000 tablets (3.5 g K <sub>2</sub> SO <sub>4</sub> / 0.105 g CuSO <sub>4</sub> * 5 H <sub>2</sub> O / 0.105 g TiO <sub>2</sub> )      |           |
| Kjeldahl Tablets Titanium Micro   | 11072628  |
| For small sample sizes, 1000 tablets (1.5 g K <sub>2</sub> SO <sub>4</sub> / 0.045 g CuSO <sub>4</sub> * 5 H <sub>2</sub> O / 0.045 g TiO <sub>2</sub> )        |           |
| Kjeldahl Tablets Missouri   | 11072629  |
| For efficient digestions without Titanium, 1000 tablets (4.98 g K <sub>2</sub> SO <sub>4</sub> / 0.02 g CuSO <sub>4</sub> * 5 H <sub>2</sub> O)                 |           |
| Kjeldahl Tablets ECO  | 11072630  |
| For eco-friendly digestions with minimum amount of copper, 1000 tablets (3.998 g K <sub>2</sub> SO <sub>4</sub> / 0.002 CuSO <sub>4</sub> * 5 H <sub>2</sub> O) |           |

|   | <b>Order no.</b> |
|---|------------------|
| Kjeldahl Tablets Antifoam<br>For foaming samples in digestions to avoid cross contamination due to foaming, 1000 tablets (0.97 g Na <sub>2</sub> SO <sub>4</sub> / 0.03 g Silicone) | 11072631         |
| Kjeldahl Tablets Copper Micro<br>For small sample sizes without Titanium, 1000 tablets (1.5 g K <sub>2</sub> SO <sub>4</sub> / 0.15 g CuSO <sub>4</sub> * 5 H <sub>2</sub> O)       | 11072632         |

## Documentation

|   | <b>Order no.</b> |
|---|------------------|
| Kjeldahl Guide (EN)<br>Comprehensive guide covering all aspects of the theoretical and practical know-how                               | 11055033         |
| Kjeldahl Practice Guide (EN)<br>Provides theoretical background information, useful hints and calculation tables for daily routine work | 11592548         |
| Kjeldahl Practice Guide (DE)  | 11592547         |
| Kjeldahl Practice Guide (CN)  | 11592549         |
| IQ/OQ set for K-439 (EN)  | 11056167         |
| IQ/OQ set for K-439 (DE)  | 11057207         |
| Repeating OQ K-439 (EN)   | 11056253         |
| Repeating OQ K-439 (DE)   | 11057209         |

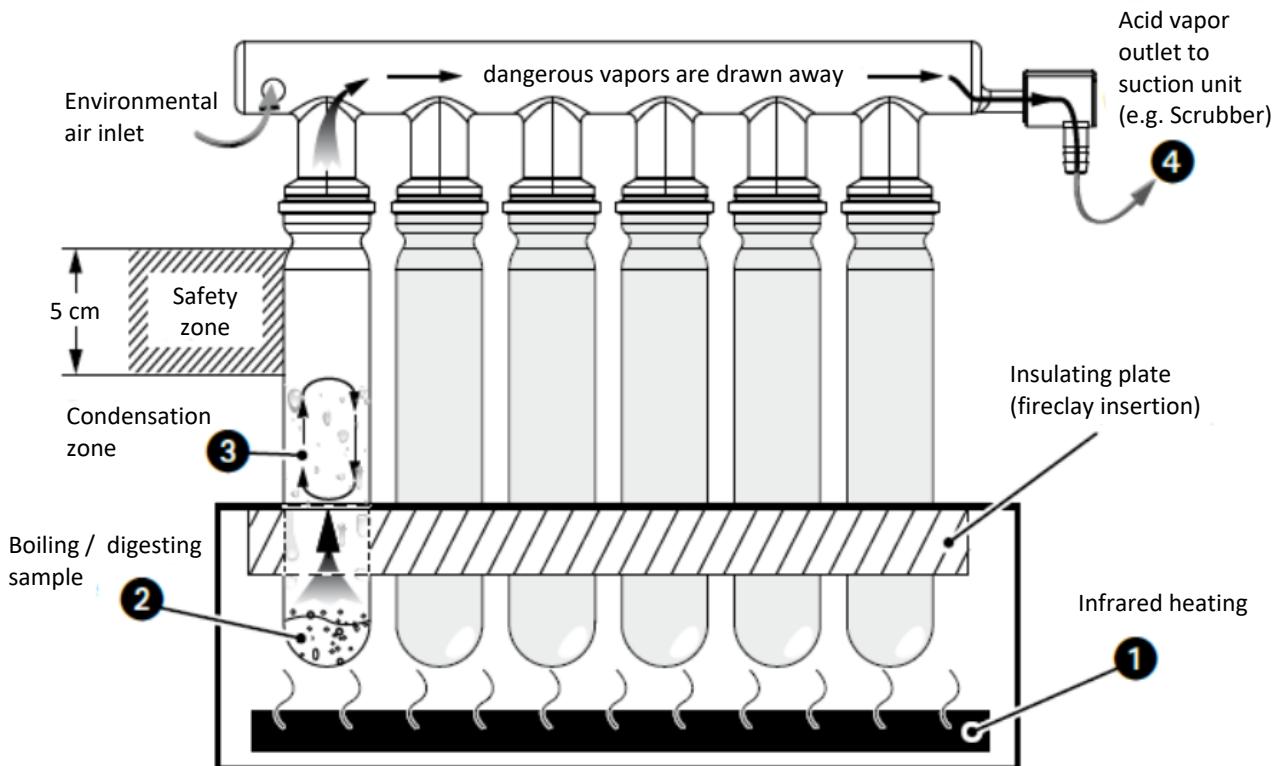
## Functional principle

The infrared heating (1) generates high temperatures in the sample (2).

The sample (2) is digested in the constantly boiling acid.

Hot acid fumes rise into the condensation zone (3), condense and rinse back down to the sample creating a constant reflux.

Residual fumes which escape the condensation zone are highly corrosive and must be withdrawn and efficiently neutralized (i.e. with the Scrubber K-415) (4).





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Technical data are subject to change without notice  
Quality Systems ISO 9001

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