

BÜCHI
S W I T Z E R L A N D

**Innovation and Safety in the
50 Litre-Flask format**

BÜCHI Rotavapor® R-250/250 EX

Packaging - Processing
Bid on Equipment
1-847-854-8577
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Büchi presents two Large Rotary Evaporators in the extra class

As a leading manufacturer of Rotary Evaporators, Büchi is setting new standards in the kilo laboratory and production scale and now presents the 50 litre flask format. The large rotary evaporators R-250 and R-250 EX are designed for a rapid and low temperature distillation. Exact, reproducible operation with a high degree of operating comfort is possible. The "Scale-up" from laboratory to production plant is particularly easy. The modular design allows the devices to be fitted according to individual needs in a flexible manner. Imprecise heating with steam or oil is eliminated. In addition, the new Rotavapor® R-250 EX complies with the strict standards 94/9 (ATEX) of the European Union for ex-safety, which is obligatory since 2003. An important aspect to consider for your future, safe investment decision.



Modular and operator-friendly

The compact design of the Büchi large-scale rotary evaporators combines maximum operator-friendliness with uncompromising security. The parallel glass assemblies are effortlessly assembled and dis-assembled using the EasyClamp connection technique. The innovative Snap Flange Coupling

ensures unbelievably simple and safe attachment and removal of the large-volume flask. The sealing parts, which are compatible with the smaller Rotavapor® R-220, simplify the procurement of spare parts.



Broader temperature range of 20 °C–180 °C (in the Ex-range up to 150 °C)

The electrical heating bath provides an optimal conical shape that enables rapid and energy-saving heating. The bath can be used with oil or water. The integrated bath guarantees with overflow replenishment a constant level. Corrosion is not a factor due to the high-quality stainless steel design and simple cleaning procedure.



Self-explanatory operation

The clear, functional product front makes operation simple and clear. The flask rotation is regulated by a frequency converter between 5 and 100 rpm.



Compact inlet valve

The inlet valve can be opened and closed with one movement of the hand. A metal spring provides for definitive applied force and prevents glass breakage. Fine dosing is provided by means of an adjusting screw.



The evaporating flask is quickly and easily assembled with the innovative snap flange coupling and subsequently fixed securely by a turn wrench.



Flask outlet suction (optional)

The contents of the evaporating flask can be easily sucked out with a PTFE hose. The hose tip is positioned at the deepest point with a magnet. This guarantees complete emptying.

Safety elements at a glance

Adjustable maximum set point temperature.

Double safety by means of a mechanical temperature safety limit switch and an automatic shut-off of the heating bath as soon as the set point is exceeded by 15 °C.

Automatic bath lowering upon power interruption, can be switched off.

The doubly insulated bath protects against touching hot surfaces.

An upward folding splash protection is available as an accessory.

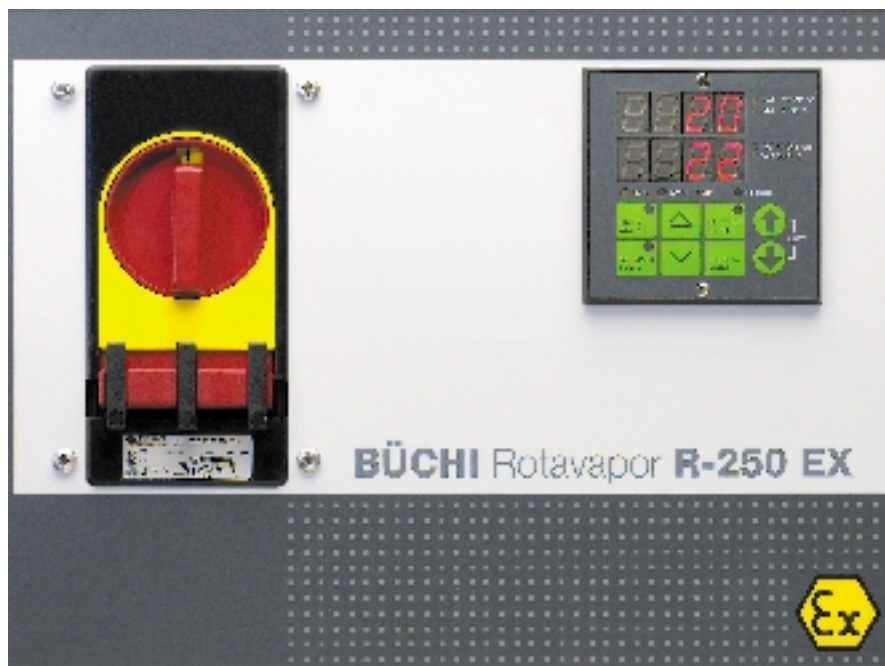
The "PLASTIC+GLAS" coating against glass breakage and splintering is available as a standard for the Rotavapor® R-250 and the R-250 EX as an option.

Other important advantages

- Powder-coated, stainless steel chassis
- Compact, space-saving design
- Abrasion-free PTFE vacuum seal
- Product contact surfaces are either glass or PTFE based
- Sturdy Büchi long-term quality

Rotavapor® R-250 EX – with sophisticated solutions in the Ex-protection area

The Büchi Rotavapor® R-250 EX, with its electrical heating bath and continuous ease of operation, is a truly unique ex-protected rotary evaporator for global applications. The international standards (IEC and CENELEC) and the EC directives 94/9 (ATEX 95) have been consistently included in the product development. The results are sophisticated solutions without compromise for all Ex-relevant components.



All functions can be triggered by means of the intrinsically safe service unit.

Marking:

CE₀₁₀₂  II 2 G EEx de i IIC T3-T4



Simple operation

Operation of the Rotavapor® R-250 EX is as easy as for a non-Ex-proof rotary evaporator. The electrical heating and the precisely controllable rotary motor enables more precise and reproducible running than the steam-heated and hydraulic or pneumatic systems.

Vacuum Controller

The R-250 EX includes an intrinsically safe digital vacuum controller and an encapsulated magnetic valve. Easy setting of vacuum and hysteresis in the range between 10 mbar and atmospheric pressure allows an efficient and safe distillation process.

Zone divisions (Work places according to ATEX 137):

Europe: Zone 1 and 2 (Category 2 G), Gas group IIC, temperature class T3 or T4.

(Corresponding in the USA to: Division 1, Class 1, Group C and D, Temperature class T3/T4)

Types of protection used

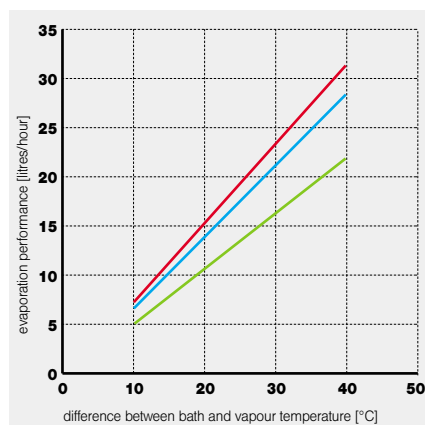
- Flameproof enclosure based on EN 50018 (IEC 60079-1) of control system, heater, bath lift, level sensor and rotary motor
- Connecting boxes in the type of protection for increased safety based on EN 50019 (IEC 60079-7) of heating and rotary motor
- Intrinsically safe control panel based on EN 50020 (IEC 60079-11)

All equipment and protective systems are in compliance with EC directive 94/9 (ATEX 95). Manufacturing is in accordance with the quality assurance module based on this directive.

Optimized distillations

The greatest asset of the 50 litre evaporator is its fast distillation rate. In practise this is strongly influenced by the solvent used and the selected parameters. Continuously feeding and distilling the solvent would make full use of the system's potential.

Impressive evaporator capacity



— Acetone, 50 litre flask, 80 rpm
 — Acetone, 50 litre flask, 30 rpm
 — Acetone, 20 litre flask, 80 rpm

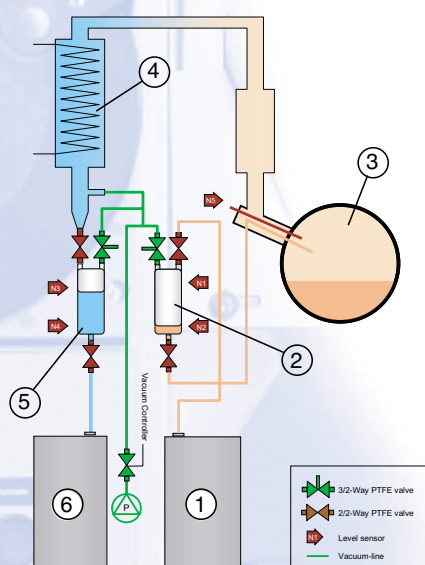
The following maximum standard values are valid for other solvents:
 ($\Delta T = 40^\circ\text{C}$, descending glass assembly)

solvent	distillation rate [litres/hour]
Water	5.8
Methanol	14
Ethanol	19.5
Toluene	36.5
Ethyl acetode	38
Hexane	55
Trichlor ethane	40.5

Continuous distillation

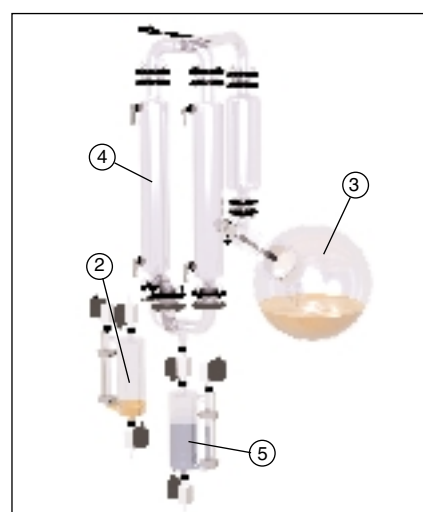
By modifying the glassware and providing automatic operation even greater quantities can be distilled. In this process, continuous supply of the solution to be distilled to the evaporating flask and automatic draining of the distillate from the distillate receiving flasks is controlled by optical sensors which continuously balance the corresponding volumes. The process is particularly suitable for solvent recycling and fortification, e.g. chromatography etc.

All surfaces contacted by the products are produced from inert materials.



Schematic display of continuous distillation

- 1 Supply tank with product to be distilled
- 2 Filling vessel
- 3 Evaporating flask
- 4 Condenser
- 5 Collecting vessel
- 6 Receiving tank with distillate



This continuous distillation control is available for both the R-250 and for the R-250 EX. All components in the EX variation comply with the latest ATEX guidelines.

Price and specifications are available on request.

Accessories for your individual needs

Manual Flask Handler



This coated holder made of stainless steel simplifies the fastening and disassembly of the large-volume flask. A special relief allows for simple emptying.

	Order No.
50 l	41414
20 l	41410

Flask Handler Crane



The glass flasks can be comfortably and safely transported and fastened by means of the foldable crane and the Manual flask handler.

	Order No.
Not Ex-proof	41494
Ex-proof	41493

Splash Protection



Fix installed metallic rear part and easily mountable polycarbonate screen. Protects from splashes and contact with the heating medium.

	Order No.
	41420

Digital Manometer (Ex)



Battery driven digital manometer for precise indication up to $\pm 2\%$. Intrinsically safe construction, can be mounted on housing.

	Order No.
	41425

Vacuum Controller V-800/V-805



Simple or automatic control of the vacuum for efficient and gentle distillation, with integrated timer function. The two designs are laid out on the Rotavapor® R-250 for the non-ex-protected area.

	Order No.
V-800 230 V for R-250	40760
V-800 120 V for R-250	40761
V-805 230 V for R-250	40762
V-805 120 V for R-250	40763

Evaporating Flasks

	Order No.
20 litre	41432
50 litre	41339

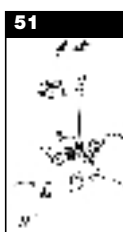
Powder Drying

	Order No.
20 litre	41393
50 litre	41394

Combine components according to your particular needs

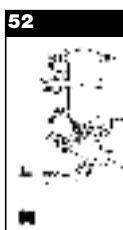
The Rotavapor® R-250 or R-250 EX can be combined in a modular arrangement according to your requirements. Select the glass assemblies and the other components and enter your corresponding data in the green fields. The ordering information for the accessories can be found on the previous page.

These assemblies selected as desired



51 Reflux

The ideal design for reflux reactions and for distillation of solvents with high boiling points such as Toluene or water.



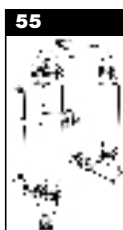
52 Bullfrog reflux

Same functioning as for the standard reflux, but smaller height due to compact construction of the condenser.



54 Descending

The descending glass assembly is especially suitable for distillation of solvents with a low heat of evaporation, for strongly foaming products as well as for solvent reclamation. The large expansion vessel prevents foam or aerosol spray from getting into the condenser.



55 Descending with third condenser

This design is recommended when the best possible condensing and highest degree of recovery rates are required. The additional condenser provides the highest distillation with very volatile solvents or slow-condensing mixtures.

Your order code:

8

Type of device

- 5** R-250 (400–440 V, 50/60 Hz)
- 6** R-250 EX (400–440 V, 50/60 Hz)

Temperature class

- 0** Not ex-protected (for R-250)
- 1** T3, up to 175 °C (for R-250 EX)
- 2** T4, up to 135 °C (for R-250 EX)

Flask Outlet Suction

- 0** Without flask suction
- 1** With flask suction

Evaporating Flask

- C** 20 l Evaporating flask
- D** 50 l Evaporating flask
- F** 20 l Drying flask
- G** 50 l Drying flask

Condensation Unit (Glass assembly)

- 51** R2 Double reflux condenser
- 52** RB2 Double reflux condenser in Bullfrog version
- 54** D2 Double descending condenser
- 55** D3 Double descending condenser with third reflux condenser

Receiving Flask

- 1** 20 Single receiving flask 20 l
- 2** 20W Dual receiving flasks 2 × 20 l





Technical Data	R-250	R-250 EX
Power consumption	7.5 kW	
Electrical requirements	400–440 V (3P + N), 50/60 Hz	
Evaporator capacity	Up to 31 l Acetone/hr, different for other solvents corresponding to the heat of evaporation	
Housing	Stainless steel, powder coated	
Rotation drive	Induction motor, 0.75 kW	Induction motor, 0.75 kW EEx de II C T4
Speed control	Frequency converter, 5–100 rpm	
Ex-protection control	None	Flameproof enclosure, EEx d II C T4
Operation	Control panel	Intrinsically safe, offset operating unit, EEx ia II C T4
Heating capacity	6.6 kW, specific heat transfer < 3 W/cm ²	
Bath dimensions	Diameter 610 mm, depth 320 mm	
Bath heating control	Electronic with PT-1000, precision of control – 2°/+ 0.5 °C	
Bath temperature area	0°–180 °C	0°–150 °C
Bath level monitoring	None	Liquiphant, EEx II C T4
Over temperature protection	Separate monitoring circle, mechanically reset, additional security switch off exceeding the set point by 15 °C	
Bath lift	Protected adjusting drive, IP 65	DC motor 24 V with guide gear, EEx d II C T4
Battery	Accumulator PB 12 V	
Vapour temperature measurement	PT-1000	
Glass assembly	Parallel condensers of 0.6 m ² each, distillate condensers 0.08 m ²	
Display	Vapour temperature, bath temperature, rotation speed	Vapour temperature, bath temperature, rotation speed, vacuum
Ventilation	Integrated valve, push-button operation, aerates in case of power failure, with inert gas connection	Aeration with aeration plug
Vacuum pump	Recommended suction capacity > 5 m ³	
Cooling water usage	200–400 l/h	
Weight	160 kg without glass	250 kg without glass
Dimensions	Length: 145 cm, Width: 85 cm Height: 210–245 cm (corresponding to glass assembly)	

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