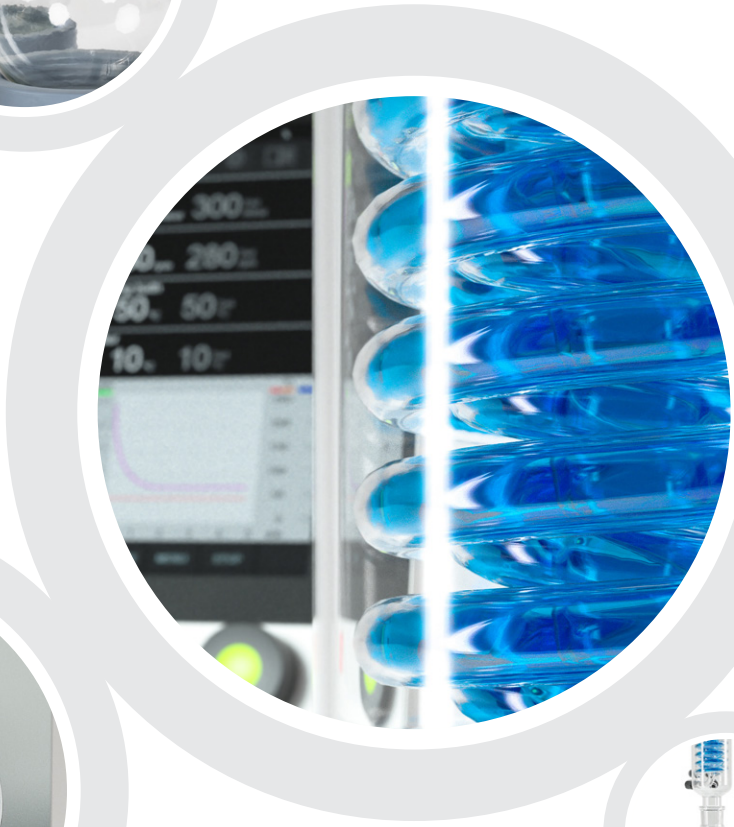


Laboratory Evaporation Glassware
Decades of expertise in glass manufacturing

Original BUCHI glassware guarantees the highest levels of efficiency and safety thanks to outstanding precision in manufacturing. For more than 75 years BUCHI has been manufacturing innovative and durable glass parts to ease daily laboratory work.

Glassware made by BUCHI
Benefit from high quality and precision

The BUCHI experience in glass manufacturing results in glassware of outstanding quality and guarantees highest safety and increased efficiency due to our exacting standards of accuracy.

Benefits of BUCHI glassware

Highest efficiency

- Maximized vacuum stability thanks to very tight joints
- Optimum heat transmission due to optimized wall thickness of evaporating flasks
- High evaporating performance due to pear-shaped evaporating flask
- High throughput due to advanced design of condensers

Maximized safety

- Use of highly resistant glass provides highest levels of safety
- Guaranteed leak-tightness and protection against hazardous fumes thanks to high precision joints
- Maximum stability thanks to sophisticated PLASTIC+GLAS coating

Proven reliability

- More than 75 years of experience in glass manufacturing
- Durable products made with best quality raw materials
- Developed and manufactured by experienced and committed employees

Laboratory evaporation glassware quality facts

High quality materials

· Exclusive use of DURAN® borosilicate glass 3.3

· High chemical resistance against acids, alkalis and organic substances

· Resistant to thermal shocks and high temperatures combined with low thermal expansion

Accuracy

· Constant monitoring of glass wall thickness uniformity

· High degree of attention paid to sphericity of rotating glass parts

· Glass parts are tension-relieved at 560 °C

Expertise

· Unique machines developed in-house to automate repetitive manufacturing processes in order to guarantee a high level of reproducibility

· Many decades of experience guarantee top quality glass parts

“PLASTIC+GLAS” coating

Maximized safety

· Protects users from contact with chemicals in case of glass breakage

· Avoids risk of injuries when touching broken glass

· Prevents glass splitter impacts in case of implosions

Improved sturdiness

· Protects glassware from physical damage

· Is chemical resistant high quality coating

Retention of substances

· Retains valuable substance in case of glass breakage

· Valuable sample or toxic solvent vapors remain within glassware

P+G properties

BUCHI PLASTIC+GLAS

For standard applications. Available for condensers, evaporating and receiving flasks. Operating range: -30 to 60 °C

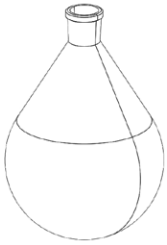
BUCHI PLASTIC+GLAS

Low temperature receiving flasks are used for cold trap and other low temperature applications. Operating range: -70 to 40 °C

Wide range of high quality BUCHI glassware
For any rotary evaporator

Evaporating flasks

High performance pear-shaped flasks for distillation of solvents.



Evaporating flask

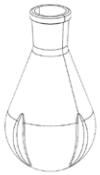
Evaporating flask, 5 L

Flask size	29/32	24/40	24/29	29/42
50 mL	000431	008750	000472	008736
50 mL P+G	033405			
50 mL P+G-LT*	11066585			
100 mL	000432	008751	000473	008737
100 mL P+G	033404			
100 mL P+G-LT*	11066586			
250 mL	000433	008754	008753	008738
250 mL P+G	025520			
250 mL P+G-LT*	11066587			
500 mL	000434	008758		008739
500 mL P+G	025322	025261		
500 mL P+G-LT*	11066588			
1000 mL	000435	000440	008761	008762
1000 mL P+G	020729	020730		025517
1000 mL P+G-LT*	11066589			
2000 mL	000436	008765	008764	008769
2000 mL P+G	025323	025262		
3000 mL	000437	008767		008770
3000 mL P+G	025324	025263		027346
4000 mL	047991	047990		
4000 mL P+G	047993	047992		
5000 mL[1]	046573	046586		
5000 mL P+G[1]	046583	046596		

[1] Spherical
*Evaporating flasks with low temperature P+G-LT coating for freeze drying applications with Dewar container. Operating range from -70°C to 40°C.

Drying flasks

Pear shaped flasks with indents for increased efficiency in powder drying by reducing accumulations on the glass walls.

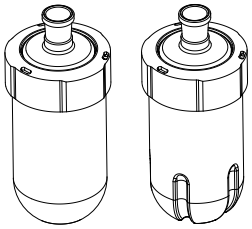


Drying flask

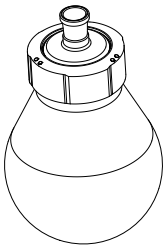
Flask size	29/32	24/40
500 mL	000452	011579
1000 mL	000453	000420
2000 mL	000454	011580

Beaker flasks

Beaker flasks with large screw-cap opening for easy retrieval of substances. Drying beaker flask consists of notches for increased efficiency in powder drying. Both variations can be used in the temperature range from -40 to 100 °C.



Round bottom / Drying



Pear shape

	For evaporation		For drying	
Flask size	29/32	24/40	29/32	24/40
500 mL[1] Convex bottom (Ø=75 mm)	11063154	11063155	11063158	11063159
1500 mL[2] Convex bottom (Ø=110 mm)	11063156	11063157	11063160	11063161
1500 mL[2] Round bottom (Ø=110 mm)	11065718	11065719	–	–
4000 mL Pear shape (Ø=110 mm)	11065690	11065691	–	–

[1]Working volume of 150 mL [2]Working volume of 450 mL Ø=Diameter of the flask opening

Spare beaker flasks	500 mL[1] Convex bottom (Ø=75 mm)	1500 mL[2] Convex bottom (Ø=110 mm)	1500 mL[2] Round bottom (Ø=110 mm)	4000 mL Pear shape (Ø=110 mm)
For evaporation	11059185	11059186	11065716	11065689
For drying	11059268	11059269	–	–

Receiving flasks

Spherical flasks with ball joint (35/20) for collecting the condensed solvents.

Receiving flask

Flask size	Standard	P+G	P+G-LT
50 mL	000421		
100 mL	000422		
250 mL	000423	11060907	11060908
500 mL	000424	025264	040774
1000 mL	000425	020728	040775
2000 mL	000426	025265	040776
3000 mL	000427	025266	040777

Flask holder

Holder for 50 mL to 5000 mL evaporating and receiving flasks.

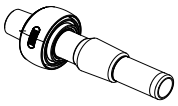
Flask holder

Quantity	
1	048618
5	11059916

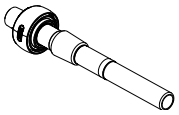
Rotavapor® accessories
Wide range of glassware and accessories

Vapor ducts

Glass parts to connect the evaporating flask to the Rotavapor®. All vapor ducts include the Combi-Clip to fasten the evaporating flask.



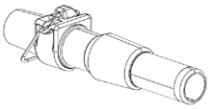
Vapor duct



Vapor duct (analytical)

R-300, R-215, R-210, R II (with Combi-Clip*) Compatible with glass assembly	29/32	24/40	29/42	24/29
A	11062267	11062268	11062269	
V, HP, C, S, E, CR, BY	11062186	11062187	11062464	11062909
V, HP, C, S, E, CR, BY (analytical)	11062465	11062466	11062467	
For high temperatures, short Combi clip, vapor duct HT, ring NS 34/32 on 30/32	1061837			
Vapor duct with frit SJ29/32, incl. Combi-Clip For powder drying. To prevent powder from getting into the condenser. For glass assembly V, HP, C, S, E, BY and CR.	11057297			

*Single Combi-Clip: 11059770

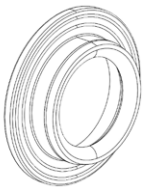


Vapor ducts

R-100, R-3, R-3000, R-144, R-134, R-124, R-114 Compatible with glass assembly	29/32	24/40
V and C	032339	032341

Vacuum seals

Air-tight lip seals between the rotating vapor duct and the condenser.



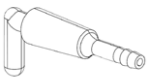
Vacuum seal

Compatibility	Vacuum seal	
R-300, R-215, R-210, R II	WD26, seal PTFE[1]	048021
R-100, R-3	KD22, seal PTFE	000636
R-100, R-3	KD22, seal PTFE[1]	11056622

[1]FDA-compliant sealing material

Stopcocks

Glass parts for aerating the Rotavapor® system.



Standard stopcock

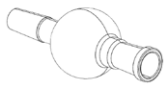
Stopcock 3-way valve

Stopcock	18.8/38
Standard stopcock	040627
Professional stopcock (less contamination)	000637
Stopcock PTFE 3-way valve (no grease needed)	11058814

Bump trap adapters

Glass adapters for excessively-foaming samples. Prevents foam from entering the vapor duct and condenser.

Reitmeyer

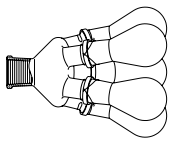


Bump trap

Type	29/32	24/40	Length
Reitmeyer	036576		135 mm
Reitmeyer		036577	150 mm
Bump trap	11056920		160 mm
Bump trap		11056919	175 mm

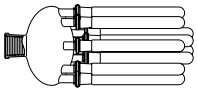
Distillation spiders

Glass parts for simultaneous distillation in 5, 6, 12 or 20 distilling flasks (cross contamination possible). Please refer to the BUCHI "Parallel Evaporation Solutions" brochure for highly efficient parallel evaporation without cross contamination.



Spider with evaporating flasks

Spider with evaporating flasks	29/32[1]	24/40[1]	24/29[2]
Spider with 5 x 50 mL flasks (24/29)	001332	011574	
Spider with 5 x 100 mL flasks (24/29)	001333	011575	
1 x 50 mL evaporating flask (without spider)			000472
1 x 100 mL evaporating flask (without spider)			000473



Spider with cylindric flasks

Spider with cylindric flasks	29/32[1]	14/23[2]
Spider with 6 x 20 mL cylindric flasks (14/23)	001334	
Spider with 12 x 20 mL cylindric flasks (14/23)	001335	
Spider with 20 x 20 mL cylindric flasks (14/23)	001336	
1 x 20 mL cylindric flask (without spider)		000477

[1]Joint of the spider to vapor duct [2]Joint of the flask to spider

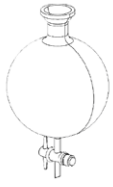
Intermediate piece

Intermediate piece with valve

Set Rotavapor connection

Connection piece with 3-way valve, placed between the condenser and the receiving flask. Allows to remove and empty the receiving flask during evaporating process.	11063430
Combining the Multivapor with the Rotavapor requires a T-shaped glass connector for the condenser of the rotary evaporator. The T-piece consist of two spherical joints for the condenser assembly and a SVL 22 joint for the vacuum tube. The length of the tube is 400 mm.	048740

Spherical flask with ball joint (35/20) and with manual drain valve for draining after aeration without removal of receiving flask.



Receiving flask with drain valve

Flask size	P+G
1000 mL	036919

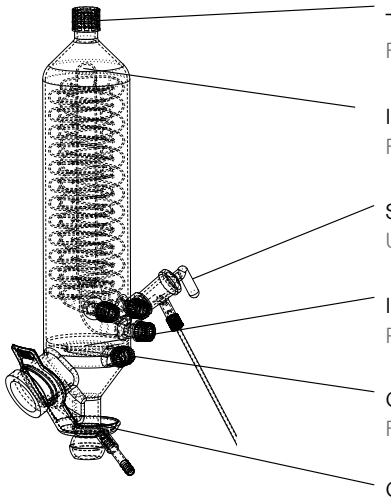
Rotavapor® glass assemblies
Widest range of highly efficient condensers

Applications	A Diagonal	C Cold trap	V Vertical	S Reflux	CR Cold trap reflux	E Expansion	BY Double jacket	HP High performance
Distillation	●	●	●	●	●	●	●	●
Drying	●	●	●	●	●	●	●	●
Concentration	●	●	●	●	●	●	●	●
Reflux reaction				●	●		●	
Soxhlet extraction				●			●	
Re-crystallization	●	●	●	●	●	●	●	●
Solvent/Sample properties								
Boiling point range	M – H	L – M	M – H	M – H	L – M	M – H	M – H	L – H
Bumping or foaming	●[1]	●[1]	●[1]	●[1]	●[1]	●	●[1]	●[1]
Characteristics								
Cooling	CL	CM	CL	CL	CM	CL	CL	CL
Cooling temperature range	H	M	H	H	M	H	H	H
Suitable for high throughput	●		●	●		●	●	●
Vapor temperature sensor			Available	Available		Available	Available	Available
Foam sensor		●	●	●	●		●	●
Automatic distillation			●[2]	●[2]				●[2]
Suitable for limited space	VS	HS	HS	HS	HS	HS	HS	HS
Condenser surface max. [cm²]	1500	500	1500	1500	1500	500	1300	3000
Available for R-300	●	●	●	●	●	●	●	●
Available for R-100		●	●[3]					

H = High M = Medium L = Low VS = Limited vertical space HS = Limited horizontal space
CL = Cooling liquid CM = Coolant mixtures (e.g. dry-ice/acetone)
[1] With Reitmeyer adapter [2] Possible with AutoDest sensor only [3] Limited features

Vertical (V) condenser

The following features displayed are only applicable to the condenser compatible to the Rotavapor® R-300.



Top inlet
For easy cleaning of the condenser

Inner glass tube
For reduced chimney effect upon vacuum applications

Stopcock (available for R-300, R-215, R-210, R-100, R-3; see FAQ)
Used for aeration and feeding (by using the feeding hose)

Inner glass plate
Prevention of solvent back flow

Connector for sensor
For measurement of vapor temperature during distillation

Condensate trap

Glass assemblies

All glass assemblies include a 1 liter receiving flask, the required tubings and a ball joint clamp. Evaporating flask, vacuum seal, vapor duct and condenser holder are not included.

	R-100		R-300							
Characteristics	V	C	A	V	C	CR	S	E	BY	HP
Top inlet			●	●			●	●	●	●
Inner glass tube				●			●			●
Stopcock (feeding possible)	●	●	●	●	●	●	●	●	●	●
Inner glass plate				●						●
Connector for vapor temperature sensor				●			●	●	●	●
Condenser holder*	052893	052893		048180	048180	048180	048180	included	048180	included (048180)
Condensate trap				●						●

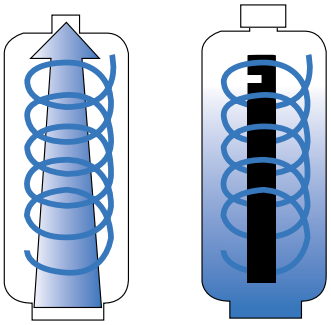
*Optionally available

Part no. of glass assemblies

	V	C	A	CR*	S*	E*	BY*	HP*
R-300, R-2xx, R-1xx	11062432	040640	048168	048292	048290	11061112	048176	11066561
P+G: R-300, R-2xx, R-1xx	11062433	040642	048169	048293	048291	11061113	048297	11066562
R II	048172	040640	048170					
P+G: R II	048173	040642	048171					
R-100, R-3	11057056	040640						
P+G: R-100, R-3	11057057	040642						

*Not compatible with R-100

What is the chimney effect and how does it affect distillation efficiency?



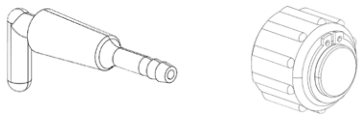
Chimney effect | Turblence, forced condensation

By evaporation - changing of state from liquid to gas - the volume of the sample increases by a factor up to 20,000. In the condenser the gas is re-condensed to a liquid and the volume shrinks immediately. During this evaporation-condensation process, vapor velocity at narrow points of the glass apparatus can be up to 150 km/h.

Distillation efficiency can be significantly increased by reducing the so-called chimney effect.

In order to maximize turbulence inside the condenser, the vacuum is applied at the top middle, however, the vacuum connectors are below. This optimal construction maximizes the movement of vapor inside the condenser, thus preventing fumes escaping to the vacuum source.

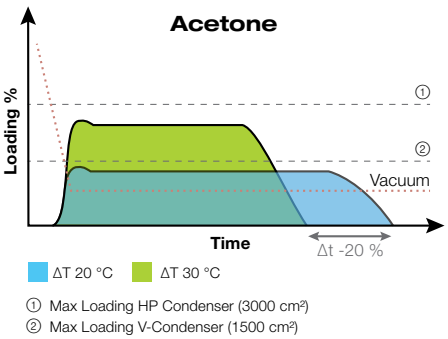
Can the evaporation flask be fed via the condenser stopcock?



Standard stopcock | Screw cap

Yes, all condensers used for R-300, R-100, R-210, R-215 and R-3 allow feeding of the evaporation flask through the standard stopcock. The C- and A-condenser for R II consist of a screw-cap instead of a stopcock and therefore does not allow feeding; a stopcock for feeding is optionally available.

When is a 3000 cm² high performance condenser recommended?



High performance condenser is recommended in the following cases:

- For reduction of solvent emissions
- For operating at higher temperature difference (ΔT>20°C) and lower pressure values
- For distilling low boiling solvents
- If faster process and greater distillation rate are required

Are the condensers shown on the previous page compatible with the older generation of BUCHI Rotavapor® product lines (R-215, R-210, R II, R-3)?

Yes, the glass assemblies V, C and A are compatible with the current generation BUCHI Rotavapor®. Glass assemblies CR, S, E and BY are compatible with the product lines R-300, R-210 / R-215 and R II only. It is recommended to also obtain a support rod (condenser holder) for glass assemblies V, C, CR, S and BY.

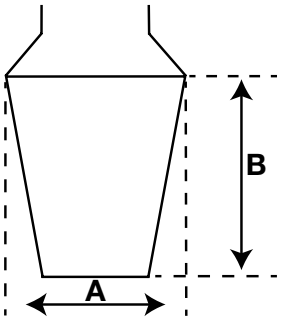
What factors influence glass shock temperature?

DURAN® borosilicate glass 3.3 is notable for its excellent temperature stability. The shock temperature is influenced by many stress factors which act cumulatively. Typical factors are tensions, vacuum, mechanical damage and shape as well as thickness of the respective glass part. Glass should be inspected visually prior to any use, especially when applying vacuums.

Are there differences between BUCHI and 3rd party evaporating flasks?

Yes, there may be several properties which set high quality BUCHI flasks apart: Optimized/uniform flask thickness, quality of joints and sphericity of the flask. All of these properties have an important impact on distillation efficiency.

What do the numbers “29/32” shown on previous pages mean?



The number-pair (e.g. 29/32) describes a joint size. The first number refers to the width of the joint (A). The second number (after the slash) refers to the length of the joint (B). 29/32 therefore means that the width of the joint is 29 mm and the length of the joint is 32 mm.

Can BUCHI provide customized glassware which is not listed in this document?

Yes, there is an additional extensive range of glassware available. BUCHI also offers customized glass according to your needs, for example amber glass for light-sensitive samples. For further information about our glassware range please contact your local BUCHI representative.

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