

Sample extraction for FRIDURIT C54 and C90 Fume Scrubbers

Instruction Manual | As of April 2018

Company Information

Publisher

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Subject to technical changes

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Introduction

The Ordinance on Evaporative Cooling Systems, Cooling Towers and Wet Separators (42nd German Emissions Protection Ordinance BImSchV)) entered into force on 20 August 2017. For the first time, requirements for the construction, operation and monitoring of wet separators were comprehensively legally regulated. These wet separators also include the FRIDURIT Fume Scrubber.

This instruction manual describes the installation of the sample extraction, gives instructions for operation and serves as a form completion aid for the plant registry according to VDI 3679 sheets 1 to 4. It does not replace the required risk assessment of plants that the laboratory operator must prepare for his work area.

Exceptions

Exempted are wet separators in which the process water permanently has a pH of 4 or less, or 10 or more.

It is the responsibility of the operator of the fume scrubber to determine and demonstrate compliance with the pH requirement.



Note:

The obligation to notify the authority about the equipment remains valid even with permanent use as described above.

Recommended procedure

If the above-mentioned use cannot be ensured by the operator, regular checks of the scrubbing liquid must be carried out. The FRIDURIT Fume Scrubber C54 and C90 built-in units have had a thread on the drain connection since 2001. This can be used to connect a sampling device (see Assembly paragraph).

For older (before 2001) type C54 and C90 built-in units, the sampling device must be positioned individually. Please contact the technical department in Mannheim directly.

Upon request, the sampling parts can also be installed by our service partners. Please contact the technical department in Mannheim or contact our service partners directly. The contact details can be found on the Internet at www.friatec.de/content/friatec/en/Ceramics/FRIDURIT-Laboratory-Technology/Fume-scrubbers/index.html

Intended use

The FRIDURIT sampling device is designed exclusively for the removal of scrubbing liquid from the liquid supply of FRIDURIT Fume Scrubbers. It allows simple and convenient sampling of the scrubbing liquid for further analysis, e.g. according to the 42nd German Emissions Protection Ordinance (BImSchV). The components used correspond in their chemical resistance to the construction materials used in the media-contacting components in the fume scrubber and are thus equivalent. The permissible temperature ranges result from the technical data listed below. The material resistance must be checked before the use of chemicals for disinfection. This is the responsibility of the operator or the specialist company that was commissioned to sample.

Safety instructions

We recommend installation is always carried out by a specialist company. Upon request, we will contact the service company responsible for your area, who will be pleased to prepare an offer for the installation of the sample extraction.

Symbols and their meaning:

Symbol	Signal word	Meaning
	Warning!	Indicates a potentially dangerous situation caused by aggressive chemicals. Failure to heed the warning may result in significant harm to health and/or property damage.
	Caution!	Indicates a potentially dangerous situation. If not avoided, minor injuries and property damage can result.
	Attention!	Indicates a potentially harmful situation. If it is not avoided, the device or things in the surrounding area may be damaged.

General warnings:

	Warning!	<p>Risk of chemical burns due to accidents involving chemicals!</p> <p>When working (including cleaning) on the FRIDURIT Fume Scrubber always wear safety goggles, gloves and protective clothing! Observe the local safety guidelines! Avoid skin contact with the scrubbing liquid!</p> 
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	Warning!	<p>Risk of burns and material damage due to leakage of scrubbing liquid!</p> <p>Be careful when making connections!</p>
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	Caution!	<p>Danger of contamination and material damage due to leakage of scrubbing liquid!</p> <p>Carefully close the ball valve after sampling. If necessary, secure against unintentional opening!</p>
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Assembly procedure

Preparing to sample:

<p>Hose connection:</p> <ul style="list-style-type: none"> Cut the hose at right angles. Slide the union nut over the hose end. Slide the cutting ring over the hose end. Slide the hose over the support sleeve. Slide the union nut with cutting ring to the screw connection and hand-tighten with thread. 	
<p>External thread:</p> <ul style="list-style-type: none"> Wrap thread with PTFE sealing tape (approx. 5 to 6 layers). Carefully screw thread into counter thread. Do not loosen the thread again. 	
<p>The fume scrubber is completely emptied. Depending on the version, the operating mode selector switch is in the control system or in the fume cupboard. For devices with a digital display and keyboard, this function can be called up in the maintenance menu.</p> <p>When it has been completely emptied, a vessel with a volume > 500 ml is positioned underneath the drain connection and the threaded plug below the drain connection is carefully unscrewed (Caution: residue!).</p>	
<p>The hose connection with suitable thread is carefully screwed in after sealing with thread sealing tape (5-6 layers).</p>	
<p>Provide the ball valve with a hose fitting on both sides. To do this, seal the appropriate adapter joints with thread sealing tape (5-6 layers) and screw into the threaded connections. Fit hose using the hose screw connection.</p>	

Examples:

Horizontally installed ball valve	
Vertically installed ball valve	

More information:

The connection is then made to the manual ball valve. The ball valve for sampling should be easily accessible. Mount the remaining hose connectors in a way that they can be removed and are easy to clean.



Note:

The obligation to notify the authority about the equipment remains valid even with permanent use as described above.

Parts list

Quantity	Designation	<u>Connection A</u>	<u>Connection B</u>
1 piece	Ball valve DN6 made of polypropylene, with double-sided threaded connection	Inner thread G1/4"	Inner thread G1/4"
1 piece	Straight screwed connection with hose connection and thread	Hose DN6/8	External thread G3/8"
2 pieces	Straight screwed connection with hose connection and thread	Hose DN6/8	External thread G1/4"
1 piece	Elbow fitting with hose connection and thread	Hose DN6/8	External thread G1/4"
1 piece	Elbow fitting with hose connection on both ends	Hose DN6/8	Hose DN6/8
1.5m	Polyethylene hose DN6/8		

Sampling procedure

Please note that the fume scrubber should be switched on during sampling so that a homogeneous mixing of the scrubbing liquid is guaranteed.

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Sampling takes place in the following order:

1. Position the vessel at the sampling outlet, open the manual ball valve and drain at least 500 ml of scrubbing liquid (triple dead space volume).
2. Disconnect at the sampling outlet, open the manual ball valve and drain at least 500 ml of scrubbing liquid (triple dead space volume).
3. Reconnect the hose connection, position the sample cup and release the desired sample quantity using the manual ball valve.
4. Intermediate rinsing of the sampling is possible at any time by draining the desired amount of liquid. The scrubbing liquid is automatically replenished by the device during operation.
5. After completion of sampling, check that the manual ball valve is completely closed.

Documentation

An operating logbook must document all important information about the system, the results of in-house and laboratory tests and any measures taken (investigation, disinfection and repair). Annex 4 of the Regulation lists the contents to be documented.

Technical specifications

Screw fittings:

Permissible temperature range (medium):	20°C to 40°C
Permissible temperature range (surroundings):	20°C to 40°C
Maximum permissible temperature for disinfection:	100°C
Permissible pressure at 20°C:	10 bar
Permissible pressure at 40°C:	7 bar
Permissible pressure at 100°C:	2 bar

Hose:

Permissible temperature range (medium):	20°C to 40°C
Permissible temperature range (surroundings):	20°C to 40°C
Maximum permissible temperature for disinfection:	70°C
Permissible pressure at 20°C:	8 bar
Minimum bending radius:	40 mm

Valve:

Dead space volume approx.: (depending on the installation situation)	150 ml – 180 ml
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Form completion assistance

Relevant points in the 42nd German Emissions Protection Ordinance (BImSchV)	
§ 1 Scope (1)	FRIDURIT Fume Scrubber as a wet separator
§ 1 Scope (2) 5.	The Regulation does not apply to wet separators in which the water supply has a permanent ph of 4 or less, or a ph of 10 or more.
§ 3 General requirements (2) 1.	The materials used are suitable.

§ 3 General requirements (2) 2.	Dead zones are minimized by design.
§ 3 General requirements (2) 3.	The Regulation does not apply to wet separators in which the water supply has a permanent ph of 4 or less, or a ph of 10 or more.
§ 3 General requirements (2) 4.	Water-bearing components can be completely emptied.
§ 3 General requirements (2) 5.	With an optional dosing connection, biocides can be added to the raw water.
§ 3 General requirements (2) 6. / 7.	The scrubbing liquid can be checked regularly with an optional sampling device.
§ 3 General requirements (2) 8.	Regular maintenance is made possible by design.
§ 3 General requirements (3)	The materials used are suitable.
§ 3 General requirements (6 - 9)	These points concern the operator obligation.
§ 4 - § 6, § 9 ff.	These points specify the requirements for operation. These are to be organized by the operator.
§ 7 - § 8	Not relevant

Form completion assistance for plant registry according to VDI 3679 sheets 1-4

Name of the unit	FRIDURIT Fume Scrubber C54 or FRIDURIT Fume Scrubber C90 (See type plate on the front of the unit).
Separator functional principle	Spray washer
Scrubbing liquid	Mixture of water and acid with max. 0.5% concentration.
Year of construction / Capacity	The year of manufacture can be seen on the type plate on the front of the unit. The capacity depends on the air flow rate of the fume cupboard, the circulated volume of the scrubbing liquid is about 2000 litres per hour.
The wet separator releases its exhaust air to the outside world (environment).	Yes

Contact details for the Technical department environmental equipment

For further questions please contact:

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