



Gas purification systems – for the highest level of purity

High purity gases are used in many areas of industry and laboratories, for example, for analytical purposes. In some cases however, certain impurities such as oxygen, moisture, hydrocarbons or sulfur compounds can still interfere with the sensitive measurements. Messer has developed a range of gas purification systems for these tasks, which specifically remove impurities from the gas flow even below the detection limits in the lowest ppb ranges.

The standardized modules of the gas purification system can be used universally, quickly and safely in laboratories as well as industrial applications, and are designed to be particularly user-friendly. The different cartridge sizes allow small gas quantities in the milliliter range as well as several hundred cubic meters per hour to be purified without difficulty. The processes are based on chemisorption or physisorption.

The size of a gas purification system depends on the requirements. The following combinations are possible, depending on the specific task:

- large R20 or R200 cylinders in a central gas purification system
- large R20/R200 cylinders or large aluminum cartridges in process lines
- large aluminum cartridges or small aluminum or glass cartridges at "point of use".

	Impurity	Final purity	Material
OXISORB®	O ₂	< 5 ppb	Silica gel, chromium salts
HYDROSORB®	H ₂ O	< 20 ppb	5A molecular sieve
ACCOSORB®	HC	< 10 ppb	Treated activated carbon
SULFOSORB®	H ₂ S	< 1 ppm	Metal-impregnated activated carbon

Point-of-use purification at a glance

Oxisorb®

Description	Small cartridge	Small cartridge - glass	Larger cartridge
Suitable for	Noble gases, N ₂ , H ₂ , CO, CO ₂ , saturated HC Not suitable for O ₂ , compressed air and unsaturated HC		
Impurities to be removed	Oxygen, moisture		
Process	O ₂ : chemisorption, H ₂ O: physisorption		
Final purity	O ₂ < 5 ppb, H ₂ O < 30 ppb		
Absorption capacity	O ₂ : 0,1 l, H ₂ O: 0,5 l		O ₂ : 9 l H ₂ O: 45 l
Optical load indication	None	Color change from blue to brown	None
Max. flow-rate	1 m ³ /h		10 m ³ / h
Max. operating pressure	10 bar (high-pressure mounting: 200 bar)		10 bar
Length	125 mm		1170 mm
Diameter	29 mm		71 mm

Material	Aluminium	Glass (splinter protection required)	Aluminium
Form of delivery	Double pack		Single
Part no.	792 40225	792 52099	792 30893

Hydrosorb®

Description	Small cartridge	Large cartridge
Suitable for	Noble gases, N ₂ , H ₂ , CO, CO ₂ , saturated HC, halogenated HC, nitrous oxide, compressed air, O ₂	
Impurities to be removed	moisture	
Process	Physisorption	
Final purity	H ₂ O < 20 ppb	
Absorption capacity	H ₂ O: 1 l	H ₂ O: 100 l
Optical load indication	None	
Max. flow-rate	1 m ³ / h	10 m ³ / h
Max. operation pressure	10 bar (200 bar)	10 bar
Length	125 mm	1170 mm
Diameter	29 mm	71 mm
Material	Aluminium	
Form of delivery	Double pack	Single
Part no.	792 40226	792 54831

Point-of-use purification at a glance

Accosorb®

Description	Small cartridge	Large Cartridge
Suitable for	Noble gases, N ₂ , H ₂ , CO, CO ₂ , methane, compressed air, Not suitable for O ₂	
Impurities to be removed	HC, oil vapor	
Process	Physisorption	
Final purity	HC < 10 ppb	
Absorption capacity	C ₂ H ₆ : 1 mg higher HC: 180 mg oil vapor: 8.000 mg	C ₂ H ₆ : 55 mg higher HC: 9.000 mg oil vapor: 450.000 mg
Optical load indication	None	
Max. flow-rate	1 m ³ / h	10 m ³ / h
Max. operation pressure	10 bar (200 bar)	10 bar
Length	125 mm	1170 mm
Diameter	29 mm	71 mm
Material	Aluminium	
Form of delivery	Double pack	Single
Part no.	792 40228	792 54832

Sulfosorb®

Description	Small cartridge	Large cartridge
Suitable for	Noble gases, N ₂ , H ₂ , CO, CO ₂ , saturated HC, compressed air, Not suitable for O ₂	
Impurities to be removed	Mercaptanes, COS, CS ₂ , H ₂ S, SO ₂ , NO	
Process	Physisorption	
Final purity	Sulfur as H ₂ S < 1 ppm	
Absorption capacity	SO ₂ : 500 mg H ₂ S: 500 mg NO: 50 mg	SO ₂ : 28.000 mg H ₂ S: 28.000 mg NO: 2.800 mg
Optical load indication	None	
Max. flow-rate	1 m ³ / h	10 m ³ / h
Max. operation pressure	10 bar (200 bar)	10 bar
Length	125 mm	1170 mm
Diameter	29 mm	71mm
Material	Aluminium	
Form of delivery	Double pack	Single
Part no.	792 40229	792 54834

Mounting systems for small cartridges

Name	Description	Part nos.
LP bench/wall mounting	<p>Upper part, base and union nut made of black plastic (Hostaform®). Screws and screw anchors for wall mounting are included.</p> <p>Connection fittings: ES 3 mm ES 6 mm ES 8 mm ES 1/4" ES 1/8" ES quick release couplings</p>	<p>794 24364</p> <p>0291 281 0291 280 0049 033 770 31374 795 10829 796 07937</p>
LP combination system	<p>Vertical Variosorb® LP combination</p> <p>Connection adapter and union nut made of black plastic (Hostaform®). With this combination in connection with the bench/wall mounting two or more absorber cartridges can be switched one above the other, in order to remove different impurities from the gas flow at the same time.</p> <p>Horizontal Variosorb® LP combination</p> <p>Quick release coupling, coil and 3 mm stainless steel compression fitting. With this combination in connection with the bench/wall mounting two or more adsorber cartridges can be switched one behind the other, in order to remove different impurities from the gas flow at the same time.</p> <p>Splinter protection</p> <p>For safety reasons, this is absolutely essential when using glass cartridges.</p>	<p>794 24363</p> <p>770 33042</p> <p>792 52101</p>
HP housing PN 200	<p>Stainless steel housing for installation in high-pressure pipes with a system pressure of > 10 bar (max. 200 bar). An angle bracket is included for wall mounting.</p> <p>Connection fittings: ES 3 mm ES 6 mm ES 8 mm ES 1/4" ES 1/8" ES VCR fittings</p>	<p>792 43386</p> <p>0291 2810 291 280 0049 033 770 31374 795 10829 on request</p>



Mounting systems for large aluminium cartridges

Name	Description	Part nos.
Single mounting	<p>Two wall-mounting brackets, incl. screws and screw anchors.</p> <p>The inlet and outlet valves on the large cartridges have an NPT 1/4" internal thread for connecting with pipe fittings that have a 1/4" external thread.</p> <p>Connection fittings: ES 3 mm ES 6 mm ES 8 mm ES 1/4" ES 1/8" ES VCR fittings</p>	<p>796 04537</p> <p>0291 281 0291 280 0049 033 770 31374 795 10829 on request</p>
Wall mounting with purging device	<p>Wall mounting with device for purging the connecting pipes after cartridge replacement, incl. purge, shut-off and safety valves.</p> <p>The fittings are pre-assembled on the panel for wall mounting.</p> <p>Materials: stainless steel, chrome-plated brass. Inlet and outlet: NPT 1/4" internal thread.</p> <p>Connection fittings: ES 3 mm ES 6 mm ES 8 mm ES 1/4" ES 1/8" ES VCR fittings</p>	<p>796 04822</p> <p>0291 281 0291 280 0049 033 770 31374 795 10829 on request</p>
Double mounting with purging device	<p>Double mounting for uninterrupted purification of the gas flow with device for purging the connecting pipes after cartridge replacement, incl. purge, shut-off and safety valves.</p> <p>The double mounting can be fitted with an optical load indication for the removal of oxygen from the gas flow. This includes a LP mounting for Oxisorb small cartridges and splinter protection.</p> <p>The fittings are pre-assembled on a panel for wall mounting.</p> <p>Materials: stainless steel, chrome-plated brass. Inlet and outlet: NPT 1/4" internal thread.</p> <p>Connection fittings: ES 3 mm ES 6 mm ES 8 mm ES 1/4" ES 1/8" ES VCR fittings</p>	<p>796 04822</p> <p>0291 281 0291 280 0049 033 770 31374 795 10829 on request</p>



R20 or R200 gas purification cylinders – the solution for industrial applications

In central gas supply systems or in production, gas quantities of up to several hundred cubic meters per hour are often required. The large R20 (operating pressure < 25 bar) or R200 (operating pressure < 230 bar) cylinders can be

used for this. These gas purification cylinders have the advantage that they can be economically regenerated unlike the gas purification cartridges for laboratories.

Description	Oxisorb®		Hydrosorb®		Accosorb®	
	R20	R200	R20	R200	R20	R200
Suitable for	Noble gases, N ₂ , H ₂ , CO, CO ₂ , saturated HC Not suitable for O ₂ , compressed air and unsaturated HC		Noble gases, N ₂ , H ₂ , CO, CO ₂ , saturated HC, halogenated HC, nitrous oxide compressed air, O ₂		Noble gases, N ₂ , H ₂ , CO, CO ₂ , methane, compressed air, Not suitable for O ₂ ,	
Impurities to be removed	Oxygen		moisture		HC, oil vapor	
Process	Chemisorption		Physisorption		Physisorption	
Final purity	O ₂ < 5 ppb		H ₂ O < 20 ppb		KW < 10 ppb	
Absorption capacity	O ₂ : 65 l	O ₂ : 41 l	H ₂ O: 430 l	H ₂ O: 270 l	C ₂ H ₆ : 0,14 g higher HC: 25 g oil vapor: 1.000 g	C ₂ H ₆ : 0,12 g higher HC: 20 g oil vapor: 900 g
Max. flow-rate	100 m ³ /h		100 m ³ /h		100 m ³ /h	
Max. operating pressure	25 bar	230 bar	25 bar	230 bar	25 bar	230 bar
Length	1590 mm	1400 mm	1590 mm	1400 mm	1590 mm	1400 mm
Diameter	160 mm	160 mm	160 mm	160 mm	160 mm	160 mm
Weight	approx. 40 kg	approx. 95 kg	approx. 40 kg	approx. 95 kg	approx. 40 kg	approx. 95 kg
Material	Stainless steel		Stainless steel		Stainless steel	
Part no.	792 48119	792 30910	792 48127	792 30911	795 10944	795 10954

Gas purification systems for installation of R20 or R200 cylinders

- are complete units, requiring only to be connected to the gas supply systems on site
- always comprise safety valve as well as shut-off and test valves
- require no external source of energy for their operation
- are completely maintenance free except for the replacement of loaded cylinders with regenerated ones.



Each large cylinder is designed for a flow rate of 100 m³/h. The flow rate can easily be increased by connecting several cylinders in parallel. The various possible uses of these large cylinders call for tailor-made solutions which we will be happy to design for you.

We look forward to hearing from you!



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