





Medical gases – a central component of healthcare

Gases such as oxygen, nitrous oxide, carbon dioxide and helium play an important role in medicine. In this regard, two issues are of particular importance: Firstly, the large amount of different gas mixtures needed in order to offer an optimal solution for every medical requirement. Secondly, the uncompromisingly high quality of the gases in order to satisfy the demanding standards of the health service.

Messer offers a comprehensive range of tailor-made gases, gas mixtures and breathing air for outpatient and clinical applications as well as home care. Our expertise in the supply of medical gases is rounded off by our ability to supply technical accessories such as fittings, cylinders and dosers.



Perfect supply at the point of care

Liquid oxygen is the most modern form of oxygen supply. If it is required in large quantities, for example in hospitals, Messer can provide a central oxygen supply on site. This supply uses bulk liquid gas storage tanks which provide optimum security of supply. From here, the gas is piped to gas-specific withdrawal points and delivered to patients via high precision connecting devices.

In order to make full use of the advantages of this system in practice, including its high security of supply, space-saving features, easier handling, clearly organized cylinder management and high cost-effectiveness, Messer offers a complete one-stop service package ranging from consulting to planning through to installation and maintenance.



Oxystem

Oxystem is a particularly innovative oxygen system. It makes the supply of oxygen in day-to-day medical care even easier. The cylinder, pressure regulator and control valve form one unit, thus ensuring convenient, quick and safe handling.

	2 liters	5 liters
Size:	10,0 x 49,0 cm	14.0 x 70.0 cm
Weight:	4,8 kg (filled), 4,2 kg (empty)	10.0 kg (filled), 8.5 kg (empty)
Capacity:	2 liters	5 liters
Gas content:	400 liters	1000 liters
Gas type:	Oxygen for medical purposes	
Filling pressure:	200 bar	200 bar
System valve:	Aperture-metered pressure regulator in accordance with EN 738-3, chrome-plated brass	
Dosage control:	0 ; 1 ; 1,5 ; 2 ; 3 ; 4 ; 6 ; 9 ; 12 ; 15 l/min	
Pressure gauge:	from 0 - 300 bar	
	10 liters	20 liters
Size:	14.0 x 110.0 cm	20.4 x 104.5 cm
Weight:	16.5 kg (filled), 13.5 kg (empty)	30.6 kg (filled), 24.6 kg (empty)
Capacity:	10 liters	20 liters
Gas content:	2000 liters	4000 liters
Gas type:	see above	
Filling pressure:	see above	
System valve:	see above	
Dosage control:	see above	
Pressure gauge:	see above	

Gas cylinders with medical oxygen

In combination with user-friendly pressure regulators (flow of up to 15 liters), these 1-2 liter cylinders are ideal for rescue and resuscitation purposes (e.g. can be connected to the Ambu bag via a tube), as well as for mobile short-term care of patients thanks to a portable device. Larger cylinders are suitable for targeted oxygen therapy.

Standard cylinder sizes:	1 liter - 50 liters
Filling pressure:	200 bar



FM 41 single-stage pressure regulators

All FM 41 pressure regulators are subjected to oxygen burnout tests and have a cylinder pressure regulator, a manual connection and a relief valve. The visible surfaces are chrome-plated and the wetted parts have been ultrasonically cleaned. All FM 41 pressure regulators can be supplied for nitrous oxide, helium, breathing air, xenon and carbon dioxide on request.

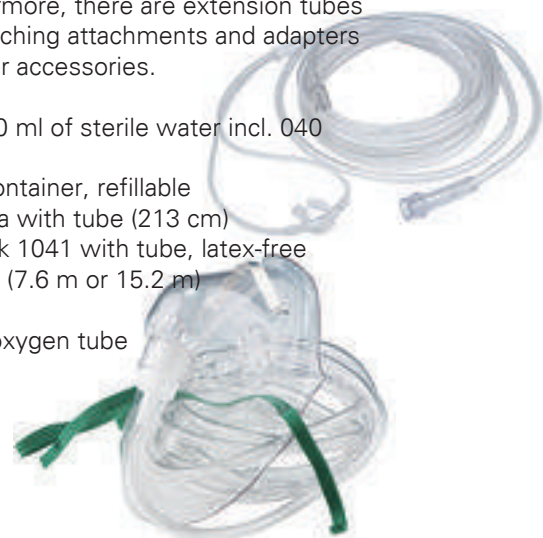
Model	
FM 41-F	<ul style="list-style-type: none"> Fixed withdrawal quantity setting via tube nozzle 1 liter / 5 liter / 15 liter per min. versions (can be specified at time of ordering)
FM 41-L	<ul style="list-style-type: none"> Withdrawal quantity controlled via aperture-meter 1, 2, 3, 4, 5, 6, 9, 12, 15 liters / min. in addition 2 outlets M12 x 1 with constant 5 bar flow (3 outlets in total)
FM 41-S1	<ul style="list-style-type: none"> 1 outlet via suspended matter metering valve 9/16 UNF Suspended matter for -1 liter / -5 liter / -15 liter per min.
FM 41-S2	<ul style="list-style-type: none"> 1 outlet via suspended matter metering valve 9/16 UNF Suspended matter for -1 liter / -5 liter / -15 liter per min. in addition 2 outlets M12 x 1 with constant 5 bar flow (3 outlets in total)

Pressure regulators with two-stage pressure regulation or for other medical gases are available on request.

Humidifier/nasal cannula/mask

In order to facilitate optimal use of the various oxygen systems, Messer also offers the corresponding expendable items such as humidifier containers, nasal cannulae and oxygen masks. Furthermore, there are extension tubes along with matching attachments and adapters as well as other accessories.

- Aquapak, 340 ml of sterile water incl. 040 adapter
- Humidifier container, refillable
- Nasal cannula with tube (213 cm)
- Oxygen mask 1041 with tube, latex-free
- Oxygen tube (7.6 m or 15.2 m)
- Water trap
- Adapter for oxygen tube



Breathe a little health every day

In addition to the supply of medical gases, central medical gas supply systems and withdrawal and connection fittings, Messer's core competencies also include oxygen concentrators and liquid systems for home care.

"NewLife Elite" oxygen concentrator

The NewLife Elite oxygen concentrator is the compact, easy-to-use and particularly inexpensive solution for everyday use. Its PSA (Pressure Swing Adsorption) technology and regenerative molecular sieve separate the nitrogen from the ambient air and supply the patient with the remaining oxygen as required. The amount of oxygen is freely adjustable from 0 - 5 l/min. Other advantages of the NewLife Elite oxygen concentrator include its low operating costs and low noise level as well as the fact that it is largely maintenance-free and functions safely and reliably up to an altitude of 1800 m above sea level.



Size:	69.9 x 41.9 x 36.8 cm
Weight:	24.5 kg
Power supply:	220 - 240 V, 50 Hz, 2 amp/360 W
Liter capacity incl. O ₂ concentration:	1- 3 l / 95 % +/- 3 % 4 l / 92 % +/- 3 % 5 l / 90 % +/- 3 %
Alarms:	<ul style="list-style-type: none"> • no power • pressure too high/low • device temperature too high • battery test • O₂ concentration too low

"Freestyle" mobile concentrator

With its extremely compact design, low weight and long-lasting battery capacity, the Freestyle mobile concentrator is a small revolution. It can be supplemented with an optional battery belt which makes it operational for even longer. No less impressive in terms of cost-effectiveness, it enables both funding bodies and patients to save costs.

Size:	21.8 x 15.5 x 9.1 cm
Weight:	2.0 kg (battery belt 0.8 kg)
Power supply:	100 - 240 V, 50 - 60 Hz, 12 - 16V
Battery capacity:	3 l / 2 h (5 h with battery belt) 2 l / 2.5 h (6 h with battery belt) 1 l / 3.5 h (10 h with battery belt)



"Companion 31" liquid oxygen system

The Companion liquid oxygen system delivers medical liquid oxygen to patients in gaseous form and dosable quantities. It consists of two units – the stationary supply unit and the portable device. In continuous operation, the stationary unit is regularly replenished by the Messer supply service, with the replenishment frequency depending on the individual usage of the patient.

Size:	83.8 x 36.1 cm (diameter)
Weight:	56.2 kg (filled), 23.1 kg (empty)
Performance:	with 2 l consumption / 208 hrs.

"Companion 1000" portable unit

The portable unit makes the Companion system mobile. It weighs a mere 3.6 kg, and with a consumption of 2 liters, the battery has a capacity of up to 8 hours. If the system is prescribed by a specialist, the costs are borne by the health insurance company.

Size:	35 cm
Weight:	3.6 kg (filled), 2.2 kg (empty)
Performance:	with 2 l consumption / 8.5 hrs.



Overview of gas types



Medical oxygen is supplied by Messer in liquid and gaseous forms. It is used above all in respiration therapy and – together with nitrous oxide – in anesthetics.

Nitrous oxide is supplied by Messer in liquid and gaseous forms. Mixed with oxygen or air, it plays a very important role in analgesia, anesthetic induction and combined anesthesia.

Medical breathing air, synthetic or compressed, which is distributed in cylinders, is an important component of contamination-free respiration and inhalation anesthesia.

Medical carbon dioxide is mainly used – in its gaseous state – in minimally invasive surgery and for medicinal baths.

Medical liquid nitrogen has a boiling point of $-196\text{ }^{\circ}\text{C}$, making it an ideal cooling agent. It is primarily used in cryotherapy and cryosurgery. However, nitrogen refrigerant is also ideal for the storage of biological materials such as aortic valves, blood products or bone marrow.

Helium, which is used for the cooling of superconductive magnetics for magnetic resonance imaging scanners, is transported and stored in vacuum super-insulated containers due to its low boiling point ($-269\text{ }^{\circ}\text{C}$).

Medical specialty gases are produced to satisfy the specific requirements of the customer in terms of content and quality.



Messer as a qualified offerer

As pharmaceutical mercantilist Messer has to guarantee production and sales of medicinal gases under compliance with gmp standard and pharmacovigilance. Internal audits, group-wide standardised pharmacovigilance system as well as validated procedures and it-systems assure excellence quality of product and delivery. All that provides security for our customers.





Messer Medical 

MESSER 

Messer Group GmbH
Limespark
Otto-Volger-Straße 3c
D-65843 Sulzbach
Tel. +49 6196 7760-0
Fax +49 6196 7760-501
info@messergroup.com
www.messergroup.com

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