

# AirElite 4h

KO<sub>2</sub> closed circuit breathing apparatus

**MSA**  
The Safety Company



*Because every life has a purpose...*

## AirElite 4h – Closed circuit breathing apparatus

*More than 100 years of competence and experience in the field of breathing apparatus and Personal Protective Equipment made it possible for MSA to develop the AirElite 4h.*

*MSA has successfully applied the principles of oxygen generation from potassium hyperoxide (KO<sub>2</sub>) for breathing air regeneration for more than 40 years.*

*The AirElite 4h is the state of the art successor to the AirElite 2h developed in 1995, which was the first long duration device on the market using KO<sub>2</sub> technology exclusively.*

*Together with its integrated control monitor IC-Air it forms a unique closed-circuit breathing apparatus.*

*Now, all the benefits of the KO<sub>2</sub> principle are available for longer service periods of up to four hours.*

### Ease of use – developed for the harshest work conditions

The most challenging operations in this application field for fire brigades are tunnels, chemical plants like refineries, large storage facilities and high-rise buildings.

In cooperation with the accreditation testing body DEKRA EXAM and customers all over the world we analysed all the detailed requirements of fire brigades and mine rescue teams became part of the development of the AirElite 4h.

With the AirElite 4h MSA offers the well established KO<sub>2</sub> technology for long duration underground and rescue missions.

It is completely breath controlled and has no requirement for complex mechanical control components, so it offers a durable construction for very robust operations. It is always immediately ready for use and suitable for long periods of maintenance free storage.



### Safety – reliability supports users to focus on tasks

These primary focus areas manifested themselves in the AirElite 4h in all aspects. The extremely easy breathing makes the AirElite 4h an indispensable piece of operational equipment. The maximum level of safety possible is reached as its operation and oxygen generation starts automatically when the mask connector is disconnected from the shoulder strap. The system is breath controlled and needs no more than the users exhalation.

### Comfort – protects health through out long operations

The lateral breathing tubes are positioned at the side, close to the body, for a maximum freedom of movement, allowing easy donning and doffing even in confined spaces without the need for mask removal. Its ergonomic design provides maximum comfort. The weight is positioned on the waist and there is no shoulder width protrusion.

With its very effective maintenance free three stage cooling system it offers excellent breathing comfort. The low breathing resistance and low inhalation temperature supplies a user friendly and dry breathing air.



For the AirElite System we offer several dedicated facepieces, as they all providing full protection in conjunction with the AirElite the differences are small.

The Advantage AirElite with it's large sealing flange and the soft silicone mask body offers the best comfort in class. The Advantage 4000 offers the same safety with its net harness which is mandatory for the Advantage series but is made of high durable Hycar.

The well-established 3S AirElite was the final choice until the latest development the state of the art G1 AirElite was launched. This is a mask which sets new levels in comfort and safety and is a symbiosis of sophisticated materials and modern design principles. In comparison with other masks, the G1 AirElite design specifically strives to significantly reduce any distractions to natural perception and behavior, such as providing an undistracted view.

The G1 design improves the perceived on head balance as well as wearing and breathing comfort. All tests confirm the reliable construction of our proven sealing line concept in closing the gap between the face and ambient air.

The G1 offers three sizes and fits almost all face types and sizes around the world. The small, medium and large sizes of the face blank and inner mask can be combined in many configurations for best fit.

Three button colors serve as markers on the face blank to provide quick visual identification of the size. All components are designed to offer ultimate safety while also allowing much simpler and quicker maintenance.

The durability of the lens against common cleaning and disinfection agents has been much increased.



Advantage AirElite



Advantage 4000 AirElite



G1 AirElite



# AirElite 4h – Innovative features



1 Electronic distributor



2 Blower



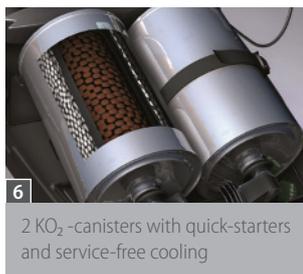
3 Rechargeable battery



4 Mask connector



5 Consumption sensor



6 2 KO<sub>2</sub>-canisters with quick-starters and service-free cooling



7 Ventilation tubing and coolers



8 IC-Air control monitor

*KO<sub>2</sub> is a chemical which reacts spontaneously with moisture and carbon dioxide (CO<sub>2</sub>) in exhaled air. This reaction releases oxygen (O<sub>2</sub>) and energy (heat).*

*At any given time, considerably more oxygen is produced in the AirElite than is consumed by the user. The person wearing the unit is always provided with a reserve of oxygen which enables rapid cycling between light and heavy work.*

### Reliable process – chemicals in motion

In addition to the integrated starter system the breath controlled system starts its oxygen generation automatically with the first breath level. Exhaled air, enriched with carbon dioxide and moisture, is directed into the exhalation bag by a valve. A blower assists the air through the air distributor and into the two parallel connected KO<sub>2</sub> canisters. Inside the KO<sub>2</sub> canisters, with their cooling system, the exhaled air is cleaned of carbon dioxide and humidity and enriched with fresh oxygen and then released as cooled breathing air to the users mask.



### Intelligent – integrated monitoring with IC-air

The AirElite 4h is equipped with an integrated control unit, the IC-air, which offers digital capacity indication. Three warning stages at 50%, 20% and 5% show the remaining capacity with visual and acoustic indication. The integrated automatic motion sensor alarm can be manually activated.



## AirElite 4h – Smart cost of ownership

*The AirElite 4h also sets new standards from an economic point of view. Considerably less work is required for preparation and maintenance and because training can be done at practically no cost, your long term operating costs will also drop.*

### Economical – cost-conscious training

No investment in additional assets and the low maintenance costs of the AirElite 4h reduce the cost of ownership to a minimum. The AirElite has minimum inspection requirements and is quick and easy to maintain or recondition. It has maintenance free standby storage for up to 2 years in full readiness mode and up to 8 years if canisters are in factory sealed condition.

Several options are available to train the user professionally and economically.

### The TR trainer conversion kit

A standard unit for real-life operation can be quickly and easily converted into a training unit. All training exercises can then be performed at practically no cost with a reusable ambient air training canister.

Optional high efficient particle filters allow training under realistic conditions in high dust environments, mist and non-toxic smoke. An option for odor removal is available. It offers flexible service times dependent on breathing rate and chosen canister.

### The KO<sub>2</sub> training kit

It offers a solution for most demanding training scenarios in fire schools or mine rescue training galleries, independent from ambient air.

### Approved safety

At MSA, the safety of the user is the top priority and we take it well beyond the legal requirements. AirElite 4h, for example, not only satisfies the approval requirements of DIN 58652-2 and vfdb 0802 standards but has also passed the tough "Flame Engulfment Test" for mining and fire brigades, with flying colours.



## Technical specifications

Weight (without mask)	15 kg
Dimensions (casing) H x W x D	600 x 360 x 190 mm
Service time	dependent on consumption; with an average breathing rate of 30 l/min it is 4 hours; maximum 6 hours
Storage at standby	-6 °C to +60°C when using rechargeable batteries -6 °C to +54 °C when using non-rechargeable batteries
Operational temperature once in use	-15 °C to +60 °C when using rechargeable batteries -15 °C to +54 °C when using non-rechargeable batteries
Breathing resistance at 30 l/min	- inhalation: -3 mbar - exhalation: +5 mbar
Inhaled air	- temperature: 30-45 °C - humidity: 20-40 % - carbon dioxide: < 1,0 vol. % (mask not considered) - oxygen: > 80 vol. %
Maximum surface temperature	temperature class T4 (< 135 °C)
Electric and electronic standards	Ex ia IIC T4 Ga, Ex ia I Ma / ATEX 2014/34/EU, Group 1 dust and water protection tested acc. to IP 67 EMC according to EN 61000-6-2 and EN 61000-6-3
Housing	polycarbonate, self-extinguishing, impact-resistant, with antistatic coating
Breathing connection	full face mask 3S-R AirElite, Advantage AirElite or G1 AirElite with MSA push-to-plug connector
Approvals	- CE in line with PPE 89/686/EC resp. PPE EU 2016/425, DIN 58652-2 - Class 240 S F for work and rescue - ATEX 2014/34/EU



## Ordering information

10065152	AirElite 4h (less chemical oxygen canister kit and full face mask)
10165441	AirElite 4h (Battery Version)
10065373	AirElite 4h chemical canister kit
10189618	G1 AirElite full face mask
10065153	3S-R AirElite full face mask
10065154	Advantage AirElite full face mask
10118774	Advantage 4000 AirElite full face mask
10100126	AirElite 4h trainer conversion kit HD
10151860	AirElite KO <sub>2</sub> Trainer canisterset
10151861	AirElite KO <sub>2</sub> Trainer housing cover
10094376	Particle filter P3 PlexTec (pack of 10)
10071650	AirElite case



G1 AirElite



## Trust & Durability

For more than 100 years our passionate mission of safety has empowered us, "The Safety Company", to protect lives. We are committed to providing the latest innovative, best-in-class safety solutions that feature integrated systems capabilities and allow our customers to return "Home" safely to their families and friends.

Every day our customers place their lives in our hands. In return, we provide them with protection they can trust, and their stories become our stories. Hand in hand we partner with our customers to earn that trust.

**At MSA, Every Life has a Purpose.**

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