
SAFETY
protection equipment

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Personal Protection For Homeland Security

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About Mestel Safety

Mestel Safety is a company of the OCEAN REEF Group with more than 70 years of experience molding rubber goods and working in several different markets. The following are some of the products produced:

- Diving equipment
- Military protection equipment
- Respiratory PPE
- Molding of silicone, rubber and thermoplastic goods
- Engineering and manufacturing of molds
- Electronics
- Under Water Communication Systems
- Engineering
- R&D in Material Science and Tecnology
- Project Management
- Medical Products
- OEM

OCEAN REEF Group has two manufacturing plants of 6,000 and 40,000 sq/feet in Vista, CA - USA and Genoa - Italy. Mestel Safety Italy is an ISO 9001-2015 certified company and also a NATO classified supplier.

The production facility includes injection machine, electronic components assembling, finished goods assembling and a testing department. The R&D Department includes a rubber/silicone compounds testing laboratory, an advanced computerized self contained breathing checking apparatus, a 32,000 liter pool with computerized ultrasonic underwater communication control system and video/audio closed circuit for demonstration and training, and two Pro E working stations for product engineering and mold design. The diving equipments produced by Mestel Safety are distributed under the Registered Trademark, OCEAN REEF. The Military and Respiratory PPEs are known under the Mestel Safety brand or, simply, as SAFETY Protection Equipments.
In the late 1980's, Mestel Safety decided to broaden its fields of production to not only include medical, diving, and military products but safety products as well. This change was due to a growing need for safety throughout the world. Mestel Safety ambitiously decided to create a gas mask, based on new innovative concepts, that was very different in design than all the gas masks produced up to that point.
The new full face gas mask was named SGE 1000. The SGE 1000 did not use the cumbersome system of twin goggles with a rubber mask. The SGE mask used a transparent polycarbonate rigid full face visor with a comfortable rubber face seal, (patented springing seal design) which covered the face and supported the other components of the gas mask. After a few years, the Protection Division received international acclaims for the success of the SGE 1000. After the September 11, 2001 terrorist attack at the World Trade Center in New York, Mestel Safety realized the need to change its market strategy. Since that tragical event, our Company was strongly involved in providing safety solutions to prevent casualties and properly assist people in possible future situations that may be similar to the 9/11 disaster. Consequently, Mestel Safety decided to create a new "Homeland Security Program Range of Products" and, soon after, a new working group started to operate.
This new branch would focus its efforts on developing and producing safety products, specifically breathing protection devices, which would be beneficial in Homeland Security situations. The first Mestel Safety gas mask, the SGE 1000, started a worldwide generation of "advanced" breathing protection devices. Currently the SGE 1000 is out of production, replaced by the new and improved range of products useful for a broad range of people (progessionals and general public).

OUR HISTORY,
OUR PASSION,
OUR VISION.

SGE 150 Gas Mask

SGE 150 Gas Mask
(medium/large - code: 33970)
(small/medium - code: 33980)

Anti-terrorism / gas mask with many features of the SGE 400 and SGE 400/3 gas masks.

The SGE 150 Gas Mask has multi-purpose appli- cations. The following are their main characteristics:

- Silicone face seal
- Single front filter connection
- Polycarbonate ballistic visor
- Light weight
- Compact large field of vision
- Easy Maintenance

SGE 400 Gas Mask (Upon Order)

SGE 400 Gas Mask
(medium/large - code: 33990)
(small/medium - code: 33981)

The SGE 400 mask has been designed to meet military and civil defense requirements.

The following are the main characteristics of the mask:

- Single front filter connection
- Polycarbonate ballistic visor treated with a coating resistant to the most aggressive chemicals
- Silicone face seal (excellent for long period use; tested for 5 days without removing)
- Connection for drinking device

SGE 400/3 Gas Mask

SGE 400/3 Gas Mask
(medium/large - code: 33994)
(small/medium - code: 33982)

Identical to the SGE 400 but with three 40mn DIN 3183 or EN148-1 filter connections. Side location of filters allows a more comfortable use of guns.

SGE 400/3 BB Gas Mask

SGE 400/3 BB Gas Mask
(medium/large - code: 33992)
(small/medium - code: 33983)

Identical to the SGE 400/3 but with three connections and the face seal in butyl rubber to respond to the CBRN requirements.

Comparative Table of Masks

(UPON ORDER)

	SGE 150	SGE 400	SGE 400/3	SGE 400/3 BB
Filter connection	1 (front)	1 (front)	2 sides&1 front	2 sides&1 front
Face seal	Silicone	Silicone	Silicone	Butyl rubber
Visor coating	No	Yes	Yes	Yes
Additional bottom port	No	Yes	Yes	Yes
Drinking device option	No	Yes	Yes	Yes
Lenses support	Available as accessory	Available as accessory	Available as accessory	Available as accessory
Integrated hood	Available as accessory	Available as accessory	Available as accessory	Available as accessory
Speaking diaphragm	Available on request	Available on request	Available on request	Available on request
Mustard gas resistance	No	Visor Only	Visor Only	Yes

Multipurpose Filters 203 A2B2E2K2P3 R D

Multipurpose Filters
(Blue - code M40020-SP)
(Grey - code M40030-SP)

Combined filter with thread connector to EN 148-1 for organic vapours having boiling point higher than 65 °C, inorganic gases and vapours, Sulphur Dioxide (SO_2), Ammonia (NH_3) and its derivatives, dust, fumes, aerosols, particles and mist. Marking R means that the filter is reusable for more than one time.

The filter can be used with full face masks that are fittted with EN 148-1 (RD 40-1/7) connector. Filters comply with the EU Regulation 2016/425 (PPE). They are combined Class 2 filters for gas protection and particle filters Class P3 RD in conformity to EN14387:2004 + A1:2008.

Material housing: polypropylene
Filter media: activated carbon and filter paper
Storage: store at temperatures between -20 and + 50 °C and RH <80%
Weight: approximatively 300 grams
Shelf life: 5 years if duly stored and in their original packaging

Filters 100 P3 R

Filters 100 P3 R
(Blue - code M40040-SP)

The 100 P3 R filter, with the standard thread connector (EN148-1, RD 40-1/7") can be used with the full face gas masks type SGE150, SGE 400/3 and SGE 400/3 BB, or equivalent and with the APA (Aria Protection adaptor) assembled on Ocean Reef snorkelling masks (Aria and UNO series). This filter protects against aerosols, particles, mist, fumes and dust.
The 100 P3 R filter complies with the EU Regulation 2016/425. Class P3 R filter, as particle filter, are in conformity to EN143:2000/A1:2006.

Material housing: polypropylene
Filter media: non-woven fabric made by glass fiber
Storage: store at temperatures between -20 and + 50 °C and RH <80%
Weight: approximatively 92 grams
Shelf life: 10 years if duly stored and in their original packaging

Filter classification

Type	Code Color	Main Applications
A	Brown	Organic gases and vapours with boiling point greater then 65 degrees °C
B	Grey	Inorganic gases and vapours, e.g. chlorine, hydrogen sulphide, hydrogen cyanide, but not carbon monoxide
E	Yellow	Sulphur dioxide, hydrogen chloride and other acid gases
K	Green	Ammonia and organic ammonia derivatives
P	White	Particles, mist, fumes and dust

Filter Class	Max. permissiable concentration
1	1000 ppm (0,1 % by vol.)
2	5000 ppm (0,5 % by vol.)
3	10000 ppm (1,0 % by vol.)

Gas Mask Accessories

PVC Hood

PVC Hood
(mask accessory - code: 6715 - hood only)

Integral PVC Hood Option

Add a PVC hood to your SGE mask. The over-hood shroud covers the head, shoulders and the upper chest. Unlike other over-hoods, there are no gaps between the face-piece and the hood. This is because the over-hood is permanently connected between the polycarbonate visor and the facial gasket, which eliminates the possibility of user error and the possibility that contaminates pass through the seal around the mask. This design leaves the head harness outside the hood allowing the easy adjustment of straps.

Optical Lens Support

Optical Lens Support
(mask accessory - code: 33299)

The lens frame for the SGE masks is made in a way to rapidly fit corerctive standard lenses without the need to use any tool and/or glue.

The lenses are mounted on the frame C 21 which snaps into the inside of the mask. After mounting the lenses on the frame, this is snapped inside the mask, inserting it on the face seal. The system, ensures a large field of vision, avoids any fogging of lenses.

This product is part of our living eco line – 100% plant based plastic.

Drinking device (optional)

Drinking Device (assembled on the maks) (code: OR030000)

The internal drinking device for SGE 400, 400/3 and 400/3 BB masks is an optional accessory that could be easily assembled in place of the bottom port of the mask.

The drinking device may be rotated, moving the internal tube to intercept the mouth and avoiding any uncomfortable condition when not necessary.
The external drinking device is supplied with a safety valve. To drink it is necessary to squeeze the valve, otherwise the tube is closed.

Both internal and external drinking systems can be used together with the water canteen connected to it thanks to a special cap.

Water Canteen (w/pouch 1LT)	External Drinking System for canteen	External Drinking System
		
(code: OR030001)	(code: OR030002)	(code: 31999)

Speech diaphragm

The speech diaphragm seats in the same slot as the exhalation membrane.

Mask Technical Information

Quick Release head harness

Solvent and scratch proof (excepting SGE150)

Filter connection EN148-1

1. Visor

General features

The transparent visor is the actual supporting body of the SGE protective masks. Its task is to replace the rubber bodies previously employed by traditional designs to bear the weight to which the mask is subjected. The visor supports the head harness, valves, filters, regulators, etc.

The main part consists of a large round surface in front of the eyes, and it set back in the structure, thus keeping the overall dimensions to a minimum, reducing the risk of scratching and allowing the use of optical instruments. The material used is a specially coated polycarbonate (excepting SGE150), which transmits more than 90% of UV-visible light.

The main adavantages of this visor are:

- **a substantially reduced mask weight**
- **a better field of vision**
- **protection of the face is guaranteed by the impact and cut resistant structure**
- **the mask fits comfortably even when the wearing time increases**
- **the wearer can be easily identified due to the total transparency of the face-piece, helping to normalize conditions and maintain discipline**

Key performances

Laboratory tests have show that the polycarbonate body is left unharmed by a 6.35 caliber bullet hitting it at a speed of more than 150 m/seconds. This means that the the visor supplies the same protection than a protective helmet.

The coating treatment of both sides of the visor in SGE 400/3 and 400/3 BB makes the polycarbonate resistant to aggressive substances. Samples of the treated material have been subjected to mustard gas penetration tests. After over 50 hours, mustard gas failed to penetrate through the tested specimens.

Any visor may be decontaminated several times without any deterioration, using all the normal decontamination methods including immersion in boiling water.

Materials

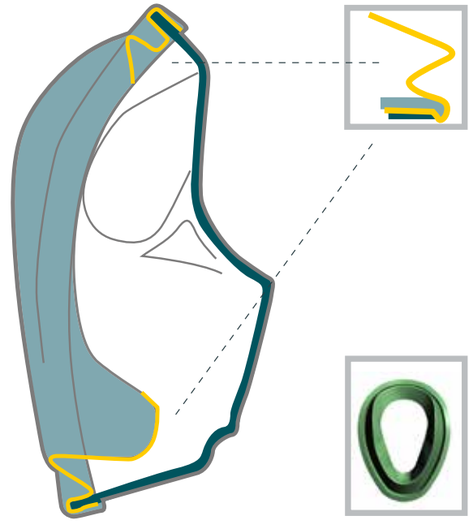
Visor: Transparent polycarbonate - Coating treatment: (SGE 400/3; SGE 400/3 BB only): Polysiloxane resin

2. Face-seal

Due to the use of an integral load-bearing face-piece, it was possible to make the rubber face-seal much lighter, as its only function is to act as a seal. Traditional masks consist basically of a load-bearing rubber structure fitted with two sealed eye-pieces, and since the rubber body has to bear the weight of all the accessories attached to the mask it has to be made rigid and thick (heavy and uncomfortable) and will therefore not adhere comfortably to the wearer's face.

Our face-seal, on the other hand, is made by soft rubber with a supple bellows type structure which allows a perfect sealing and a very high degree of comfort even after a prolonged use. The bellows type structure also allows the comfortable fitting to all face shapes.

As a whole, straps, face-seal and stiff body of the mask together provide far more comfort than traditional masks.



3D seal

Materials

Silicone and butyl rubber (only 400/3BB)

Face seals assembled on SGE150 and SGE400/3 are made by silicone. This hypoallergenic material allows a perfect comfort during wearing the mask together with optimal mechanical performances and tear resistance. The SGE400/3 BB face seal is made by butyl rubber in order to improve the protection to toxic gases thanks to the low permeability of this material.

3. Filter fittings

The SGE masks have a threaded fitting for application of standard filters (DIN 3183, UNI EN 148-1). The fitting is contained in a single unit which also comprises the exhalation valve. The shape of the internal ring nut allows perfect ventilation of the whole face-piece, preventing misting even at low temperatures, thanks to the mask design, antifog is not necessary.

Mechanical characteristics

The material used is black polyarilamide, created for aeronautical and aerospace requirements. In addition to very high impact resistance, it is not affected by aging or atmospheric factors. Its abrasion resistance is such that after testing with over 3000 assembly/disassembly operations, the filter had sustained no wear.

4. Membranes

The exhalation membrane is fitted onto the same unit containing the filter fitting.

Externally the membrane has a structure which, although it covers the whole membrane, still allows easy discharging of the exhaled air.

The purpose of this covering structure is to keep a sufficient volume of uncontaminated air in continuous contact with the membrane.

The exhalation membrane has been made to require minimum effort even at very high flow rates. The excellent memory of the membranes has been achieved by a combination of good design and high grade material. A considerable increase in resistance to chemical agents, has been achieved, using as constituting material a butyl based compound instead of the traditional natural rubber.

5. Nose cup

The design of this component is critical to the effectiveness and comfort of the mask. Because it comes in direct contact with particularly sensitive areas of the face, the correct choice of shape and material was vital. The nose-cup is made of soft silicone rubber, designed specifically for use in contact with the human body for indefinite periods of time without causing irritation or allergic reactions of any kind. The shape is designed to provide optimum comfort and efficiency; the U shaped peripheral lip performs the following important functions:

- it adheres softly and evenly to the face, following its contours perfectly
- it has a sufficiently rigid structure to ensure effective sealing during inhalation
- it is sufficiently soft to open and swell under the slight pressure caused by exhalation, isolating the nose and mouth area perfectly from the rest of the mask

Breathing valve system

Two very light inhalation membranes made by silicone are attached laterally to the nose-cup, the lower part of which is connected to the auxiliary drainage valve. The front part of the oral-nasal unit is attached into the exhalation/speech/feeding valve unit. This union is obtained by using the rubber's elasticity, guaranteeing perfect sealing.

6. Frame and strap

The fixing rim has the role of connecting the straps to the frame of the mask and at the same time fixing and locking the face-seal and the incorporated hood, if used. Once the rim is tightened in place by means of the special screw, it fits into a special seat in the frame of the mask.

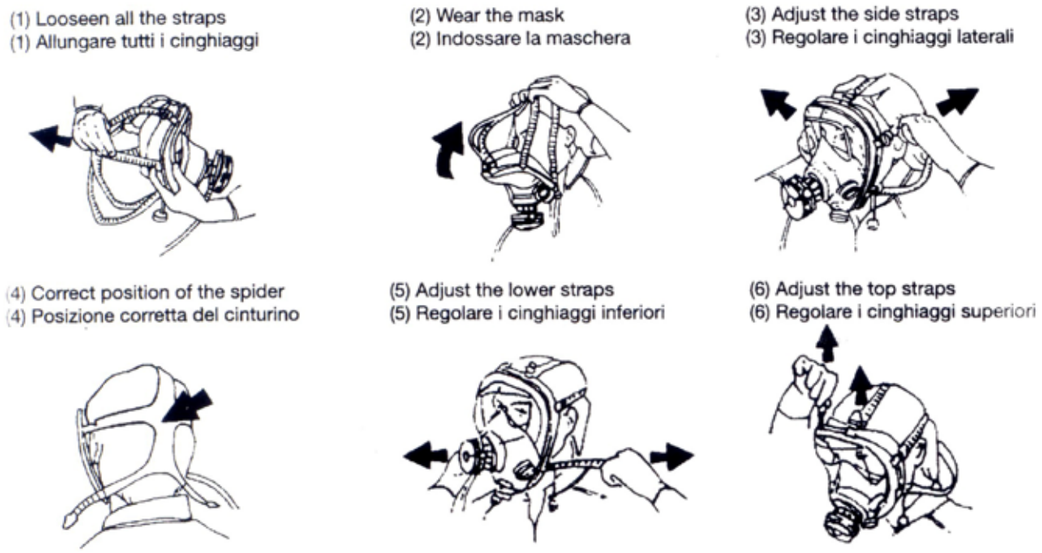
In this way, the pull exerted on the fixing points of the head harness is transferred and distributed evenly around the whole circumference of the mask, allowing perfect adjustment of its tightness for maximum comfort and optimum sealing on the face of the wearer.

It should be pointed out that this is not possible with the traditional mask, as the pull exerted by the strap itself is secured, thus requiring the wearer to over-tighten the mask, drastically reducing the level of comfort.

SGE's stiff body allows the straps to evenly distribute the effort around the edges of the mask, so that it is not necessary to tighten them excessively.

Material used

Frame: Polyamide - Head-strap: NBR rubber



7. Cleaning and decontamination

The mask design makes both decontamination and cleaning easier. Particular care of any contaminants deposited on the mask should be taken, performing all cleaning treatments in safe areas.
Masks can be disinfected using non aggressive disinfectants or by immersing it briefly in boiling water. No abrasive substances to clean the Visor can be used.
If disinfection is required, a solution of diluted chlorhexidine digluconate (5%) can be used as well.
After cleaning, the mask is dried with a soft, clean cloth or with a cool air blower, paying attention to the visor just to avoid any scratch on the optical part.

Mask Performances and Specifications

SGE150, SGE400, SGE400/3 & SGE400/3 BB full face masks are Personal Protective Equipments (PPEs) that fall under category III in compliance with the EU Regulation 425/2016. The masks follow the harmonized EN136: 2000 standard and satisfy the requirements laid down for class 3 (Firefighting & special use). Only screw filters are used, conforming to the European standard EN-148 part 1.

FOGGING UP OF VISOR

(Tested up to –30° C.)
- Starting cold: no fogging up
- Starting warm: no fogging up

LIGHT TRANSMITTANCE MORE THAN 90%

FIELD OF VISION
- Total 87%
- Overlapping 80%

COMMUNICATION

Microphone, earphones and hearing protection devices can be easily fitted to the mask. Due to the position and type of speech membrane, loud speaker use is easy and efficient.

PROTECTION AGAINST CONVENTIONAL WEAPONS

The visor protects not only the eyes, but the whole face against fragments, stones, splinters caused by explosions. It can stand with no damage (break or perforation) to the impact of a steel sphere 6.35 mm caliber bullet hitting the mask at any point at the speed of more than 150 m/sec.

Blast effects do not impair the protection performances as all the membranes are able to stand significant pressure. The speech diaphragm in particular is the open type and does not use the old rigid metal membrane.

HEAT RESISTANCE

Masks are flame resistant and heat-radiation resistant.The mask does not melt or catch fire when tested accordingly with the EN 136 standard.

APPLICATIONS

The masks can be used in conditions requiring protection for both eyes and the respiratory apparates. It is particularly recommended for industrial, military and agricultural sectors where the air is contaminated by toxic and/or hazardous substances.

CBRN protection

SGE masks are included among the PPE (Personal Protective Equipment) that ensure the chemical, biological, radiological and nuclear defense (CBRN defense or CBRNE defense) taken in situations in which chemical, biological, radiological or nuclear warfare (including terrorism) hazards may be present. CBRN defense consists of CBRN passive protection, contamination avoidance and CBRN mitigation.

Ocean Reef Group

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underwater, naturally.
SAFETY

protection equipment
engineering
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