



BIO-GUARDIAN®



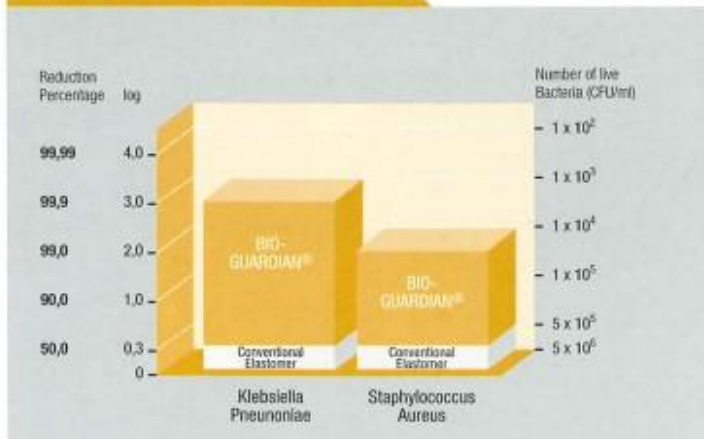
Advantages

Microbial protection
Anti-bacteriological
Blocking fungal growth
FDA, EPA, EPFSA approved

A continuous threat - We have the solution

Bacteriological and microbial growth in and on equipment and materials used in Pharmaceutical, Food, Dairy and medical installations is extremely hazardous and require expensive cleaning and sterilisation processes.

Number of remaining bacteria



Percentage reduction	Log reduction	Number of live Bacteria (CFU/ml)
0	0,0	1,000,000 (1x10 ⁶)
50	0,3	500,000 (5x10 ⁵)
90	1,0	100,000 (1x10 ⁵)
99	2,0	10,000 (1x10 ⁴)
99,9	3,0	1,000 (1x10 ³)
99,99	4,0	100 (1x10 ²)

Garlock developed "BIO-GUARDIAN®" a new FDA conform silicone compound with anti bacteria inhibitors preventing growth of micro organism on the surfaces of this elastomer to remarkable LOG reductions.

The BIO-GUARDIAN® compound combines white silicone, conform FDA and UPS Class VI approved with silver ions inhibitors throughout. The silver ions have bacteria killing properties resulting in LOG reductions up 3 (1000 CFU/ml). Conventional elastomers typically show a LOG reduction of 0,3 (50.000 CFU/ml).

BIO-GUARDIAN® opens new dimensions of process security in Pharmaceutical, Food, Beverage and Dairy industrial processing as well as in health care, potable water and clean room applications.

CEFIL'AIR® -

Inflatable seals

A proven sealing concept with numerous applications and solutions for all industries.

CEFIL'AIR® inflatable seals can be supplied in circular and rectangular form in over 150 different profiles, please consult our detailed product brochure.



BIO-GUARDIAN® is available in all possible CEFIL'AIR® variations. For example in straight length with vulcanized expendable end plugs. Also available as endless seals with axial or radial expansion either to the inside or outside.



Extruded profile

BIO-GUARDIAN® can also be supplied in extruded profiles, tooling for over 1200 different profiles is available, consult your Garlock representative for details.



Moulded parts

Depending on size and quantity, custom made moulded parts can be supplied in the BIO-GUARDIAN® compound,

BIO-GUARDIAN[®] SILICONE RUBBER (C85MAMC6/60)

1. NATURE.

BIO-GUARDIAN[®] is Silicone rubber type Copolymer Méthyl Vinyl Silicone (classification VMQ as per ASTM D 1418).

2. USE.

The BIO-GUARDIAN[®] modified by extrusion or moulding enables the manufacture of profiles and vulcanized parts, which can be used in very hard working conditions regarding heat level. The nature of this rubber allows it to preserve its initial silicone physical and mechanical properties,

3. EXAMPLES OF USE.

- CEFIL AIR[®] inflatable seals.
- Seals for sterilizers & dryers
- Seals for lids and covers.
- Profiles, tubes, washers.
- O'Ring.
- Etc

4. PHYSICAL PROPERTIES.

Color : White
Density : $1,16 \pm 0,05 \text{ gr/cm}^3$
Use temperature* : -60°C at $+200^\circ\text{C}$ (250°C highest T° during short time)
*(Indicative values)

5. MECHANICAL PROPERTIES.

5.1. Initial properties

(On moulded parts 10' 15' à 165°C (+ oven heating 4h at 200°C))

Hardness	:	60 ± 5	Shore A	(NFT 46052)
Tensile strength	:	8,5 mini	MPa	(NFT 46002)
Elongation	:	600 mini	%	(NFT 46002)
Tear resistance (Method C).	:	35 mini	KN/m	(NFT 46007)
Compression set (22h at 175°C pre compression 25 %)	:	25 MAXI	%	(NFT 46011)

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BIO-GUARDIAN® SILICONE RUBBER (C85MAMC6/60)

5.2. Heat ageing* (24h at 225°C)*

Hardness	:	70 ± 5	Shore A	(NFT 46052)
Tensile strength	:	8	MPa	(NFT 46002)
Elongation	:	350	%	(NFT 46002)
Tear resistance (Method C).	:	20	KN/m	(NFT 46007)

*(Indicative values)

6. CHEMICAL PROPERTIES.

BIO-GUARDIAN® has a good resistance to ozone, oxygen, inclemency and UV light. It is also possible to use it with acids and low concentrated bases. Nevertheless it would be preferable not to expose it to solvents, hydrocarbons or saturated water steam at a pressure upper than 6 bars.

7. SPECIFIC APTITUDES.

Beyond its very high mechanical properties, BIO-GUARDIAN® is manufactured from specific components and special additives based on silver ions (Ag+). This formulation prevents biofilm generation and avoid the development of bacteria and micro organisms (microbes, bacteria, moisures, ...).

Moreover all components of BIO-GUARDIAN® are in accordance with part 21 CFR 1772600 of FDA (Food Drug Administration) standard used in food industry applications like too with the US Pharma Class VI standard used in pharmaceutical industry applications (Extraction Test executed at 121°C during 1h).

(Technical data given on our documents correspond to the most update knowledge but do not exempt the customer from checking the performances in its particular working conditions).

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