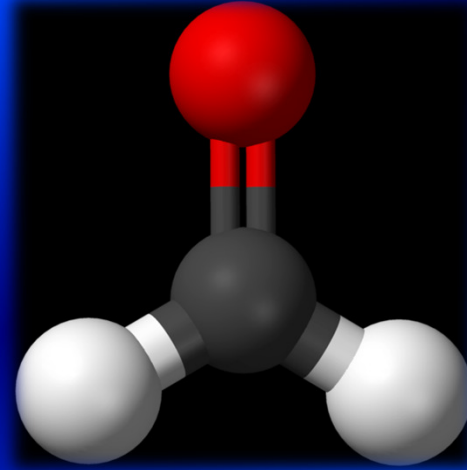




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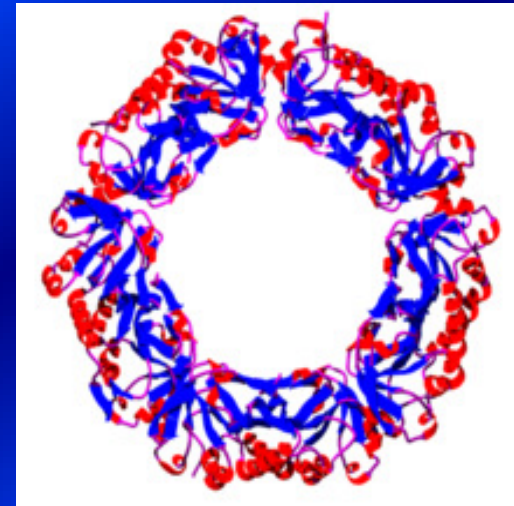
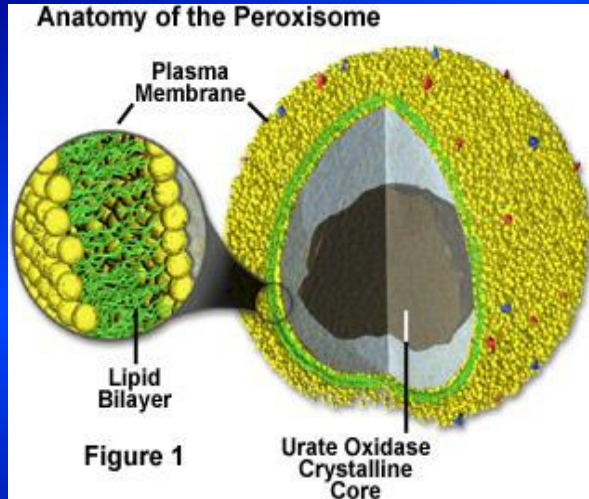
VAPORISED HYDROGENPEROXIDE ROOM/CABINET STERILISATION SYSTEM
VHP





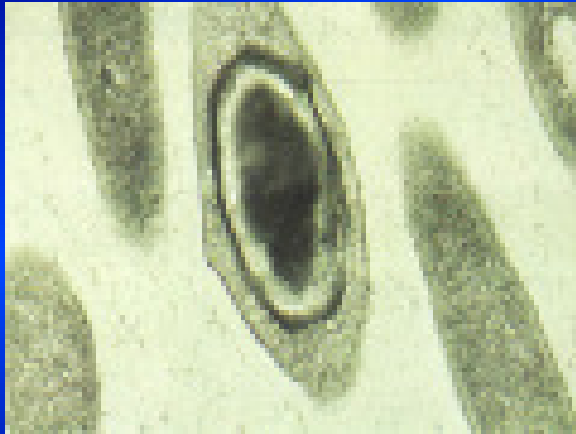
Applications :

- High Patogene Virus and Microbiology Laboratories
- Hospitals and Healthcare related decontamination,
- Temperature sensitive equipment sterilisation
- Tacticle Vehicle sterilisation,
- Aircraft sterilisation,
- Biotechnological and Pharmaceutical Factories,
- Biosafety cabinets, isolators,
- BSL-3/4 Laboratories and Animal Laboratories.



Our body fights with the foreign microorganisms producing H_2O_2 in the our cell. If our immune system sense a bacterial attack Peroxizome enzymes produced for producing H_2O_2 , on the contrary to balance and to control H_2O_2 level peroxiredoxin enzymes produced to convert H_2O_2 to H_2O and O_2 . Some Scientists thinks that if this balance break down it causes cancer and diabet.

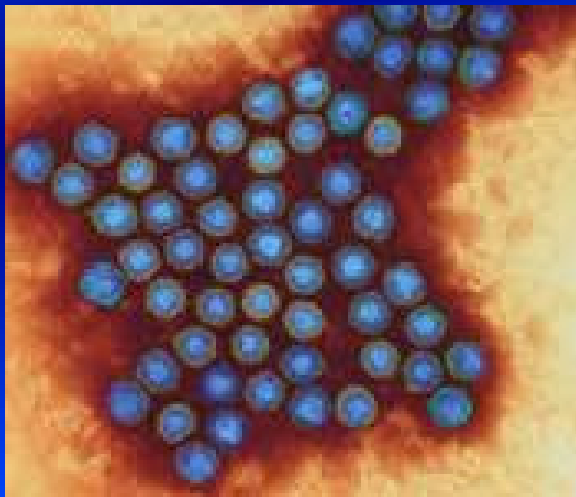
HYDROGENPEROXIDE COMBINES FROM TWO HYROGEN AND TWO OXIGEN ATOM AND KILLS :



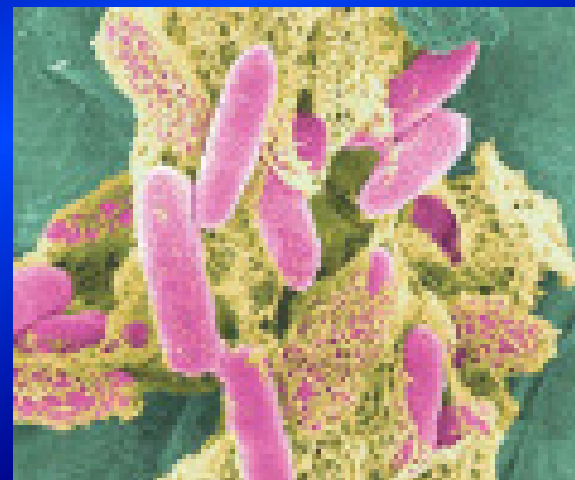
Bacterial endospores



Mycobacteria

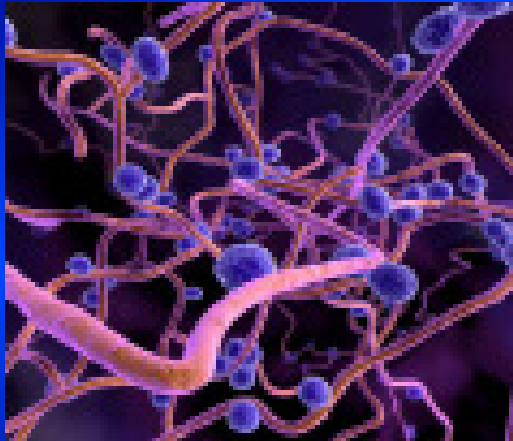


Small nonenveloped viruses

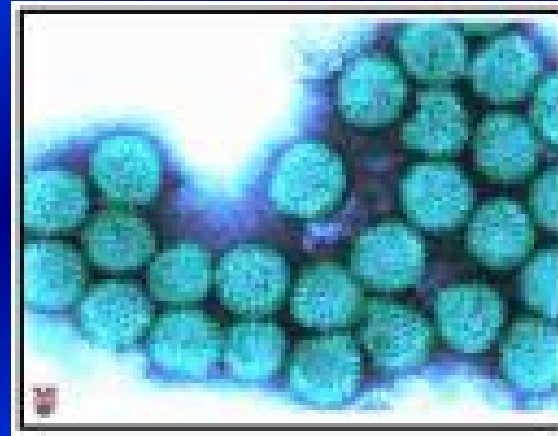


Gram-negative bacteria

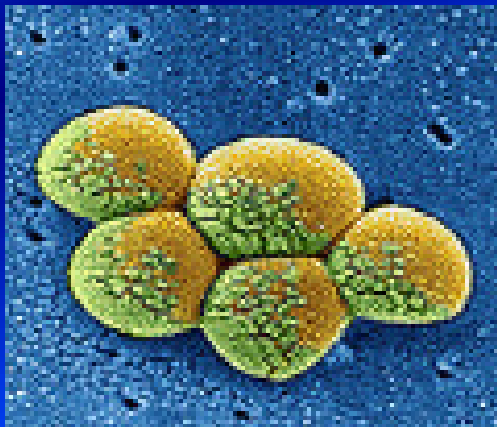
HYDROGENPEROXIDE COMBINES FROM TWO HYDROGEN AND TWO OXIGEN ATOM AND KILLS :



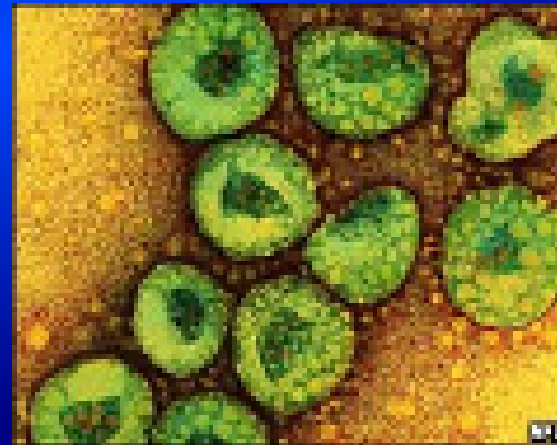
Fungi



Large nonenveloped viruses



Gram-positive Bacteria



Enveloped viruses

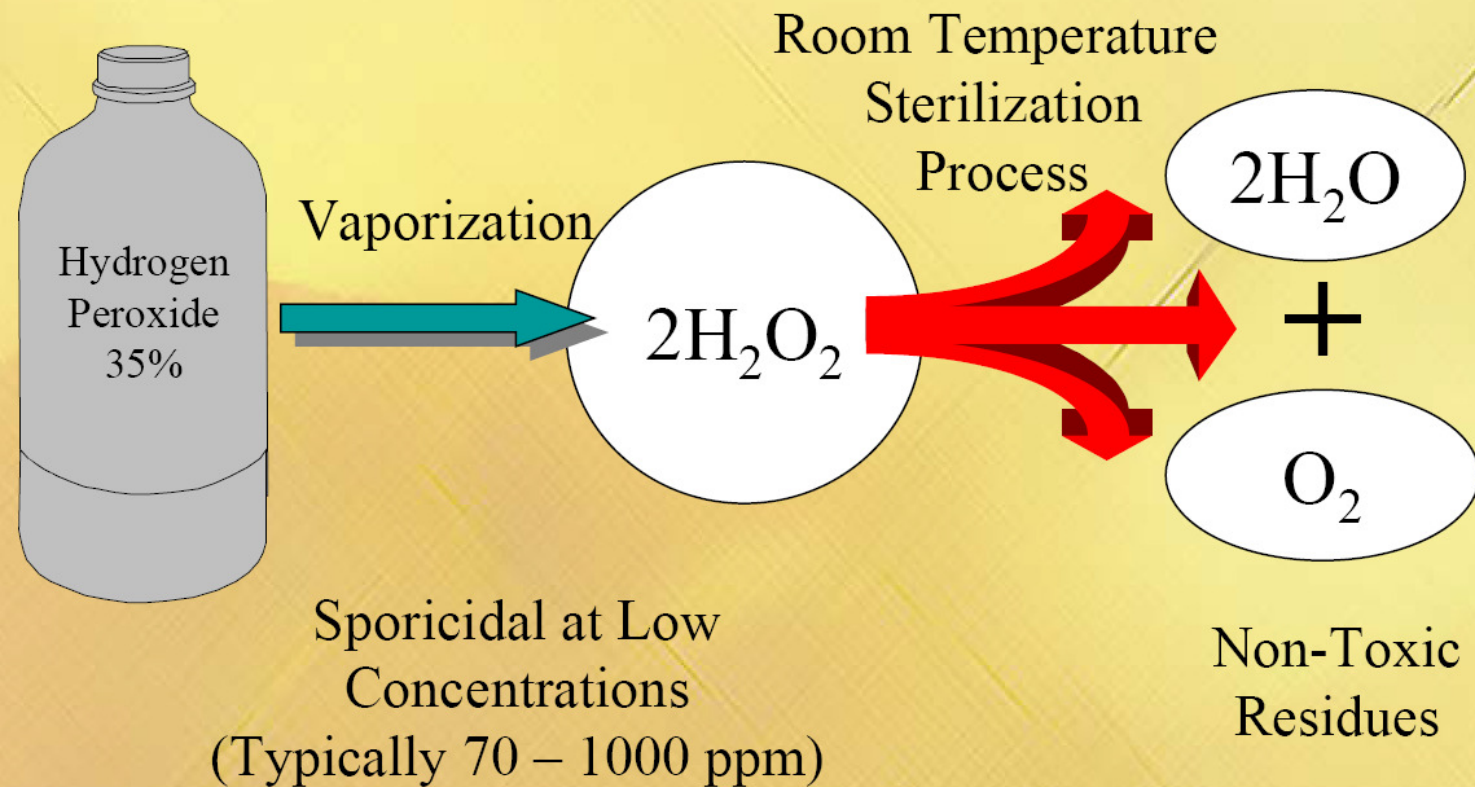


Hydrogen peroxide vapour is well established as a bio-decontamination agent due to its “residue free” nature (the only residues are oxygen and water) and low temperature, vapour-phase application.

HPV has been tested against many organisms and classes of organisms. However, because a great number of “common” micro-organisms exist, efficacy testing remains an ongoing process.

HPV has been shown to kill a wide range of micro-organisms including bacteria, viruses and fungi. The efficacy of HPV has been repeatedly demonstrated against bacterial endospores, which are typically the most resistant organism to any kind of bio-deactivation stress so as such are positioned at the top of the Spaulding classification.

Hydrogen Peroxide Vapor



Why H₂O₂ Vapor?

Hydrogen Peroxide

Skin/eye irritant

PEL 1.0 ppm

IDLH 75 ppm

Chlorine Dioxide

Severe irritant

PEL 0.1 ppm

STEL 0.3 ppm

IDLH 5.0 ppm

Formaldehyde

Human
Carcinogen

PEL 0.75 ppm

STEL 2 ppm

IDLH 10 ppm

PEL - Personal Exposure Limit (8 hours)

STEL - Short-term Exposure Limit (15 min.)

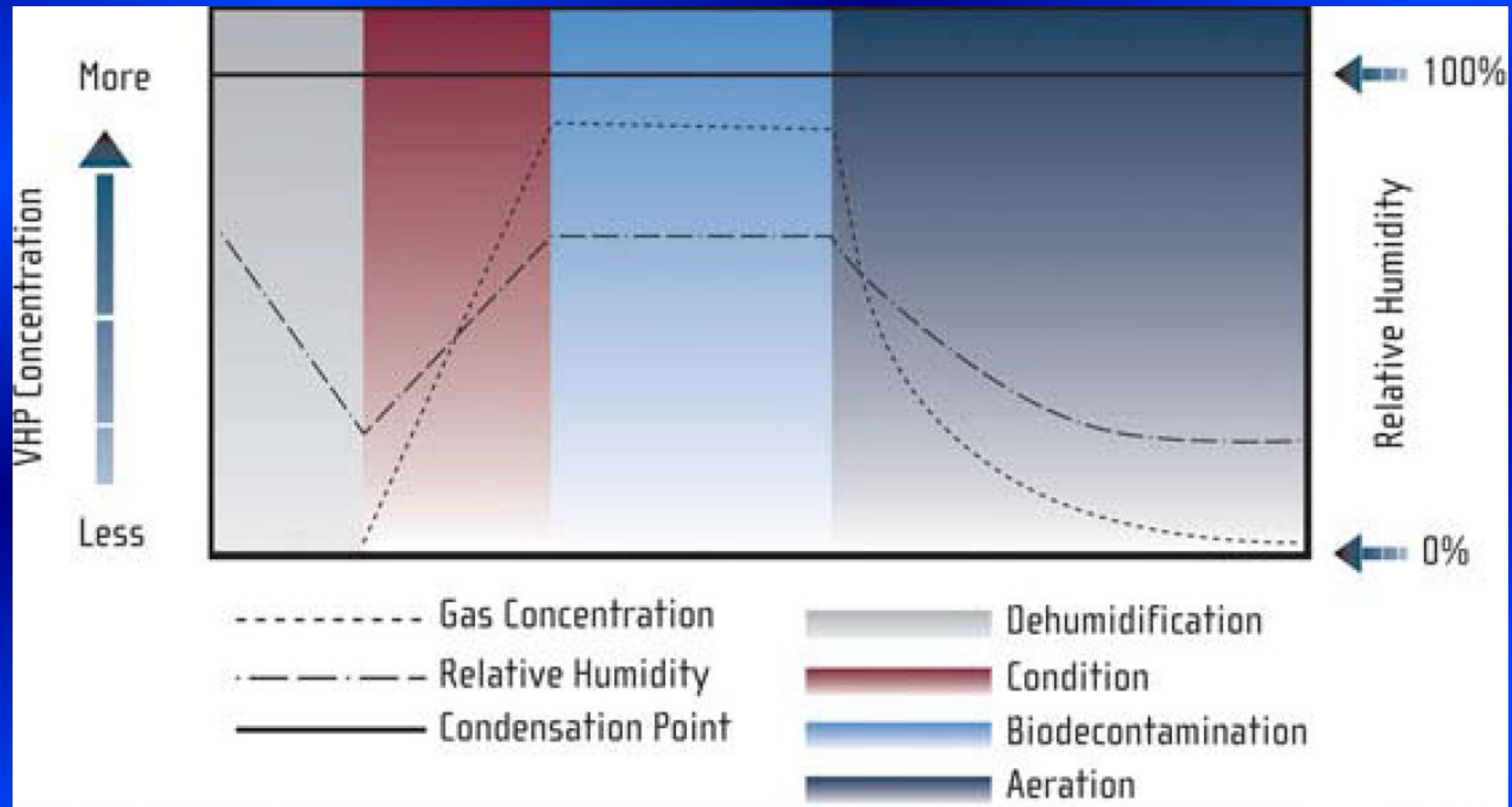
IDLH - Immediately Dangerous to Life or Health



Limitations :

- Temperature : Water vapour and H₂O₂ shares the same partial vapour pressure. So at the low temperature we can't reach the necessary ppm level. For example not used for coldrooms.
- Liquids
- Open areas : To reach the necessary ppm we need close areas.

Typical process cycle





Process :

- Prepare the room
 - Remove or reduce clutter . Spores are harder to kill on the porous absorbent materials like paper
 - Clean surfaces especially spills occur
 - Shut of air supply and exhaust
 - Recirculate biological safety cabinets
 - Place biological and chemical indicators
 - *Geobacillus steraoiththermophilus*
 - 10^6 spores per sample are typical for bio-safety applications
 - Minimum 10-12 sample for smaller applications 1 sample for 10 sqm for larger applications
 - Chemical indicators
 - Place fan for turbulence
 - Seal doors and openings with tape
 - Place warning signs



Process :

- High humidity limits the H₂O₂ given to the room. So first step is dehumidifying the room. (The unit does it)
- After dehumidifying supplying H₂O₂ vapour starts
- According to the room structure required ppm level maintain the necessary time. Sterilisation obtained.
- After sterilisation decomposition (deactivation) of the H₂O₂ starts. With a special catalisior H₂O₂ converted to H₂O and O₂.
- Decomposition of the H₂O₂ is very fast in the beginning of the periotd and slow down hiperbolically. So; in most cases exhaust sytem used to reach the safety zone.
- To enter the room H₂O₂ should be ≤ 1 ppm.





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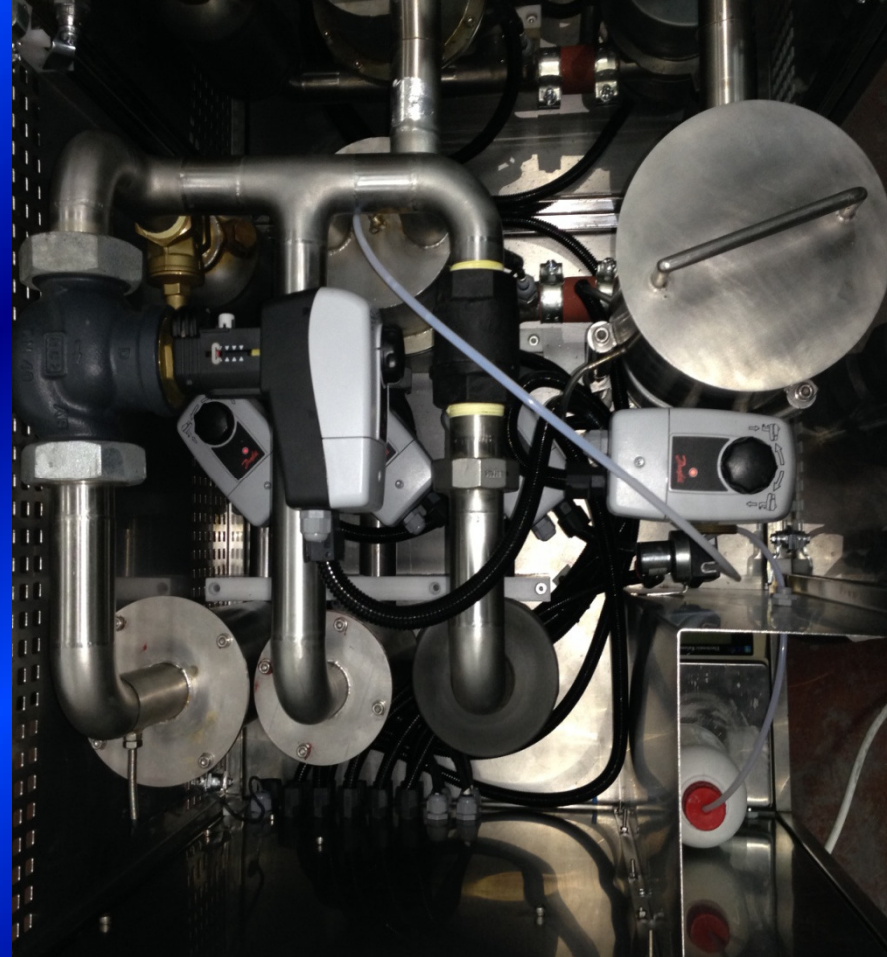


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| TECHNICAL DATA OF HTL-PEROXMIN | |
|--|--|
| Properties | Value/Explanation |
| Dimension w x d x h (mm) | 730 x 920 x 790 |
| Weight | 87 kg |
| Size for shipment | 1 std. Euro-pallet |
| Electrical connection | 230 V/50 Hz, 16 A |
| Power consumption max. KW | 2.8 kw |
| Quick connectors for the gas circuit | Kamlock coupling 1" male and female |
| Quick connectors side | On the rear side, other connectors on request |
| Control system | PLC+Touchmatic multicolour panel |
| Check balance (Note This is 300 Euro, w/o verification 200 Euro) | KERN FO86K21M (6000 g /2g), with verification |
| Output | 3" thermal printer |
| Sterile filter | Vokes Hepatex 13 (Optionally H14) |
| Blower | EBMPAPST 60 m ³ /h |
| Valves | Electrically driven |
| Humidity sensor | Quick responding Driesen&Kern SK470 |
| Disinfection agent | Hydrogen peroxide 35 (395 g/l) standard grade |
| Dosing | PLC controlled peristaltic pump |
| H2O2 holding container | Standard chemical can 1-5 liters (Suction tubing and operation opening recommended; will be supplied together with a 2 liters can) |

OPTIONS

In-line measurement of H2O2 concentration by a Dräger Polytron 7000, integrated into the gas return piping.

OEM-version for the integration into isolators, locks, etc. on specific request.