

### Protective solutions

#### System Description

The LSS-80 is a complete Nuclear, Biological and Chemical (NBC) Protection System designed for use at home or at the office. The LSS-80 provides a safe protected space for a maximum of 6 persons for an extended period of time.

The LSS-80 Protection System comprises a Protective Tent with overhead rope supports and a Filter-Blower Unit provided with an effective Nuclear, Biological and Chemical Filter. The entry to the Protective Tent is through a zippered lock chamber to prevent the loss of positive pressure in the Protective Tent when using the entryway. The system Filter-Blower Unit LSS-FBU (also see Temet product leaflet no: 1274 6601 009) is powered by an electric motor and equipped with a manual hand crank back-up drive easily operable by one person. Additional features of the Filter-Blower Unit are a Pre-filter for removal of coarse particles from the intake air, and an Emergency Light functional in manual operation. The system components are packed in a special container for rapid deployment. Once the necessary preparations are performed, the LSS-80 Nuclear, Biological and Chemical Protection System can be made fully operational in less than 15 minutes.



The LSS-80 Protection System deployed. The Protective Tent is pressurized with clean air at 25 Pa positive pressure. Note the viewing window on the tent side wall.

The Protective Tent is slightly pressurized with clean, completely toxic free air. The positive pressure inside the tent prevents the diffusion of toxic substances. The air is treated with the Filter-Blower Unit having a nominal air flow capacity of 50 m<sup>3</sup>/h (29 cfm). The air flow is sufficient to provide a minimum of 25 Pa (0.10 in Wg) positive pressure inside the tent.

The Filter-Blower Unit is based on the acknowledged Temet shelter technology originally developed for the comprehensive Civil Defense shelter program in Finland. The blower and the NBC Filter of the unit are standard components designed according to the Specific Provisions for small K-class shelters issued by the Finnish Ministry of the Interior. The blower and the filter are both type tested and approved by the Ministry and issued official approval code numbers K/420 respectively K/419.

Design criteria of the NBC Filter are as follows:

- removal of all biological warfare agents dispersed in solid powder or aerosol form including Anthrax
- removal of all blister, nerve and generally poisonous gases potentially used in chemical warfare or terrorist actions
- removal of radioactive Iodide (<sup>131</sup>ICH<sub>3</sub>) gas potentially released in an Nuclear Power Plant accident

When packed, the size of the container housing the LSS-80 System is 580 x 790 x 980 mm (22.8 x 31.1 x 38.6 in) (w x l x h) with total weight of 70 kg (154 lb.). The container is provided with a set of wheels and handlebars to facilitate the transportation.

When deployed, the size of the Protective Tent is 2500 x 3710 x 2100 mm (8'2" x 12'2" x 6'11") (w x l x h) inclusive the 750 x 750 mm (29.5 x 29.5 in) lock chamber in front of the entryway. Net inside area of the Protective Tent is 7.4 m<sup>2</sup> (80 ft<sup>2</sup>).

The tent bottom is made of wear resistant PVC-coated Polyester fabric, and side walls and ceiling are made of Polyurethane and Silicone coated Polyamide fabric. The tent is supported by overhead ropes fixed to wall or ceiling.



**The LSS-80 System setup is fast. The Protective Tent is fixed on the ceiling at four corners, the Filter-Blower Unit is installed, and the system is ready for use.**

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### LSS-80 Technical Specification

#### Pre-filter Specification

- The air intake is provided with a replaceable pre-filter cartridge having a filter class G3 in accordance with standard EN 779.

#### NBC Filter Performance

- Total gas filter capacity for Blister Agents (such as Mustard Gas) minimum 2.2 kg (4.85 lb.).
- Total gas filter capacity for Nerve Agents (such as Sarin, Soman, VX) minimum 0.52 kg (1.15 lb.).
- Total gas filter capacity for Generally Poisonous Gases (such as Hydrogen Cyanide) minimum 0.26 kg (0.57 lb.).
- Gas filter efficiency for removal of radioactive methyl iodide  $I^{131}CH_3$  99.995 % for dry air (RH max. 60 %) provided the activated carbon is dry.
- Particle filter efficiency for particles with size distribution between 0.1 and 0.3  $\mu m$  better than 99.995 % measured in accordance with standard DIN 24183.



The Filter-Blower Unit provided with Pre-Filter, NBC Filter, Blower with electric and manual drive, Air Flow Meter and Emergency Light functional in manual blower operation.



Internal overpressure inside the Protective Tent is easily sustained also in manual blower operation.



The doorway of the Protective Tent is sealed with heavy duty Velcro Tape and Zippers

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### LSS-80 Technical Specification, continued

#### Ventilation System Performance

*Nominal air flow rates:*

- 50 m<sup>3</sup>/h (29 cfm) in electric motor drive.
- 35 m<sup>3</sup>/h (20 cfm) in hand crank drive.
- The ventilation flow rate is designed to keep the carbon dioxide (CO<sub>2</sub>) content below 0.5 vol.% even when the protective tent is occupied by the maximum number of persons for an extended period of time.
- Minimum positive pressure sustained in the Protective Tent 25 Pa (1.0 in Wg).

#### Blower Unit Specification

- Blower Unit with electric motor 125 V, 60 Hz (or 230 V, 50 Hz), 190 W, 1-phase.
- Blower provided with hand crank for manual operation. Max. power input in manual blower operation 60 W.
- Blower provided with a 6 V mini-generator feeding a 3 W emergency light in manual blower operation.

#### Protective Tent Material Specification

*Bottom material:*

PVC-coated 1100 dtex polyester fabric

*Material of side walls and ceiling*

Polyurethane and silicone coated 235 dtex polyamide fabric



The LSS-80 Protection System doorway is provided with an airlock to make possible entry in the Protective Tent without compromising the positive pressure in the tent

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