Strata Safety Emergency Refuge Chambers are complete safety systems designed to provide immediate refuge and breathable air in the event that air quality in the working environment becomes compromised. They are intended to be an alternative option when escape is not possible.

### CONSTRUCTION

Strata Safety’s chambers are purpose-built to customer specifications. They are constructed to withstand harsh underground environments during emergency situations and remain completely airtight. The floor structure is built of ¼ inch thick (6mm), non-slip floor plate with fully-welded walls along all sides. The entry door is standard 70 inch h x 30 inch w (178 cm x 76 cm) and is fitted with a 24 in x 16 in (61 cm x 41 cm) viewing window made from laminated impact and fire-resistant polycarbonate.

### AIRLOCK

All Strata chambers include an Airlock entry sectioned off by an interior wall and either a secondary steel door or a clear, heavy-duty curtain. This Airlock partition minimizes contaminants entering the chamber when the main access door is opened. There is also an optional purge air system that will completely flush airlock prior to occupants’ entrance into the main chamber.

<table>
<thead>
<tr>
<th>Persons</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (ft / m)</td>
<td>12 / 3.6</td>
<td>14.5 / 4.4</td>
<td>18 / 5.5</td>
<td>21 / 6.4</td>
<td>25.6 / 7.8</td>
<td>30 / 9.2</td>
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<tr>
<td>Width (ft / m)</td>
<td>7 / 2.2</td>
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<td>Height (ft / m)</td>
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<tr>
<td>Approx. Weight (lbs/kg)</td>
<td>9,040 / 4,100</td>
<td>9,260 / 4,200</td>
<td>11,023 / 5,000</td>
<td>12,125 / 5,500</td>
<td>14,110 / 6,400</td>
<td>17,000 / 7711</td>
</tr>
</tbody>
</table>

Note: Dimensions and weights are based on a 48-hour unit with battery backup, a double door Airlock entry, and a STRATA 24-volt Cooling System.
BREATHABLE AIR
PRIMARY SOURCE OF BREATHABLE AIR

*Mine air connection for an indefinite supply of air.*

Air from the mine's compressed air lines passes through a high-quality air filtration system and silencer to remove any oil, water, odor or organic compounds. The flow of air maintains positive pressure throughout the chamber, and a non-return valve controls the pressure.

CARBON MONOXIDE DIVERSION SYSTEM

The optional Strata Carbon Monoxide (CO) Diversion System is a fully automatic system that monitors the quality of the air entering a mine refuge alternative through compressed mine-air supply lines, and automatically re-routes the air if the supply becomes contaminated with CO.

CARBON MONOXIDE REMOVAL

Strata currently offers CO scrubbing solutions for human produced carbon monoxide using a CO catalyst reactor incorporated into the carbon dioxide scrubber.

SECONDARY SOURCE OF BREATHABLE AIR

*On board back-up air supply for a minimum of 48 hours.* All Strata chambers are equipped with compressed oxygen cylinders, soda lime chemicals and an active carbon dioxide scrubber. In the event mine air is lost or unavailable, the back-up air system is activated. Supplies are scalable up to 96 hours.

STRATA ACTIVEAIR™

Self-contained units that remove carbon dioxide from enclosed areas and replenish oxygen levels at controlled rates. The system utilizes compressed oxygen from cylinders and soda lime chemicals in spill-proof cartridges. Individual flow-rate controls are fitted to each low pressure oxygen cylinder to regulate the release of oxygen into the environment. These are set according to the number of occupants and provide up to 5.5 LPM distribution per oxygen cylinder.

SCRUBBER COMPONENTS:

- Scrubber Body
- On/Off Switch
- Fans/Finger Guards/Batteries
- Electronic Cartridge Change Out Timer with Alarm
- Strata Decals and Operating Instructions
- Trolex Sentro 1 CO₂ Sensor
- Trolex Sentro 1 O₂ Sensor
- Higher Decibel Auxiliary Alarm
TRANSFORMER

A step-down transformer included and operates off 220/110 VAC/60 Hz. We are able customize our electrical system to meet any power requirements.

APPARENT TEMPERATURE COOLING SYSTEM

A complete industrial grade, Direct Current Air Conditioning System with de-humidifying control is available as an option. *Note: The amount of heat produced by human occupants, CO₂ scrubbing over a 48-hour period and other site-specific variables may create a very hazardous environment. In this case, an air conditioning system is highly recommended.

DC BACKUP POWER

Each chamber is equipped with a fully automatic 24-volt, battery backup system. This system consists of a bank of gel, fiber mat, and crush-proof batteries connected via a charging module. In stand-alone backup mode, the batteries will provide power to the air conditioner, the CO₂ scrubber, the lighting systems, any atmospheric monitoring equipment and any installed communication system. The standard duration of battery life supplied is 48 hours (scalable to customer preference).

LIGHTING AND ALARM

Six clear 24-volt LED lights are mounted on the ceiling of the chamber. One red and one blue 24-volt LED light is mounted above the door on the outside of the chamber for identification and location. These are wired into the Lighting Module Switch & Alarm Kit with manual override.

SEATING AND STORAGE

Storage facilities are provided under the seats and overhead. The seats are constructed from high-grade materials to provide the most comfort and durability.
EMERGENCY SIDE ESCAPE HATCH

To protect against possible rock falls barracading the main entrance of the chamber which could potentially trap occupants inside, a 34in x 24in (86cm x 61cm) inward-opening rear escape hatch with a polycarbonate viewing window is provided as a secondary escape route.

PAINT

The chamber exterior is painted safety yellow or white (according to customer preference) and the interior is a white finish. The external paint is a Mastic coating in compliance with high-wear resistance codes, and the interior coating is suitable for human occupation according to Occupational Health Regulations.

PRIVATE SANITATION

A private lavatory area is standard in all chambers. It includes a portable chemical toilet with at least a five-gallon water reserve tank, concealed behind an opaque privacy curtain in the airlock compartment.

FOOD/WATER

Two and a quarter quarts of drinking water is provided per person per day; individually packaged and stored under the seats. Food, in the form of emergency energy bars, is provided for all occupants. 2000 calories per person, per day.
CUSTOMIZATION

The sizes of Strata chambers can be customized and equipped according to specific customer requirements. A few examples of Strata’s offerings:

- Tunneling (reduced width)
- Low profile (reduced height)
- Powerless (air-powered and MSHA approved components)
- Compact and mobile (small, lightweight and wheel packages)

SAFETY AND DIRECTIONAL DECAL PACKAGE

Chambers are fitted with large reflective safety and identification decals, as well as signs on all four sides that include directional arrows indicating the entrance. A red and white reflective band encircles the chamber to assist in unit location amid deteriorating conditions.

HANDLING

As a standard feature, each chamber is equipped with forklift guides, a skid base and lifting facilities for a crane. A crash bar is fitted around the structure to minimize damage during transportation. Special lifting guides and attachments can be supplied as required to lower the unit down a shaft.

FIRST AID & FIRE EXTINGUISHER(S)

First aid kits containing supplies to suit the intended number of occupants is mounted on the wall of the main chamber.

20lb (9kg) ABC dry chemical fire extinguishers are provided in all chambers. Mounted and secured inside the airlock compartment and/or placed beneath the seats.

ATMOSPHERIC MONITORING

Continually monitor multiple chamber functions simultaneously. For instance:

- Gas Monitoring
- Battery Voltage Indicator
- Battery Temperature indicator
- Temperature inside & outside the chamber
- Door “OPEN” Sensor (optional)
- Remotely Turn Emergency Chamber Lights on during emergency
- Remotely Turn Emergency Siren on during emergency

- IP Fiber Camera

Remotely monitor the inside of refuge chamber in real time. Data transmitted via mine’s fiber network and relayed to the surface.
A wheel and/or tow bar package can be added to facilitate easier mobility. Wheels are made of solid, highly resistant rubber (non-air filled).