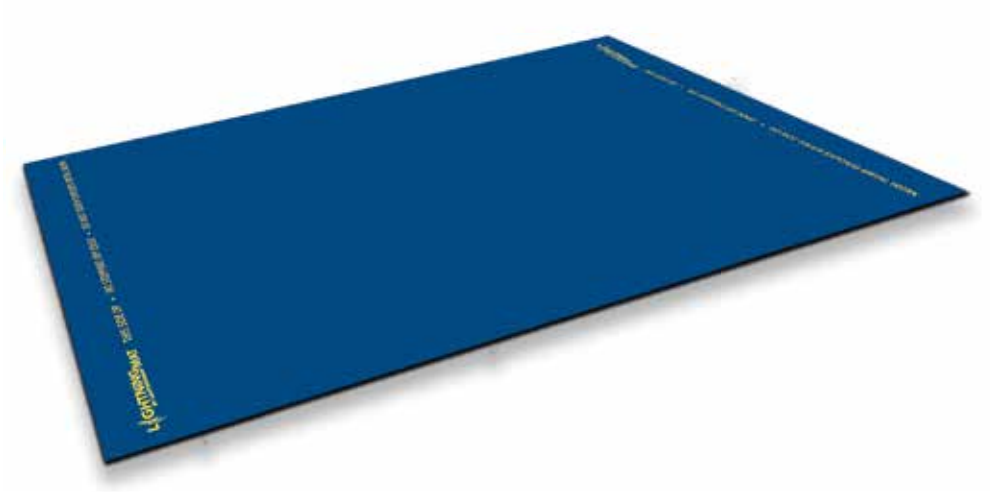
Lightning & Surge
TECHNOLOGIES

Lightningman™ LightningMat
EPR Safety Mat



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Earth Potential Rise (EPR) - The misunderstood lightning risk

Electrical discharge events such as lightning strikes and electrical power system faults present serious electrocution hazards to any person in close proximity to the "Earth Potential Rise" (EPR) that accompanies such high potential events. It is widely estimated that 85% of all Lightning related injury and fatality statistics are attributed to this EPR condition, whilst outdoor workers represent one of the highest percentages within the lightning injury statistics.

The significance of this EPR risk is such that all Electricity Regulators worldwide have mandated the use of EPR Controls in all High Voltage facilities, however such controls are large and cumbersome, and typically comprise of large and permanently installed buried earth mats, which are costly and are not suitable for temporary, or portable application in other higher risk EPR environments.

Introducing the Lightningman™ LightningMat EPR Safety Mat

The ***LightningMat*** **EPR Safety Mat** offers unique and innovative new approach to EPR Risk Mitigation.

The ***LightningMat*** **EPR Safety Mat** works by redistributing the surface voltage profile associated with EPR, and reducing dangerous potential gradients across the mat structure.

Any persons situated upon the ***LightningMat*** **EPR Safety Mat** during an EPR event, should be equipotential with the mat, such that they will not be exposed to significantly differing voltage gradients that result from EPR .

The ***LightningMat*** **EPR Safety Mat** will therefore prove invaluable to those groups working exposed to the elements, and who may have a limited access to appropriate safe shelter.

Additionally, those working with/ or in close proximity to long conductive elements, such as Rail Lines, Pipelines, and Power/Signal lines, will also benefit from the protection offered by the LightningMat.

Whilst the ***LightningMat*** **EPR Safety Mat** can be used without an electrical bond to nearby touchable objects (since it redistributes the surface voltage profile), enhanced performance and voltage reduction is achieved, wherever an electrical bond is used.

The flexibility and light weight of the ***LightningMat*** **EPR Safety Mat** offers simple field application, and an ease in portability.

LIGHTNING MAT BY LIGHTNINGMAN™

The ***LightningMat*** **EPR Safety Mat** provides a simple means for mitigating the EPR hazard via its unique three-layer design (Figure 1).

All of the layers are highly flexible, hence enable the mat to be rolled and unrolled as required (Figure 2).

An additional product option is available that enables mats to be joined electrically, to create longer mats as required (Figure 3).

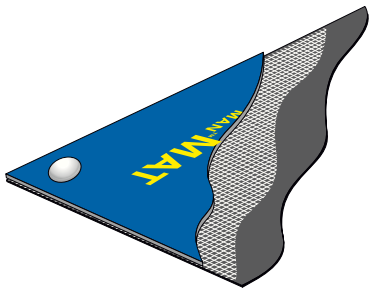

Figure 1.
Three layer construction and corner eyelet of the EPR Safety Mat.

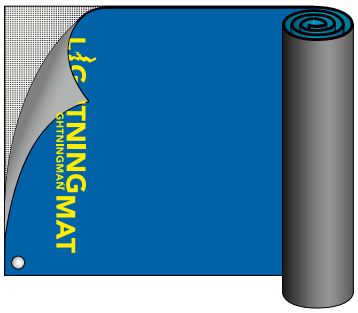

Figure 2.
The EPR Safety Mat's unique three-layer design and rollability for ease of portability.

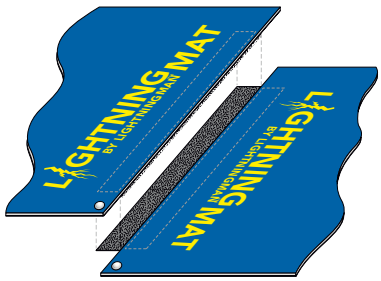

Figure 3.
The EPR Safety Mat can easily be rolled and unrolled as required, and can be joined together in multiple sections.

- The upper layer insulates the asset from the electrically-conductive layer.
- The central, electrically-conductive layer rapidly equalises the electrical potential across the mat
- The lower layer, is a special electrically-conductive elastomer that protects the central layer and provides electrical continuity to that layer.

Typical application - Remote Exploration Camp

In the following example, LightningMat EPR Safety mats are used as flooring within the accommodation and common areas of a remote camp application.

When used in conjunction with overhead catenary shield wires, as shown in Figure 4, this arrangement offers a robust means by which a significant reduction in the overall risk probability can be achieved.

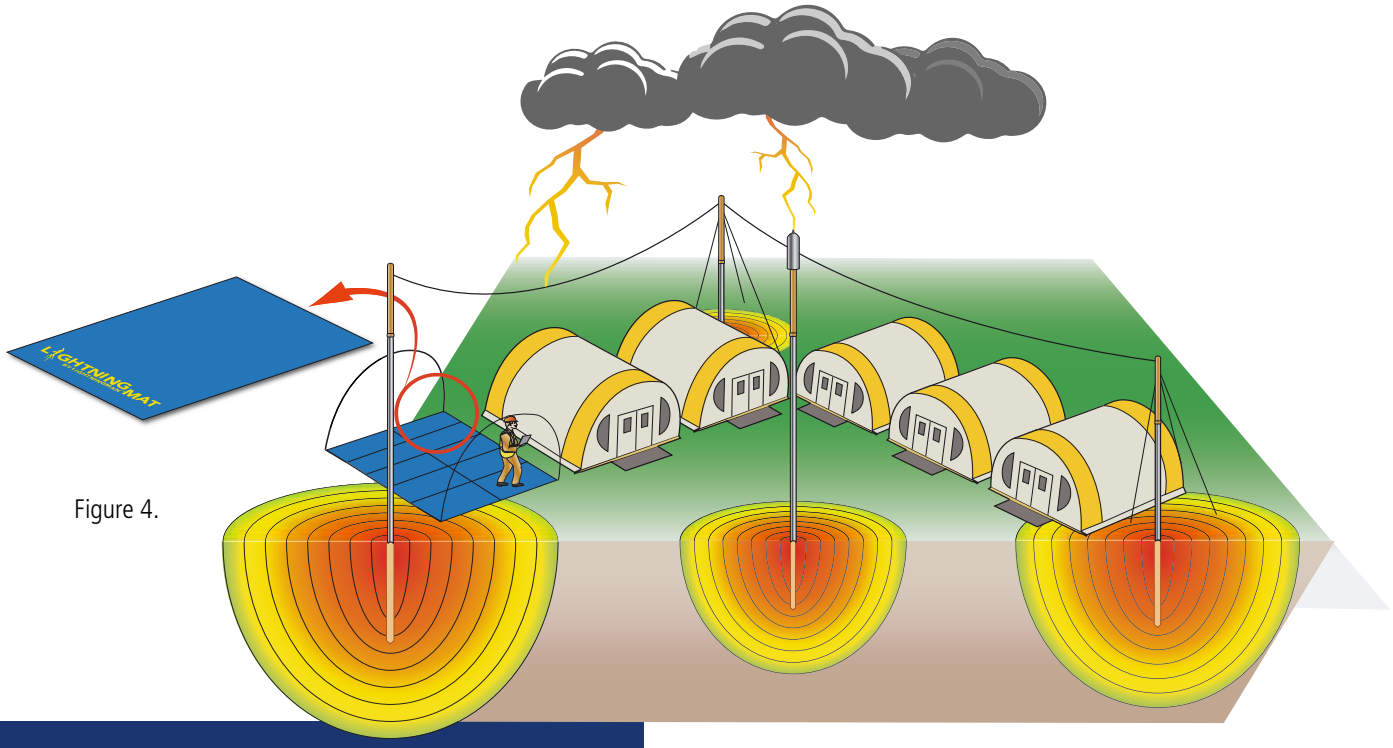

Figure 4.

EPR Safety Mat Features

- **Mitigation of EPR hazards to personnel from lightning discharges and other fault currents injected into the ground**
- **Unique three-layer design and technology to redistribute surface potential gradients**
- **High degree of portability and deployment (easily unrolled and rolled up)**
- **Can be easily joined to create a safety mat of any desired size**

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LightningMat EPR Safety Mat Typical Applications

- Remote Tented Exploration Camps
- Exploration Drill Rigs
- Mining and Resource outdoors personnel
- Oil and Gas personnel
- Fire and emergency Services
- Remote environmental personnel
- Electrical personnel
- Communications personnel
- Rail Maintenance crews
- Pipeline Maintenance Crew
- Public area shelters (Council Gazebos)
- Military tent camps
- Scouting
- Camping
- Airport operations
- Lightning Safety Shelters
- Golf Course Shelters
- Around large structures
- Along metallic fences
- Racecourses
- Livestock
- Zoos
- Piggeries

Test Reports and Technical Papers

Upon request Lightning & Surge Technologies can provide a selection of test reports and technical papers.

- Review of testing methodology applied to EPR safety mat. (University of Woolongong, Australia).
- Test report, IEC 61111:2009.
- Technical Paper: EPR safety mat, statistics on lightning and power related injuries.
- Technical Paper: EPR safety mat, modelling and field testing summary.

Specifications

Ordering Code:	EPRSM-1M
Description:	Earth Potential Rise Safety Mat 1.m x 1.5m, complete with Bonding Kit
Material:	1 – NBR-PVC rubber (non-conductive) 2 – Stainless steel (316L) 3 – NBR-PVC rubber (conductive)
Finish:	1 – Coarse fabric, non-slip (top layer) 2 – Fine wire mesh (middle layer) 3 – Medium fabric, non-slip (bottom layer)
Colour:	Royal Blue
Nominal Thickness (total):	3.2 mm
Standard Width:	1.5 metres
Standard Length:	1 metre
Weight:	< 7 kg per lineal metre
Markings:	35 mm embossed labelling 100 mm from each edge, bright yellow lettering
Standards:	IEC 61111, IEEE Std. 81, ENA EG1

Accessories

Bonding Kit:	Electrical connection kit for bonding the EPR Safety mat to adjacent equipment. Kit comprises: 2 metre single core flexible conductor with black insulation and heavy duty spring clamp
Joining Kit:	Mechanical connection kit for electrically joining two or more mats.
Packaging Fasteners:	Fastening straps for securing rolled by mat.
Supplied as:	2 x Velcro straps

Customised EPR Safety Mat

To customise your Safety Mat:	EPRSM – XMBJ X = Mat length B = Bonding Kit J = Joining Kit

Notes

- Nominate length of Mat "X"
- Include "B" in Product Code if Bonding Kit is required
- Include "J" if Joining Kit is required

Lightning & Surge TECHNOLOGIES

WE DON'T KNOW WHERE OR WHEN LIGHTNING WILL STRIKE,

BUT WE CAN HELP YOU PREPARE YOUR BUSINESS TO DEAL WITH IT.

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