



Chequered Electrical Mat as per IS: 5424 (1969)

TECHNICAL DATASHEET

SANDHYAFLEX Chequered Electrical Mat is a high-performance electrical safety solution designed to provide reliable insulation and enhanced slip resistance for personnel working in and around electrical installations. Manufactured from premium-quality rubber compounds, these mats are engineered to withstand specified operating voltages while delivering excellent dielectric strength, mechanical durability, and long-term safety performance under demanding industrial conditions.

The distinctive chequered surface pattern provides superior grip and traction, helping to reduce the risk of slips and falls in electrical work areas. Combined with excellent electrical insulating properties, the mat creates a protective barrier between personnel and energized equipment, significantly reducing the risk of electrical shock and improving workplace safety.

SANDHYAFLEX INDIA PVT LTD has established itself as a trusted manufacturer of high-quality electrical safety products in India, delivering insulating solutions that combine superior protection, durability, and reliability. Manufactured using carefully selected rubber compounds and advanced production techniques, these mats are designed to maintain their electrical and mechanical properties throughout their service life.

Overcoming Challenges, Delivering Excellence:

Electrical workplaces often face challenges such as accidental contact with live equipment, slippery flooring surfaces, inadequate insulation protection, moisture exposure, and demanding operating conditions. These risks can compromise personnel safety, increase the likelihood of workplace accidents, and result in costly operational disruptions.

Recognizing these challenges, SANDHYAFLEX developed its Chequered Electrical Mat range using premium-quality insulating rubber compounds designed to provide dependable electrical insulation, excellent surface grip, and long-term durability. The specially engineered chequered pattern enhances traction while maintaining the mat's insulating performance under normal operating conditions.

By delivering a durable, reliable, and high-performance electrical safety solution, SANDHYAFLEX Chequered Electrical Mats have become a preferred choice for substations, power plants, switchgear installations, transformer yards, control rooms, industrial facilities, and other critical electrical environments where personnel safety is essential.

Key Features:

- Manufactured from premium-quality insulating rubber compounds.
- Distinctive chequered anti-slip surface pattern.
- Excellent dielectric strength and electrical insulation properties.
- Suitable for use around energized electrical equipment.
- High insulation resistance for enhanced personnel safety.
- Excellent grip and slip resistance.
- Good resistance to moisture and humidity.
- Durable construction designed for long service life.
- Resistant to normal industrial wear and tear.
- Good flexibility and resilience.
- Easy to install, handle, and maintain.
- Available in various thicknesses and dimensions.
- Suitable for indoor and outdoor electrical installations.
- Provides enhanced protection against electrical shock hazards.
- Manufactured to meet applicable electrical safety requirements.

Applications:

- **Electrical Substations:** Provides insulation and slip resistance for personnel working near energized equipment.
- **Switchgear Rooms:** Installed in front of switchboards, switchgear panels, and electrical control systems.
- **Transformer Yards:** Protects personnel operating and maintaining transformers and associated equipment.
- **Control Panel Areas:** Enhances operator safety around electrical control panels and distribution systems.
- **Power Generation Plants:** Suitable for thermal, hydroelectric, solar, wind, and captive power facilities.
- **Electrical Maintenance Workshops:** Protects technicians during testing, servicing, and maintenance operations.

- **Industrial Manufacturing Facilities:** Provides electrical safety in production and processing environments.
- **Commercial Buildings:** Installed in electrical rooms, utility areas, and distribution panel locations.
- **Data Centres:** Enhances safety around UPS systems, switchgear, and critical power infrastructure.
- **Railway and Metro Installations:** Used in electrical control rooms and traction power facilities.
- **Utility and Distribution Networks:** Suitable for power transmission and distribution applications.
- **Educational and Research Institutions:** Installed in laboratories and technical facilities with electrical equipment.
- **Hospitals and Healthcare Facilities:** Used in electrical service rooms and backup power installations.
- **Renewable Energy Projects:** Suitable for solar substations, wind farms, and energy storage facilities.

History of Chequered Electrical Mats:

- **1950s** – Growing industrial electrification increased the need for protective insulating floor coverings.
- **1960s** – Electrical safety mats became widely adopted in substations and industrial facilities.
- **1969** – Introduction of IS 5424 established requirements for electrical rubber mats in India.
- **1970s** – Development of anti-slip surface patterns improved worker safety in electrical environments.
- **1980s** – Advances in rubber compounding enhanced dielectric strength and durability.
- **1990s** – Increasing industrial automation drove demand for improved electrical safety solutions.
- **2000s** – Introduction of IS 15652 modernized standards for insulating mats used in electrical installations.
- **2010s** – Enhanced manufacturing technologies improved dimensional accuracy, grip characteristics, and performance consistency.
- **2020s** – Modern Chequered Electrical Mats continue to provide essential protection in power generation, transmission, distribution, and industrial electrical systems worldwide.

Colours and Their Applications:

For Chequered Electrical Mats, colours are generally used for identification, safety coding, visibility requirements, voltage classification reference, project specifications, or customer preferences rather than indicating differences in electrical insulation performance. The insulating properties are primarily determined by the rubber compound formulation and compliance with applicable electrical safety standards.

Colour	Typical Application
Black	Standard electrical substations, switchgear rooms, transformer yards, and industrial electrical installations
Blue	Power generation facilities, utility networks, and project-specific identification requirements
Grey	Commercial buildings, control rooms, and electrical maintenance facilities
Green	Renewable energy projects, environmentally sensitive facilities, and safety-designated electrical zones
Red	Hazard-prone electrical areas, emergency power systems, and restricted-access installations
Yellow	High-visibility safety applications requiring enhanced personnel awareness
Orange	Industrial electrical workstations and temporary electrical maintenance areas
Custom Colours	Available as per client specifications and project requirements

Materials:

The Sandhyaflex Chequered Electrical Mat shall be manufactured using high-quality insulating rubber compounds designed to provide superior dielectric strength, electrical insulation, slip resistance, durability, and long-term safety performance in electrical applications.

The mats shall be manufactured using advanced mixing, calendaring, moulding, vulcanization, and finishing processes and shall be free from defects such as cracks, blisters, porosity, foreign inclusions, delamination, punctures, or surface irregularities that may adversely affect electrical insulation performance or service life.

The specially engineered chequered surface pattern shall provide enhanced grip, improved slip resistance, and increased operator safety while maintaining the required insulating characteristics.

RAW MATERIALS OF CHEQUERED ELECTRICAL MAT BY SANDHYAFLEX				
S. No.	Raw Material	Image	Typical Grade / Example	Function / Purpose
1	Natural Rubber (NR) / Synthetic Rubber (SBR) (Base Elastomers)		<ul style="list-style-type: none"> RSS-1 / RSS-2 (NR) SBR 1500 / SBR 1712 High quality elastomer grades 	<ul style="list-style-type: none"> Provides elasticity & resilience High tensile strength Excellent abrasion resistance Forms base polymer structure
2	Carbon Black (Conductive Grade)		<ul style="list-style-type: none"> N550 / N660 / N772 High structure carbon black 	<ul style="list-style-type: none"> Provides electrical conductivity Ensures low surface & volume resistivity Dissipates static charge Enhances durability
3	Zinc Oxide		<ul style="list-style-type: none"> Zinc Oxide (ZnO) Active Zinc Oxide 	<ul style="list-style-type: none"> Activates vulcanization Improves physical properties Enhances heat aging performance
4	Stearic Acid		<ul style="list-style-type: none"> Stearic Acid (Industrial Grade) 1801 / 1838 	<ul style="list-style-type: none"> Acts as activator Improves dispersion Aids in smooth processing
5	Antioxidants & Anti-Ozonants		<ul style="list-style-type: none"> 6PPD / TMQ Anti-Ozonant Wax 	<ul style="list-style-type: none"> Protects from oxidation & ozone Improves aging resistance Extends service life
6	Sulphur		<ul style="list-style-type: none"> Crude Sulphur Insoluble Sulphur 	<ul style="list-style-type: none"> Provides crosslinking Improves elasticity & strength Enhances heat resistance
7	Accelerators		<ul style="list-style-type: none"> CBS / TMTD MBTS / TBBS DPG 	<ul style="list-style-type: none"> Controls curing rate Improves mechanical properties Ensures optimum vulcanization
8	Processing Oils		<ul style="list-style-type: none"> Paraffinic Oil Aromatic Process Oil Naphthenic Oil 	<ul style="list-style-type: none"> Improves workability Reduces friction Ensures smooth mixing & calendaring

MANUFACTURING PROCESS												
	→		→		→		→		→		→	
RAW MATERIALS MIXING		CALENDERING (SHEET FORMING)		CUTTING TO SIZE		CHEQUERED TEXTURE EMBOSSING		VULCANIZATION / CURING		QUALITY INSPECTION		FINISHED CHEQUERED ELECTRICAL MAT
HIGH ELECTRICAL SAFETY	EXCELLENT INSULATION	ANTI-SLIP SURFACE	DURABLE PERFORMANCE	COMPLIANT WITH STANDARDS	LONG SERVICE LIFE							

The material shall possess adequate resistance to moisture, humidity, mechanical wear, impact loading, ageing, and normal industrial environmental conditions, ensuring dependable performance in substations, switchgear rooms, transformer yards, power plants, and other electrical installations.

Manufactured from premium-quality insulating rubber compounds, Sandhyaflex Chequered Electrical Mats provide reliable electrical protection, excellent durability, enhanced workplace safety, and long service life across a wide range of industrial, commercial, utility, and power-sector applications.

Physical and Mechanical Properties of Sandhyaflex Chequered Electrical

Mat:

S. No.	Property / Test	Requirement
1	Product Type	Chequered Electrical Mat
2	Material Composition	Insulating Rubber Compound
3	Colour	Black, Blue, Grey, Green, Red, Yellow or Other Specified Colours
4	Manufacturing Process	Vulcanized Rubber Mat
5	Shape	Flat Mat Roll
6	Surface Finish	Chequered Anti-Skid Pattern
10	Length	Standard Rolls or Custom Lengths
12	Tensile Strength	As per IS 15652 Requirements
13	Elongation at Break	As per IS 15652 Requirements
14	Electrical Insulation	Excellent
15	Dielectric Strength	As per IS 15652 Requirements
16	Insulation Resistance	High
17	Proof Voltage	As per Applicable Class Requirements
18	Breakdown Voltage	As per Applicable Class Requirements
19	Slip Resistance	Excellent
20	Water Absorption	Negligible
21	Moisture Resistance	Excellent
22	Abrasion Resistance	Excellent
23	Flexibility	Excellent
24	Impact Resistance	Good
25	Weather Resistance	Good
26	Ozone Resistance	Good
27	Chemical Resistance	Resistant to Oils, Grease, Acids, Alkalis and Mild Industrial Chemicals
28	Flame Resistance	Available in Flame-Retardant Grades
29	Operating Temperature Range	-10°C to +70°C
30	Dimensional Stability	Good
31	Applicable Standard	IS 15652:2006
32	Typical Applications	Substations, Switchgear Rooms, Transformer Yards, Control Panels and Electrical Installations
33	Country of Origin	Made in India
34	Availability	Standard and Custom Sizes Available
35	Maintenance Requirement	Low

Usage Tips:

- Select the correct voltage class based on the operating voltage of the installation.
- Ensure the mat is placed on a clean, dry, and level surface before installation.
- Inspect the mat before use for cuts, punctures, cracks, or excessive wear.
- Position the mat in front of switchboards, control panels, transformers, and electrical equipment.
- Keep the chequered surface free from dust, oil, grease, and moisture to maintain anti-slip performance.
- Avoid dragging sharp tools, heavy equipment, or abrasive materials across the mat surface.
- Follow applicable electrical safety regulations and workplace safety procedures.
- Use only mats that have been tested and approved for the intended voltage class.
- Ensure periodic inspection by qualified personnel.
- Replace damaged mats immediately to maintain workplace safety.

Maintenance and Care:

Maintaining Sandhyaflex Chequered Electrical Mats is simple and helps ensure long service life and reliable electrical protection:

- **Regular Inspection:** Check periodically for cracks, cuts, punctures, deformation, or surface damage.
- **Keep Clean:** Remove dust, dirt, oil, grease, and moisture using a clean cloth or mild cleaning solution.
- **Proper Storage:** Store in a cool, dry place away from direct sunlight, excessive heat, and ozone-generating equipment.
- **Avoid Chemical Exposure:** Prevent prolonged contact with aggressive chemicals and solvents.
- **Protect from Mechanical Damage:** Avoid dragging heavy equipment or sharp objects over the mat.
- **Maintain Surface Condition:** Keep the chequered pattern clean to preserve slip-resistant properties.
- **Periodic Testing:** Conduct electrical testing as required by company safety procedures and applicable regulations.
- **Replace Damaged Mats:** Remove and replace mats showing signs of deterioration or reduced insulation performance.

Applications by Countries:

India

- Widely used in substations, transformer yards, switchgear rooms, and industrial electrical installations.
- Commonly installed in power generation plants, manufacturing facilities, and utility networks.
- Growing demand in smart cities, metro rail projects, and renewable energy infrastructure.

China

- Extensively used in industrial plants, substations, and large-scale electrical infrastructure projects.
- Commonly installed in manufacturing facilities, power stations, and utility networks.
- Preferred for high-capacity industrial and urban development projects.

United States

- Widely used in electrical substations, power distribution facilities, and industrial plants.
- Commonly installed in commercial buildings, data centres, and utility infrastructure.
- Increasing adoption in renewable energy and critical power applications.

Europe

- Preferred for substations, switchgear installations, and industrial electrical systems.
- Commonly used in transportation infrastructure, power plants, and commercial facilities.
- Strong demand due to stringent workplace electrical safety regulations.

Middle East

- Extensively used in power generation facilities, substations, and utility networks.
- High demand in oil & gas facilities, industrial plants, and smart city developments.
- Suitable for harsh environmental and operating conditions.

Africa

- Used in power distribution systems, substations, and industrial facilities.
- Important for utility infrastructure, renewable energy projects, and public facilities.
- Growing adoption due to reliability, durability, and electrical safety requirements.

Southeast Asia

- Widely used in manufacturing facilities, electrical infrastructure projects, and utility networks.

- Growing demand from expanding industrial and urban development sectors.

Australia

- Preferred for mining operations, electrical substations, utility networks, and industrial installations.
- Commonly used where electrical safety and personnel protection are critical requirements.

Get in touch:

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