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## BOSTON RUBBERS

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Mfrs. & Exporters: CONVEYER BELTS, BELTINGS, RUBBER SHEETS


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# PVC INSULATION

PVC insulation sheets are specialized thermoplastic materials designed to provide reliable electrical insulation and mechanical protection in a wide range of applications. Made from polyvinyl chloride, they combine durability with flexibility, offering resistance to moisture, chemicals, and abrasion while maintaining stable dielectric strength. These sheets are commonly used in switchboards, control panels, transformers, and high-voltage equipment, where safety and performance are critical. Depending on the formulation, PVC insulation sheets can be tailored to meet specific requirements such as flame retardancy, high dielectric strength, oil resistance, or chemical resistance, making them a versatile and economical choice for industries ranging from power distribution to automotive and chemical processing.

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# PVC INSULATION PRODUCTS

**General Purpose PVC Insulation Sheet**
Standard dielectric strength, economical option for switchboards and control panels.

**Flame Retardant PVC Insulation Sheet (FR)**
Self-extinguishing, fire-resistant formulation for electrical rooms, substations, and safety compliance.

**High Dielectric Strength PVC Insulation Sheet**
Superior breakdown voltage, used in transformers, high-voltage panels, and substations.

**Chemical Resistant PVC Insulation Sheet (CR)**
Resistant to acids, alkalis, and corrosive chemicals; ideal for chemical plants and laboratories.

**Oil Resistant PVC Insulation Sheet (OR)**
Withstands oils, lubricants, and hydrocarbons; common in automotive, machinery, and oil-exposed areas.

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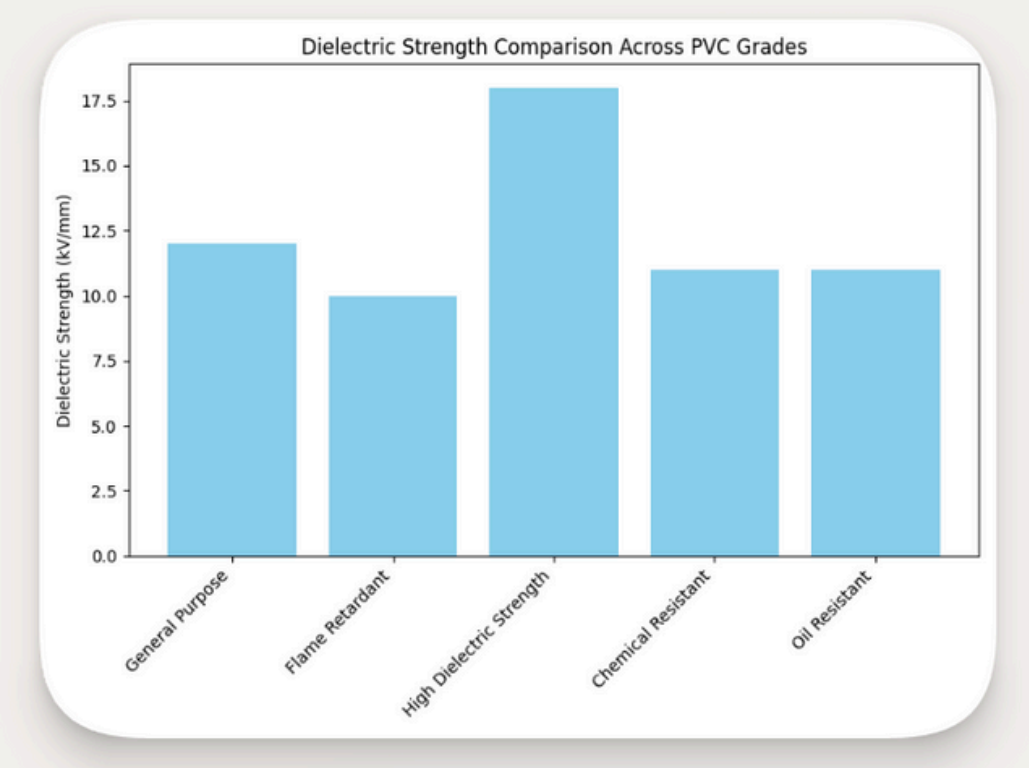
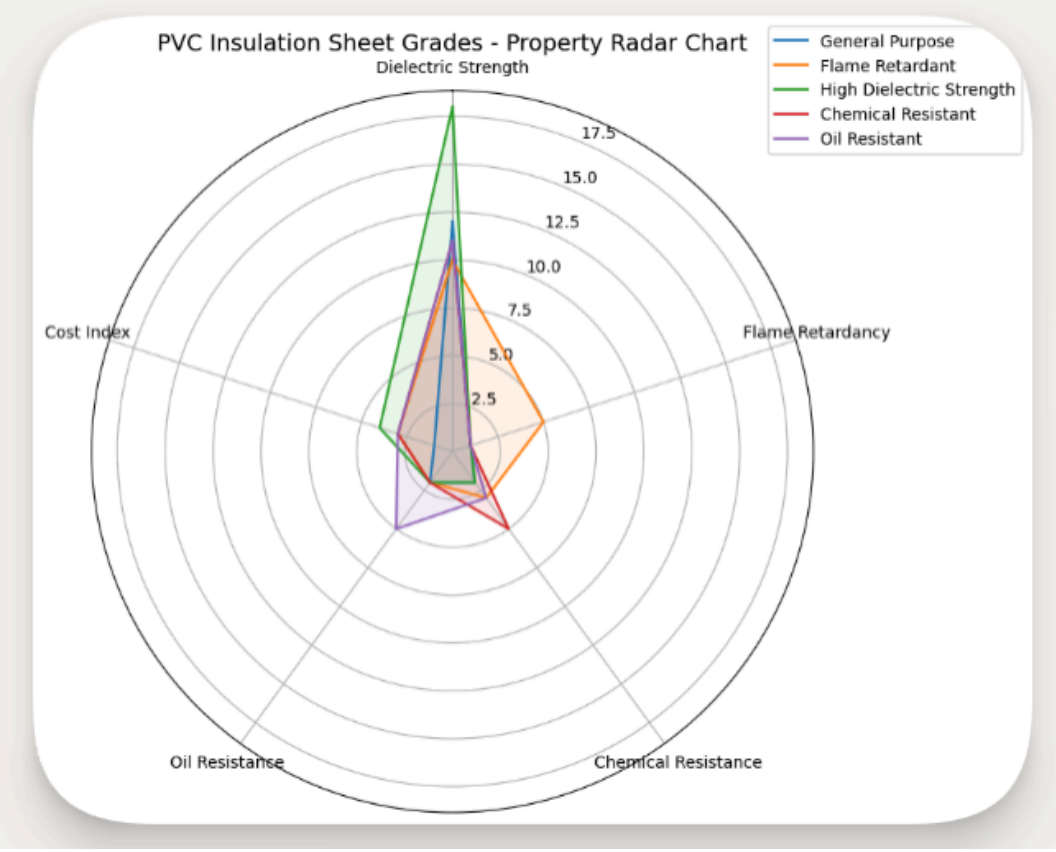
| Grade Name | Standard | Basic Property | Typical Applications |
|---|---|---|---|
| General Purpose PVC Insulation Sheet | IS/IEC General Insulation | Standard dielectric strength, economical option | Switchboards, control panels |
| Flame Retardant PVC Insulation Sheet (FR) | IS 3402 / IEC 60695 | Self-extinguishing, fire-resistant formulation | Electrical rooms, substations, safety areas |
| High Dielectric Strength PVC Sheet | IEC 60243 | High breakdown voltage, superior insulation | Transformers, high-voltage panels, substations |
| Chemical Resistant PVC Sheet (CR) | ASTM D543 | Resistant to acids, alkalis, corrosive chemicals | Chemical plants, labs, corrosive environments |
| Oil Resistant PVC Sheet (OR) | ASTM D471 | Resistant to oils, lubricants, hydrocarbons | Automotive, machinery, oil-exposed areas |


Dielectric Strength Comparison Across PVC Grades
Dielectric Strength (kV/mm)
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
General Purpose
Flame Retardant
High Dielectric Strength
Chemical Resistant
Oil Resistant


PVC Insulation Sheet Grades - Property Radar Chart
Dielectric Strength
Flame Retardancy
Chemical Resistance
Oil Resistance
Cost Index
17.5
15.0
12.5
10.0
7.5
5.0
2.5
General Purpose
Flame Retardant
High Dielectric Strength
Chemical Resistant
Oil Resistant

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# 1. GENERAL PURPOSE PVC INSULATION SHEET

This is the baseline grade used in everyday electrical insulation. It offers standard dielectric strength, good mechanical balance, and economical performance. It's widely applied in switchboards, control panels, and general electrical installations where cost efficiency and reliable insulation are the main priorities.

| Attribute | Details |
|---|---|
| Grade Name | General Purpose PVC Insulation Sheet |
| Standard / Compliance | IS/IEC General Electrical Insulation |
| Key Property | Standard dielectric strength, economical option |
| Typical Applications | Switchboards, control panels, general electrical installations |
| Comparison Metric | Dielectric Strength: 10 kV/mm |
| Reference | IS/IEC General Electrical Insulation; typical GP performance |

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# TECHNICAL DATA

| Property / Test | Value | Units | Tolerance / Flag |
|---|---|---|---|
| Dielectric Strength | 10 | kV/mm | Min. |
| Volume Resistivity | 1e14 | Ohm-cm | Min. |
| Tensile Strength | 15 | MPa | Min. |
| Elongation at Break | 250 | % | Min. |
| Hardness | 65 | Shore A | ±5 |
| Water Absorption | 0.5 | % | Max. |
| Thermal Stability | 70 | °C | Max. |
| Impact Strength | 50 | J/m | Min. |
| Flexibility Test | Pass | — | Fixed |
| Surface Finish | Smooth/Matte | — | Fixed |
| Migration Test | Pass | — | Fixed |
| Cold Brittleness Temperature | -10 | °C | Max. |
| Heat Ageing Test | -20 | % change | Max. |
| UV Resistance | Moderate | — | Fixed |
| Reference Compliance | IS/IEC General | — | Fixed |

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# 2. FLAME RETARDANT PVC INSULATION SHEET (FR)

This grade is engineered for environments where fire safety is critical. It incorporates self-extinguishing properties and a higher oxygen index, ensuring compliance with flame retardancy standards. FR PVC sheets are widely used in substations, electrical rooms, and other installations where minimizing fire risk is essential.

| Attribute | Details |
|---|---|
| Grade Name | Flame Retardant PVC Insulation Sheet (FR) |
| Standard / Compliance | IS 3402 / IEC 60695 |
| Key Property | Self-extinguishing, fire-resistant formulation |
| Typical Applications | Electrical rooms, substations, safety-critical installations |
| Comparison Metric | Flammability Rating: Self-extinguishing; Oxygen Index ≥ 28% |
| Reference | IS 3402 / IEC 60695 – Flame Retardant performance expectations |

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# TECHNICAL DATA

| Property / Test | Value | Units | Tolerance / Flag |
|---|---|---|---|
| Flame Test | Self-extinguishing | — | Pass |
| Oxygen Index | 28 | % | Min. |
| Smoke Density | Low | — | Fixed |
| Dielectric Strength | 12 | kV/mm | Min. |
| Volume Resistivity | 1e14 | Ohm-cm | Min. |
| Tensile Strength | 16 | MPa | Min. |
| Elongation at Break | 250 | % | Min. |
| Hardness | 70 | Shore A | ±5 |
| Heat Ageing Test | -25 | % change | Max. |
| Cold Brittleness Temperature | -15 | °C | Max. |
| Surface Finish | Smooth/Matte | — | Fixed |
| Migration Test | Pass | — | Fixed |
| UV Resistance | Moderate | — | Fixed |
| Thermal Stability | 80 | °C | Max. |
| Reference Compliance | IS 3402 / IEC 60695 | — | Fixed |

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# 3. HIGH DIELECTRIC STRENGTH PVC INSULATION SHEET

This grade is designed for applications where superior electrical insulation is critical. With a dielectric strength of up to 20 kV/mm and very high volume resistivity, it ensures reliable performance in high-voltage environments. It is widely used in transformers, switchgear, and substations, where breakdown resistance and long-term stability are essential.

| Attribute | Details |
|---|---|
| Grade Name | High Dielectric Strength PVC Insulation Sheet |
| Standard / Compliance | IEC 60243 |
| Key Property | High breakdown voltage, superior insulation performance |
| Typical Applications | Transformers, high-voltage panels, substations |
| Comparison Metric | Dielectric Strength: 20 kV/mm |
| Reference | IEC 60243 – Methods of test for electrical strength of insulating materials |

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# TECHNICAL DATA

| Property / Test | Value | Units | Tolerance / Flag |
|---|---|---|---|
| Dielectric Strength | 20 | kV/mm | Min. |
| Volume Resistivity | 1e15 | Ohm-cm | Min. |
| Tensile Strength | 18 | MPa | Min. |
| Elongation at Break | 280 | % | Min. |
| Hardness | 70 | Shore A | ±5 |
| Heat Ageing Test | -20 | % change | Max. |
| Cold Brittleness Temperature | -20 | °C | Max. |
| Surface Finish | Smooth/Glossy | — | Fixed |
| Migration Test | Pass | — | Fixed |
| UV Resistance | High | — | Fixed |
| Thermal Stability | 90 | °C | Max. |
| Impact Strength | 60 | J/m | Min. |
| Flexibility Test | Pass | — | Fixed |
| Water Absorption | 0.3 | % | Max. |
| Reference Compliance | IEC 60243 | — | Fixed |

# 4. CHEMICAL RESISTANT PVC INSULATION SHEET (CR)

This grade is formulated to withstand exposure to corrosive chemicals such as acids, alkalis, and solvents. It ensures reliable electrical insulation while maintaining mechanical integrity in harsh environments. CR PVC sheets are widely used in chemical plants, laboratories, and industrial facilities where chemical exposure is a constant risk.

| Attribute | Details |
|---|---|
| Grade Name | Chemical Resistant PVC Insulation Sheet (CR) |
| Standard / Compliance | ASTM D543 |
| Key Property | High resistance to acids, alkalis, and corrosive chemicals |
| Typical Applications | Chemical plants, laboratories, corrosive industrial environments |
| Comparison Metric | Chemical Resistance Index: High |
| Reference | ASTM D543 – Evaluating resistance of plastics to chemical reagents |

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# TECHNICAL DATA

| Property / Test | Value | Units | Tolerance / Flag |
|---|---|---|---|
| Chemical Resistance Class | High | — | Fixed |
| Acid Compatibility | Good | — | Fixed |
| Base Compatibility | Good | — | Fixed |
| Solvent Compatibility | Moderate | — | Fixed |
| Dielectric Strength | 12 | kV/mm | Min. |
| Volume Resistivity | 1e14 | Ohm-cm | Min. |
| Tensile Strength | 16 | MPa | Min. |
| Elongation at Break | 250 | % | Min. |
| Hardness | 68 | Shore A | ±5 |
| Heat Ageing Test | -25 | % change | Max. |
| Cold Brittleness Temperature | -15 | °C | Max. |
| Water Absorption | 0.4 | % | Max. |
| Surface Finish | Smooth/Matte | — | Fixed |
| Migration Test | Pass | — | Fixed |
| Reference Compliance | ASTM D543 | — | Fixed |

# 5. OIL RESISTANT PVC INSULATION SHEET (OR)

This grade is formulated to withstand exposure to oils, lubricants, and hydrocarbons without losing its insulating properties. It is particularly useful in automotive, machinery, and industrial environments where oil contamination is common. OR PVC sheets maintain electrical insulation while resisting swelling and degradation, making them a reliable choice for heavy-duty applications.

| Attribute | Details |
|---|---|
| Grade Name | Oil Resistant PVC Insulation Sheet (OR) |
| Standard / Compliance | ASTM D471 |
| Key Property | Resistant to oils, lubricants, and hydrocarbons |
| Typical Applications | Automotive, machinery, oil-exposed industrial areas |
| Comparison Metric | Oil Resistance Level: High (swelling ≤ 5%) |
| Reference | ASTM D471 – Standard test method for rubber property — effect of liquids |

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# TECHNICAL DATA

| Property / Test | Value | Units | Tolerance / Flag |
|---|---|---|---|
| Oil Swelling Test | ≤ 5 | % change | Max. |
| Hydrocarbon Exposure Test | Pass | — | Fixed |
| Dielectric Strength | 12 | kV/mm | Min. |
| Volume Resistivity | 1e14 | Ohm-cm | Min. |
| Tensile Strength | 16 | MPa | Min. |
| Elongation at Break | 250 | % | Min. |
| Hardness | 70 | Shore A | ±5 |
| Heat Ageing Test | -25 | % change | Max. |
| Cold Brittleness Temperature | -15 | °C | Max. |
| Water Absorption | 0.4 | % | Max. |
| Surface Finish | Smooth/Matte | — | Fixed |
| Migration Test | Pass | — | Fixed |
| UV Resistance | Moderate | — | Fixed |
| Thermal Stability | 80 | °C | Max. |
| Reference Compliance | ASTM D471 | — | Fixed |

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