



Eco-Spark Tile

What are Eco-Spark Tiles?

Eco-Spark tiles are specialized flooring components crafted from materials like crystals or ceramics. These tiles have the unique ability to generate electrical charge when subjected to mechanical stress or pressure, such as when someone walks or applies force on them. This distinctive property arises from the material's ability to convert mechanical energy into electrical energy.

When pressure is applied to these tiles, it causes a displacement of positive and negative charge centres within the material. This displacement results in the generation of an external electric field, leading to the production of electricity. In essence, Eco-Spark tiles capture the kinetic energy from footsteps or pressure and transform it into usable electrical power, making them valuable for harvesting energy from human movement in various public spaces.

Supporting Schemes and Policies:

1) **Make In India:** Championing local materials and technology, the project embodies the ethos of indigenous manufacturing, supporting innovation within the country.

2) **Atmanirbhar Bharat:** Embracing indigenous materials, piezoelectric tiles mirror the self-reliance vision, highlighting innovation and self-sufficiency in technology.

3) **National Electric Mobility Mission Plan 2020:** Offering potential renewable energy sources for electric mobility, these tiles complement the mission's drive towards eco-friendly transportation.

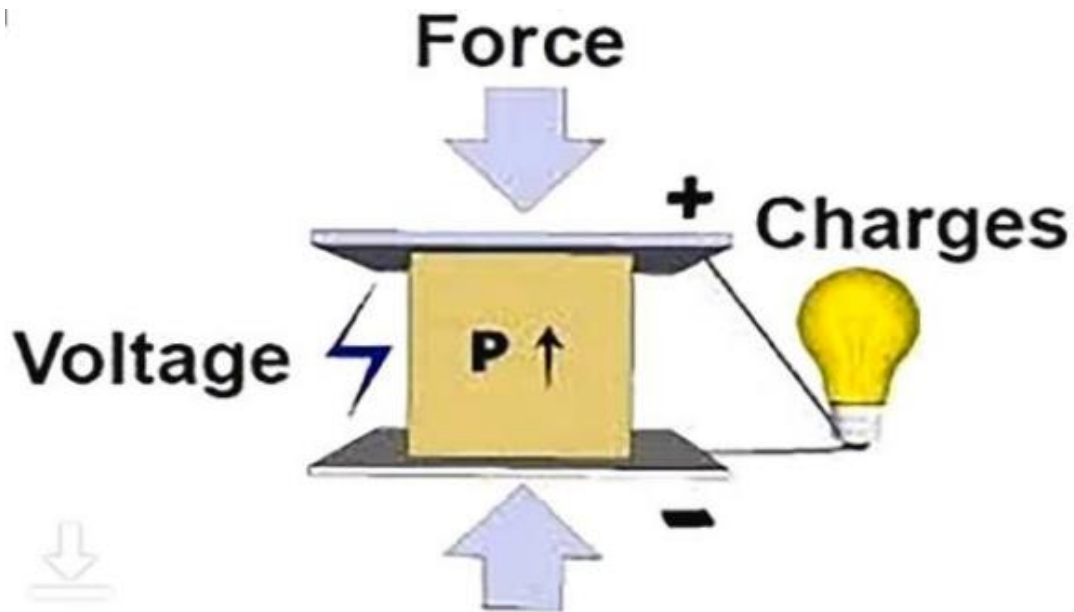
4) **Swachh Bharat Abhiyan:** The use of recycled plastic aligns with the mission's goal of environmental cleanliness and sustainable waste management.

5) **National Action Plan on Climate Change:** Mitigating greenhouse gas emissions, these tiles play a pivotal role in India's efforts towards low-carbon development.

Beyond national policies, Eco-Spark tiles align with Mission Innovation, Clean Energy **Ministerial**, **Green Climate Fund**, the **Paris Agreement**, and the Technology Mechanism. Their presence aligns with the **Clean Energy Ministerial's** focus on promoting clean energy deployment globally and echoes the aims of Mission Innovation, aimed at fostering transformative energy technologies worldwide.

Furthermore, Eco-Spark tiles support the **Green Climate Fund's** goals by presenting a practical means of generating renewable energy, contributing to mitigating greenhouse gas emissions. Their role in promoting clean and renewable energy sources harmonizes with the **Paris Agreement's** aspirations of limiting global warming and combating climate change. As part of the Technology Mechanism, these tiles are an innovative technology-driven solution for sustainable energy generation, aligning with efforts to ease technology development and transfer for climate change mitigation and adaptation on a global scale.

How do Eco-Spark [Piezoelectric] Tiles produce electricity?



Piezoelectric tiles function through a phenomenon known as the piezoelectric effect. Crafted from materials like crystals or ceramics, these tiles have a unique ability to convert mechanical stress or pressure into electrical energy. When force is applied to these materials, it triggers a displacement of charge centres within their structure, generating an electric field across the material. This displacement leads to the separation of charges and the later production of electricity. Essentially, the tiles capture the kinetic energy from footsteps or pressure and transform it into usable electrical power. This innovative capability allows piezoelectric tiles to play a crucial role in harvesting energy from human movement in various public spaces, contributing to sustainable energy solutions. We also plan to incorporate a coil with the composition 20% lead zirconate titanate and 80% stainless steel, aiming to harness typically wasted heat energy from conventional piezoelectric tiles. This innovative design looks to perfect energy use efficiently.