

Bio-Derived Foam

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About Bio-Derived Foam:

- Bio-derived foam offers a sustainable alternative to plastic materials used in traditional **Fast-Moving Consumer Goods (FMCG)** packaging.
- The foam is made from **bio-based epoxy resins**, made from non-edible oils approved by the US Food and Drug Administration (FDA) and **hardeners derived from tea leaves**.
- It offers industries an **environmentally responsible alternative** to conventional expanded polystyrene (EPS) and polyurethane foam.
- The new foam's unique chemical structure features dynamic covalent bonds that can **break and reform under external stimuli**, allowing the foams to be mechanically reprocessed or dissolved in eco-friendly solvents without losing strength.
- Unlike conventional packaging materials that persist in landfills for centuries, these bio-foams can **disintegrate within three hours** when exposed to eco-friendly solvents at 80°C.
- It disintegrates safely in landfills **without contaminating groundwater**, offering a sustainable alternative to traditional plastic foams.
- **Significance:** The Indian foam market is currently valued at \$7.9 billion, is expected to reach \$11.1 billion by 2032, according to an analysis report by 'Research and Markets'.

- With less than 1% of the 2.3 million tonnes of plastic foam produced annually being recycled, this innovation **addresses a pressing environmental challenge.**
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Q1: What is Resin?

Resins are viscous, liquid polymers derived from organic or synthetic sources. Their benefit centres on their ability to transition from a liquid into a customisable solid, homogeneous structure.

News: IISc researchers develop recyclable, eco-friendly bio-derived foam for FMCG packaging

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