Central Institute of Petrochemicals Engineering & Technology (CIPET),
T.V.K. Industrial Estate, Guindy,
Chennai - 600 032, India.

CIPET: Intellectual Property Rights (IPR) Cell

Title of the Technology

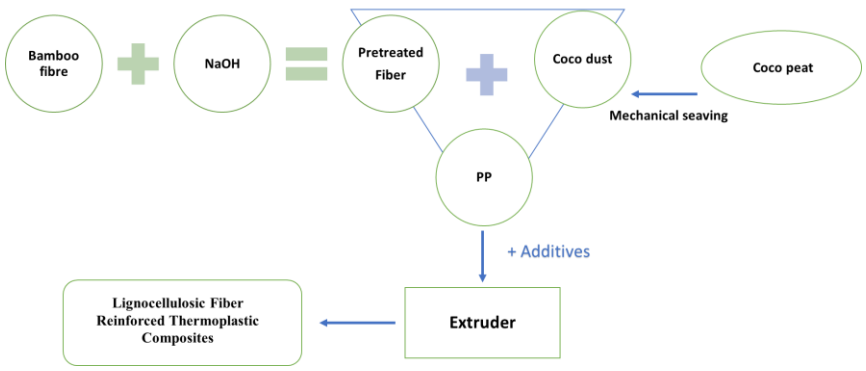
Lignocellulosic Based Composite Thermoplastic Composition and Preparation Method Thereof

Key Words: lignocellulosic fibres, Composites, Thermoplastic, Extrusion

Domain: Sustainable Materials / Green Composites

CIPET Technology Available for Licensing

Technology Description



- Converts natural waste into strong, eco-friendly plastic composites
- Improves strength and performance using special additives
- Can be made using regular plastic processing machines

Innovation and Novelty

- Uses natural lignocellulosic fibers for eco-friendly and sustainable composites
- Unique formulation enhances strength without harming the environment
- Compatible with standard manufacturing processes, reducing cost and complexity

Intellectual Property Status

- Patent application no: 41049962;
- https://doi.org/10.1007/s00289-020-03178-4
- https://doi.org/10.1007/s10965-021-02788-4

Technical Specifications

Physico-mechanical And Thermal Properties Of Composition 1, Composition 2 And Comparative Examples

Properties	Units	Composition 1	Composition 2	Comparative example
Density (g/cc)	g/cc	0.99	0.97	0.91
MFI	g/10 min	10.926	9.036	12
Yield Strength	MPa	33.48 ± 3	27.045±5	33.187±0.9
Elongation at break	%	7.736 ± 3	10.312±7	136.86±37
Flexural Strength	MPa	31.164 ± 3	24.828±4	41.45±0.9
Impact	J/m	58.855 ± 2	53.587±3	17.74±0.67
HDT	˚ C	140	130	85
Melting point	˚ C	166.50	165.43	167.17 °C

Technology Readiness Level (TRL)

- Currently at TRL 7, with system prototype demonstrated in industry validating performance and compliance.

Contact us
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Applications / Use Cases

- Applicable in automotive, construction, packaging, and consumer goods sectors.
- Solves problems of plastic waste management and reduces reliance on virgin polymers.
- Fulfils need for sustainable, cost-effective, and high-performance composite materials.

Competitive Advantage

- More cost-effective than traditional virgin polymer-based composites.
- Enhanced performance, including better mechanical strength and durability.
- Easy to process using standard thermoplastic equipment, with improved sustainability profile..

Supporting Evidence

- Pilot trials successfully completed
- Injection Moulded Car Door Panel being successfully developed at M/s TACO, Pune's site:

Commercialization Potential

- Market Demand: Growing demand for sustainable, recyclable thermoplastic composites in automotive, packaging, and construction sectors.
- Potential Customers/Partners: Automotive OEMs, packaging industries, composite manufacturers, recyclers (e.g., Reliance, AB Composites).
- Revenue Models: Licensing of technology, direct product sales, and joint venture partnerships for scaling production.

Development Timeline

- 4-6 months
- Upcoming Plans: Scale-up production, pursue additional certifications, and file international patents.

Licensing or Partnership Options

- Licensing Model: Open to both exclusive and non-exclusive licensing, based on partner requirements.
- Collaboration Opportunities: Actively seeking joint ventures, strategic partnerships, and research collaborations for scale-up and product diversification.

Originating Centre/Developer

- School for Advanced Research in Petrochemicals (SARP), Laboratory for Advanced Research in Polymeric Materials (LARPM), Central Institute of Petrochemicals Engineering and Technology (CIPET), B-25, CNI Complex, Patia, Bhubaneswar, Odisha 751024, India

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