

Chemical Tech

Modified Polyurea Coating Incorporating Waste Plastic Additive

Technology Domain: Polymer Technology

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Status (Patent/TRL): Granted Patent / TRL 3

Technology Summary:

This invention provides a novel composition for a two-component polyurea coating that effectively utilizes waste polystyrene plastic to improve key properties. The key technical solution involves incorporating a waste plastic solution (polystyrene dissolved in toluene) into a standard two-component polyurea resin, which is then mixed with a polyurea hardener.

The key inventive feature is the ability of the waste polystyrene plastic to significantly increase the gel time of the polyurea coating, thereby extending its workability, and to improve its long-term tensile strength and percentage elongation. Results show that compositions with waste plastic, particularly 15 gm of waste plastic solution per 100 gm of polyurea resin, exhibited substantially longer gel times (e.g., 18 seconds vs. 12 seconds for control) and improved mechanical properties after 13 days. The use of this invention is twofold: it provides a cost-effective and sustainable polyurea coating for applications like waterproofing and corrosion prevention, and it offers an innovative solution for managing and recycling waste polystyrene plastic, contributing to environmental waste reduction.

