



Roofing Shingles Made with Upcycled Plastic

Polymer Modified Asphalt Shingles

Standard roofing shingles are made of *oxidized asphalt* (OA). They're hard and brittle, more prone to breaks and cracks, as well as impact damage and premature aging.

Malarkey invented *polymer modified asphalt* (PMA) shingles. By incorporating post-consumer and post-industrial *upcycled plastic* (and rubber) into asphalt, we're able to modify asphalt attributes for optimal performance as a roofing shingle - stronger, more durable, and more impact resistant for superior all-weather resilience. We use the term 'upcycled' to reflect transforming waste rubber and plastic into a new, high quality product.

NEX® POLYMER MODIFIED ASPHALT TECHNOLOGY

Asphalt Weathering, Rubber Tough, Plastic Strong



High-Grade Asphalt
Waterproofing & Granule Adhesion



Synthetic Rubber Polymers (SBS)
Waterproofing & Granule Adhesion



Upcycled Rubber Polymers
Durability and Sustainability



Upcycled Plastic Polymers
Strength and Sustainability



PERFORMANCE BENEFITS

More than just filler, upcycled plastic adds many benefits to the performance of the shingle. As you would expect, adding plastic **adds strength and durability**. Less obvious, **upcycled plastic also enhances shingle installation** by improving **adhesion to plywood, reducing tackiness in high-temperatures, and increasing workability in cold temperatures**.



SUSTAINABILITY BENEFITS

In addition to **diverting waste plastics from our landfills and oceans**, incorporating single-use and consumer-recycled plastics into roofing shingles **transforms short-lifespan products into long-lifespan ones**, enhancing circularity. **Each 30 SQ Malarkey roof upcycles the equivalent of ~3,200 plastic bags**.



How it Works

Multi-Step Process of Upcycling Plastic Into Shingles

- 1) Homeowners discard used dog food bags, yogurt containers, sour cream containers, etc. into their recycling bin.
- 2) Plastics are sorted, with polypropylene (PP) plastics sent to a processing facility.
- 3) Processing facility grinds plastics into small parts and then uses **molecular recycling technology** to transform plastic pieces into polymers (large molecules made up of smaller ones).
- 4) Plastic polymers are converted into pellets and transported to Malarkey.
- 5) Upcycled plastic polymer pellets are introduced into Malarkey's asphalt formulation.
- 6) Malarkey applies its own chemistry to modify the polymer-infused asphalt to desired performance characteristics.
- 7) Plastic (and rubber) modified asphalt is poured over a fiberglass sheet and made into a roofing shingle.

Malarkey Utilizes PP [Polypropylene] Plastics in Our Roofing Shingles.

TYPES OF UPCYCLED PLASTICS

- Plastic bags (bread bags, pet food bags, etc.)
- Caps to plastic bottles (soda, water, ketchup, etc.)
- Plastic yogurt cups
- Plastic microwavable trays
- Pill bottles
- Plastic car bumpers

Malarkey is the only roofing manufacturer to incorporate upcycled plastic (and rubber) materials into its asphalt roofing shingles.

