
UNIVERSAL MATTER
ADVANCED MATERIALS
USING CARBON TO
decarbonize

INTRODUCING FLASH GRAPHENE

Universal Matter upcycles carbon into graphene and related advanced materials to boost the performance and sustainability of your innovations.

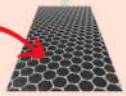
Our process delivers high quality, economical graphene and related advanced materials from simple carbon feedstocks enabling optimized solutions that enhance performance and reduces your carbon footprint.

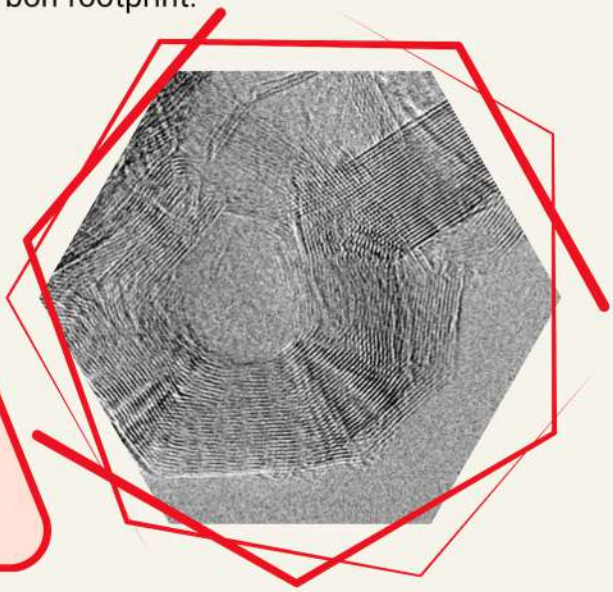
How the Flash process works...

1. Input carbon sources such as coal, biomass, rubber tire carbon black

2. Apply energy via a short electrical pulse to instantly heat to 3,000K, breaking chemical bonds in the material

3. Non-carbon materials sublime out and the remaining carbon elements reform into turbostratic graphene





Why Choose Us

High Quality Graphene

Few layer graphene and related advanced materials with low defects and superior dispersibility

New Morphologies

Process and manufacturing flexibility enables fiber, flake, polyhedral and functionalized graphene

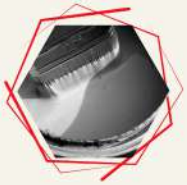
More Economical

Efficient, high volume process facilitates a significantly lower cost graphene production method

Highly Sustainable

Energy efficient process requiring only electricity. No other chemicals or heat needed. Raw materials include recycled carbon waste streams

We understand the challenges you face...



PAINTS & COATINGS

Barrier Improvement
- Anti-corrosion
- Chemical resistance
- Water barrier

Mechanical Properties
- Abrasion resistance
- Tensile strength
- Impact resistance

Conductivity Applications
- Electrical conductivity
- Anti-static dissipation
- Thermal conductivity

Electromagnetic Spectrum
- UV protection
- EMI shielding

Product Attributes
- Patent pending graphene-polymer composite
- Cost effective replacement for SBS + cross-linker
- Excellent dispersion stability for both bitumen terminal or asphalt plant addition

ASPHALT

Performance and Sustainability Improvement
- **Significant reduction in fatigue damage** compared to other polymeric modifiers such as SBS
- Production **CO_2 emissions are 92% lower** than the industry standard SBS + crosslinker

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RUBBER & TIRES

Performance Improvement
- **>20%** increase in tear and abrasion resistance
- **>10%** improvement in fuel economy
- **No negative impact** on any other characteristics

Sustainability Improvement
- **20%** reduction in compounding energy consumption
- Uses **recycled waste tire carbon** to enable the development of the **circular economy**

Performance Improvement
- Easy to use, no adjustment to existing concrete manufacture
- **>35%** increase in compression strength
- **Significant reduction** in water permeability

Sustainability Improvement
- Potential for **25% reduction** of cement in concrete without impacting concrete strength, leading to significant **decrease in greenhouse gas emissions**

CONCRETE & CEMENT

POLYMER COMPOSITES

Performance Improvement
- Increase in mechanical performance; **tensile strength, fracture toughness, fatigue** and **impact resistance.**
- Increased **barrier** performance

Enabling Innovation - Type V Hydrogen Storage
- Through a **20 years life simulation**, our graphene enables the composite to **get stronger** over the pressure cycles
- Mass reduced by **40%**, cost reduced by **50%**
- **5000psi** gas storage capability

THE LEADER IN SUSTAINABLE GRAPHENE

Universal Matter is leading the transition toward the **circular economy** by transforming carbon materials, including waste streams, into graphene to dramatically **reduce green house gases** emissions and **decarbonize** industrial materials across key market sectors.

Using Carbon to Decarbonize

Global Player with a Local Presence

UM has a network of production and innovation centers, and increasing global coverage of distribution partners. This enables us to offer consistent supply of high quality products and offer the technical support our customers deserve.

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