CIRCULAR REINFORCING CARBONS FROM TIRE PYROLYSIS OIL

Climate change. Electric vehicles. Smart Grids. Sustainability is increasingly recognized as a crucial business imperative. At Cabot, a focus on sustainability has been a part of our culture and integrated into our operations for many years and is now part of our purpose: "Creating materials that improve daily life and enable a more sustainable future."

In 2021, Cabot announced its ambition to achieve net zero carbon emissions globally by 2050, consistent with the Paris Climate Agreement. We have invested in several technologies on our journey to net zero. Advancing product innovations to increase the use of recycled content is one important step in this journey. We are also working on innovations for Cabot's reinforcing carbons, highly engineered and versatile performance materials to make tires and other industrial products last longer while improving energy efficiency.

The Opportunity

Tires that reach their end of life have many uses, but many still end up being disposed of in landfills or incinerated for energy recovery (see Figure 1). Many different methods of recovery are possible, including reuse, recycling and material recovery, with varying levels of contribution to the circular economy. Pyrolysis and gasification of end-of-life tires (EoLTs) provide a hybrid approach that creates a circular value chain for more sustainable use of EoLTs.

Waste and Recovery Route Hierarchy

Figure 1: EoLT waste hierarchy and recovery routes (source: WBCSD End-of-Life Tire (ELT) Management Toolkit)

EVOLVE™

SUSTAINABLE SOLUTIONS

Cabot recently created EVOLVE™ Sustainable Solutions, a technology platform for delivering sustainable reinforcing carbons. Products powered by EVOLVE Sustainable Solutions are designed to deliver sustainable content with reliable performance at industrial scale. EVOLVE Sustainable Solutions is designed to develop reinforcing carbons from circular value chains using materials ***recovered*** from end-of-life tires and/or made from ***renewable*** materials and/or made with a demonstrably ***reduced*** GHG footprint.

For reinforcing carbons recovered from circular value chains, Cabot's innovative carbon black production process uses the products from the pyrolysis of EoLTs–tire pyrolysis oils (TPO) and reclaimed carbons (rC) – and converts them to reinforcing carbons for use in tire production (see Figure 2).

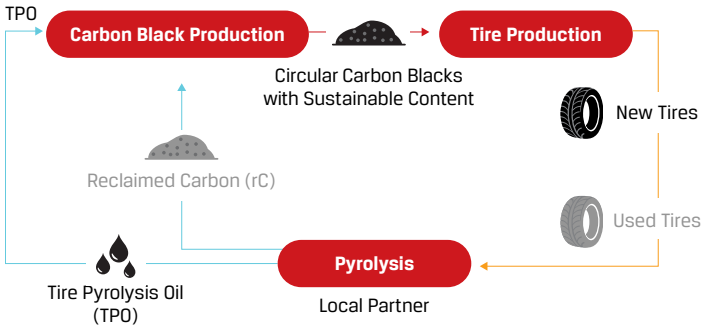

Figure 2: Simplified End-of-life-tire Value Chain

Products produced using TPO offer the same quality and performance as Cabot's traditional reinforcing carbons and can be used as drop-in solutions. The products are produced by Cabot and will be fully ISCC PLUS certified. These products are available in variety of reinforcing and semi-reinforcing grades, including the recently launched VULCAN® 7H-C circular reinforcing carbon.

Figure 3: Illustration of ISCC PLUS Mass Balance Approach

ABOUT ISCC PLUS MASS BALANCE

International Sustainability & Carbon Certification (ISCC) is a globally applicable certification system designed to ensure compliance with ecological and social requirements, greenhouse gas emissions savings and traceability. Mass balance accounting (see Figure 3) is a chain of custody approach designed to trace the flow of materials through a complex value chain. It is well suited to address the challenges of tracking the flow of recycled feedstock around chemical industry plants. The demand for recycled materials from downstream customers is crucial to drive the development of chemically recycled materials. Furthermore, increasing shares of recycled content in products is one of the key ways for a business to transition to a circular economy approach. The mass balance approach provides a set of rules for how to allocate the recycled content to different products to be able to claim and market the content as "recycled."

As part of our commitment to transparency, we are working on achieving ISCC PLUS certification for multiple sites globally.

CABOT

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