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Patent filed for fire-resistant construction materials containing PureGRAPH[®]

Highlights

- **Patent filed by existing UK-based strategic partner for novel flame-resistant materials containing PureGRAPH[®] designed for housing and infrastructure**
- **Graphene enhanced materials demonstrated up to 100% self-extinguishing behaviour**
- **Fire retardancy of graphene enhanced material offers safe, sustainable solution for multi-trillion-dollar global construction industry**

First Graphene Limited (ASX:FGR; “First Graphene” or “the Company”) is pleased to provide an update on graphene enhanced fire-retardant materials developed for construction and housing.

Novel flame-resistant materials containing PureGRAPH[®], developed by strategic UK-based partner Vector Group (“Vector”), has been filed for patent in Europe, Asia and the United States.

Recent testing of the graphene enhanced material has demonstrated excellent flame resistance and mechanical performance, showcasing the fundamental value of PureGRAPH[®] to the products.

Results include a self-extinguishing rate of 100% in various formulations containing a range of PureGRAPH[®] loadings, which is a significant improvement in performance compared to conventional non-halogenated materials.

Flame retardancy was also enhanced at lower loadings of PureGRAPH[®], reducing need for higher volumes of fire-resistant phosphorous-based additives, which are known to have adverse environmental and health impacts.

Tensile and modulus performance was also improved with the addition of PureGRAPH[®], enhancing safety and structural integrity outcomes.

The patented materials have potential for application across the global construction market, which is expected to grow to USD\$16.11 trillion in value by 2030¹.

Overhauled UK regulations improve building and fire safety

Since the early 2020s the UK has introduced a range of stricter regulatory measures for building materials, established a Building Safety Regulator and banned the use of combustible materials.

These changes, along with a raft of others slated to continue rolling out until later this decade in three phases, underscore heightened scrutiny on safety and fire preparedness of materials used in homes and buildings, including more sustainable product solutions that resist and react to fire².

Research has found non-halogenated fire-retardant additives can have a detrimental effect on both material performance – including strength and durability – and fire resistance as loading goes up.

Work conducted by Vector has shown very small volumes of graphene combined with non-halogenated retardants boosts material performance and fire resistance by lowering additive dosage rates.

First Graphene Managing Director and CEO Michael Bell said:

“Patent filings for graphene enhanced fire-retardant materials is a major milestone for both companies as well as the broader construction industry.

This innovative flame-resistant material will provide the sector with a safer and more sustainable solution at a time regulations are tightening around fire safety in homes and buildings, with a clear shift away from dangerous halogenated fire-retardant materials.

We look forward to seeing the patent progress and are excited to take the next step in our journey with Vector Group as we work towards commercialisation of this industry-changing material.”

Vector Group CEO Nathan Feddy said:

“We are proud to have achieved this important milestone in collaboration with First Graphene. The successful patent filings mark a pivotal step towards delivering safer, stronger, and more sustainable fire-resistant materials to the global construction industry.

Incorporation of PureGRAPH® into our formulations has unlocked significant improvements in performance, enabling us to address both regulatory demands and environmental concerns.

This innovation reflects Vector Group’s commitment to transforming the way construction materials are designed and applied. By reducing reliance on harmful additives while improving fire safety and structural integrity, we are setting new benchmarks for the industry.

We look forward to advancing commercial opportunities alongside First Graphene and ensuring these technologies play a leading role in shaping safer and more resilient infrastructure worldwide.”

Strategic Partnership Agreement

The graphene enhanced materials will be particularly beneficial for housing and infrastructure projects where stringent fire-safety standards are required using non-halogenated additives – both in terms of new builds and refurbishing existing buildings with safer products.

First Graphene has been supplying Vector with PureGRAPH® to develop this innovative material since 2023 as part of a Strategic Partnership Agreement between the companies.

Under the multi-year deal, First Graphene will continue to work with Vector to develop and deliver graphene-enhanced materials to the global construction industry.

References:

¹[Global Powers of Construction Report - Deloitte](#)

²[Construction Products Reform Green Paper 2025](#)

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This release has been approved for release by the Chairman.

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About First Graphene Ltd (ASX: FGR)

First Graphene Limited is focused on the development of advanced materials to help industry improve. The Company is a leading supplier of graphitic materials and product formulations with a specific commercial focus on large, high-growth global markets including cement and concrete; composites and plastics; coatings, adhesives, sealants and elastomers (CASE); and energy storage applications.

One of the key outcomes these advanced materials offer is the reduction of carbon dioxide emissions, whether directly through a reduction in output of these harmful greenhouse gases or lower energy usage requirements in manufacturing, or indirectly due to enhanced performance characteristics and extending the usable life of products.

First Graphene has a robust manufacturing platform based on captive and abundant supply of high-purity raw materials, and readily scalable technologies to meet growing market demand. As well as being the world's leading supplier of its own high performance PureGRAPH® graphene product range, the Company works with multiple industry partners around the world as a supplier of graphitic materials and partner to research, develop, test and facilitate the commercial marketing of a wide range of sector-specific chemical solutions.

First Graphene Ltd is publicly listed in Australia (ASX:FGR) and has a primary manufacturing base in Henderson, near Perth, WA. The Company is incorporated in the UK as First Graphene (UK) Ltd where it has a strong R&D capability.