



GRAPHENE FOR AEROSPACE AND DEFENCE



Graphene, a multilayer 2D structure of carbon atom with sp^2 hybridized hexagonal lattice structure. The chemistry of the material helps to deliver unique properties such as enhanced strength, barrier properties, conduction, etc. Due to these exceptional properties delivered to different matrices it has been incorporated in, it has gained significant attention in the aerospace and defence sectors.



CUMI Grafino is the brand name for graphene products. The facility is located in the Cochin Special Economic Zone capable of manufacturing various grades of graphene nanoplatelets, additives and masterbatches. Our graphene products can be used in a wide range of applications in composites, coatings and energy.

Grafino for Aerospace Applications

Structural reinforcement:

Graphene enhances mechanical properties such as tensile strength and compression strength of aircraft structural parts by reinforcing CFRP laminates. Nano platelets align along the resin throughout the matrix, making it stronger.

Protective coatings:

Graphene-infused coatings decrease permeability. This supports performance enhancement in applications such as anti-corrosion, and coatings including thermal barrier.

Specialty elastomers:

Elastomers incorporated with Graphene have enhanced mechanical strength, fatigue resistance, durability and vibration dampening.

Sensors:

Graphene-based conductive inks find use in electronic components such as sensors due to the electrical conductivity of the material.

Grafino has wide-ranging, innovative uses in defence applications too.

Superior armour

Graphene has the potential to offer both enhanced protection and mobility.

Thermal management with advanced fabrics

Fabrics engineered with graphene can help soldiers keep warm in cold environments due to the superior thermal conductivity of this material.



Sensor application

Graphene can be used in various sensors due to its conductivity and nano dimension.

Specialty shoes

Graphene can be used to reduce the weight of soldiers' shoes, while enabling enhanced mechanical strength.



CARBORUNDUM UNIVERSAL LIMITED

Carborundum Universal Limited (CUMI), established as a tripartite joint venture in 1954, is a leading material sciences engineering solutions provider. Part of the 120-year-old Murugappa Group, it is listed on the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). CUMI is a mines to market company whose integrated operations include mining, power generation, fusion, manufacturing, marketing and distribution.

CUMI has over 5,500 employees worldwide who collaborate, innovate, and develop high-quality material solutions and world-class services in abrasives, electro minerals, ceramics, refractories and energy storage materials, serving customers in diverse industries including engineering, fabrication, auto and auto components, infrastructure, steel, glass, power generation and distribution, mining, aerospace and defence. CUMI has a wide geographical presence spanning six continents and exports products to over 50 countries.

For any enquiries, you may contact us at:

CUMI Electro Minerals Division

+91 484 3023600

salesemd@cumi.murugappa.com

www.cumi-minerals.com

Akshay Kashinath

Head – Business Development (Aerospace & Defence), CUMI

+91 96770 63238

akshayk@cumi.murugappa.com

Subbu Venkatachalam

Head – Marketing, CUMI

+91 98408 82390

subbu@cumi.murugappa.com