

# Product information Sheet

## PureGRAPH™ Graphene Products

first graphene

The world's leading graphene company

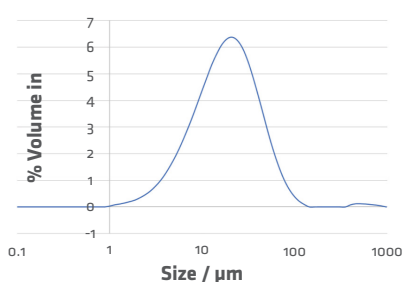
**First Graphene Ltd.** offers a range of graphene products. The products are characterised by their large platelet size, high aspect ratio and low defect levels. Three product grades are available with average platelet sizes of 20  $\mu\text{m}$ , 10  $\mu\text{m}$  and 5  $\mu\text{m}$  with tightly controlled platelet geometries. The powders are readily dispersed in a range of solvent and polymer media. Batch to batch consistency is ensured through leading edge quality control testing.

## PureGRAPH™ Graphene Powders from First Graphene Ltd.

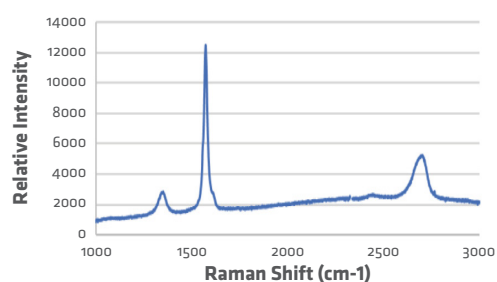
### PureGRAPH™ 20

D50 = 20  $\mu\text{m}$  | Sheet Resistance<sup>3</sup> = < 10 Ohm/square | Tapped Density<sup>4</sup> = 0.251  $\text{gcm}^{-3}$

Particle Size Distribution<sup>1</sup>



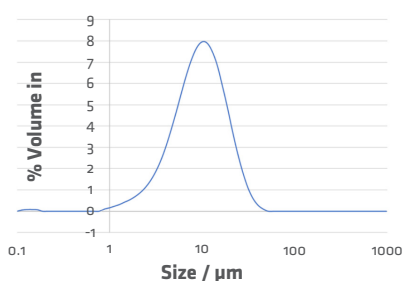
Raman Spectroscopy<sup>2</sup>



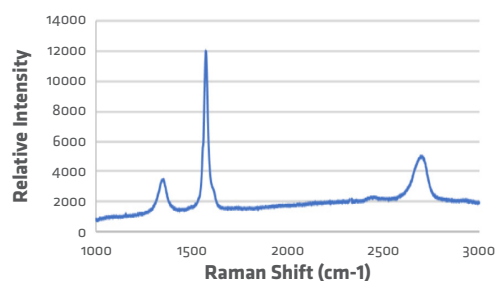
### PureGRAPH™ 10

D50 = 10  $\mu\text{m}$  | Sheet Resistance<sup>3</sup> = < 10 Ohm/square | Tapped Density<sup>4</sup> = 0.124  $\text{gcm}^{-3}$

Particle Size Distribution<sup>1</sup>



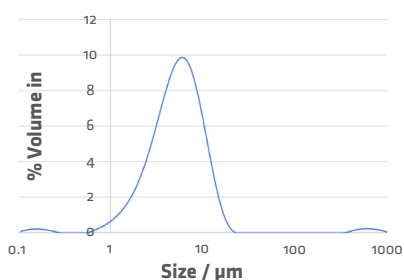
Raman Spectroscopy<sup>2</sup>



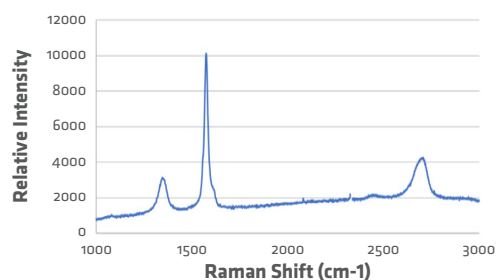
### PureGRAPH™ 5

D50 = 5  $\mu\text{m}$  | Sheet Resistance<sup>3</sup> = < 10 Ohm/square | Tapped Density<sup>4</sup> = 0.062  $\text{gcm}^{-3}$

Particle Size Distribution<sup>1</sup>

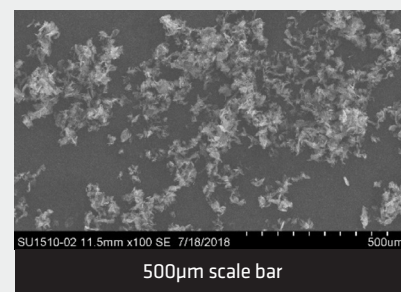
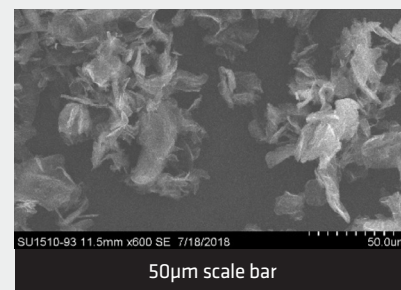
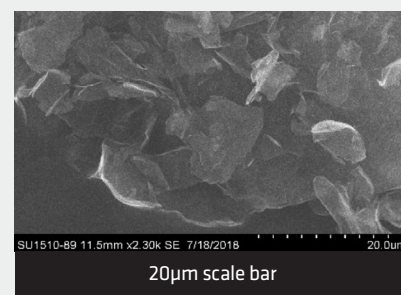


Raman Spectroscopy<sup>2</sup>



## Scanning Electron Microscopy (SEM):

Typical SEM analysis of PureGRAPH™ 20 powders showing non-aggregated, uniform sized graphene nanoplatelets.

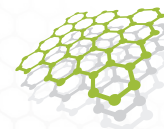


## REFERENCES

- 1 Malvern Mastersizer 3000E. Graphene powder dispersed in water & surfactant.
- 2 Raman analysis using a large area remote sampling probe.
- 3 Four-point probe measurement of a 25  $\mu\text{m}$  film collected on membrane filter.
- 4 According to ASTM D7481.

ASX:FGR

[www.firstgraphene.com.au](http://www.firstgraphene.com.au)



# About the Company

**First Graphene Ltd.** are the leading supplier of high quality graphene products manufactured directly from high grade Sri Lankan graphite.

First Graphene Ltd. is publicly listed in Australia (ASX:FGR) and has a primary manufacturing base in Henderson, near Perth, Western Australia. With a fully integrated supply of vein graphite and a low capital cost, First Graphene Ltd. is one of the lowest cost producers of highest quality graphene products in the world and have a current manufacturing capacity of 90 tonnes of graphene per annum.

The single step manufacturing process used directly converts high quality graphite raw materials to a range of graphene products.

## Applications:

PureGRAPH™ products are currently being used in...

Fire retardant coatings

Concrete strengthening

Battery electrode materials

Conductive inks and sensors

Rubber and composite strengthening

Moisture barrier in thermoset composites

### LIMITED WARRANTY INFORMATION:

The information contained herein is offered in good faith and is believed to be accurate at the time of printing. This information should not be used as a substitute for your own quality control and/or testing procedures to ensure that our products are safe, effective and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

## For further information:

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## Advantages of PureGRAPH™ graphene products:

### High purity starting materials:

- Highest purity raw materials.
- Products free of metallic contaminants.
- Defect free graphene platelets – high electrical and thermal conductivity.

### Range of graphene products with controlled dimensions:

- Available with lateral sizes of 5, 10 and 20 microns.
- Tightly controlled platelet size distribution for easy dispersion.
- Multi-layer graphene nanoplatelets confirmed by Raman spectroscopy<sup>5</sup>.
- Non-aggregated, easy to disperse powders.

### Single step manufacture of high quality graphene

- Direct exfoliation of graphite ore for cost effective graphene products.
- Scaled process supporting tonnage orders.
- Full quality control on each batch.

### REFERENCES

- <sup>5</sup> Ferrari, A. C. et al. Raman spectrum of graphene and graphene layers. Phys. Rev. Lett. 97, 187401, (2006)