

## GXT - INK Description

Is a highly concentrated suspension of graphene in water with a concentration around 20 mg/ml. The suspended graphene is produced by chemical exfoliation of graphite using a proprietary exfoliating agent.

The high-quality graphene is produced using a very low amount of exfoliation agent, below 1% wt., yielding graphene flakes with lateral dimensions below 1 micron.

No oxidation processes are involved in the production of GXT - INK, giving to this product the excellent electronic and mechanical properties of graphene.

With GXT - INK you can print complex and personalized conductive circuits with various technologies on wide range of substrate: polymer sheets, paper, metals and even bioplastic.

A volume resistivity below 4 ohm/sq/mil can be reach depending on the substrate and printed technology. Sensors for smart coating or protection, e.g. system to monitoring structure stress or failure, can be printed on various substrate. Printed material can be coupled with wide range of polymer film without any effects on electrical performance.

We can easily print antenna on flexible transparent film based on your need.

Our printed material remains stable for extremely long time, a proprietary fatigue bending test last for more than 50.000 cycle without any performance variation.

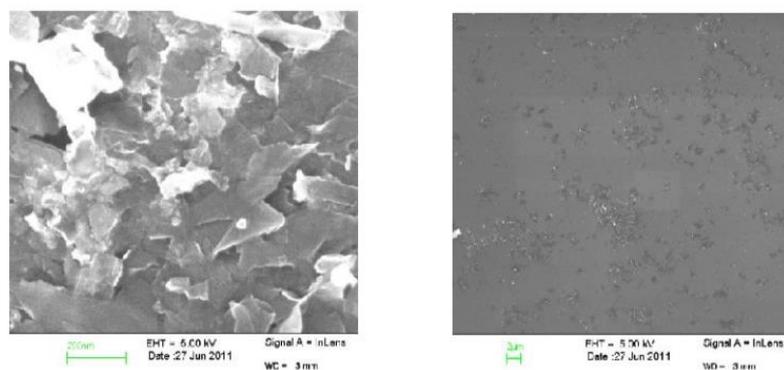


Figure 1: SEM image of spin coated GXT - Ink on silicon.

GXT- PET 2 is a polyethylene terephthalate (PET) film coated with a thin film of graphene flakes. Graphene-xt, thanks to its flexible technology, is able to coat many different polymers with a pristine

graphene. The graphene flakes are uniformly attached onto the polymer surface to form a pattern

PRODUCT	UNIT	INSTRUMENT
PET film thickness	12 & 100 $\mu\text{m}$	Micrometer
Graphene coating thickness	<50 nm	AFM
Sheet resistance (4 x 4 cm)	5-20 $\text{k}\Omega/\text{sq}$	ResistanceMeter
Total light transmission (550 nm)	50%	UV spectrometer
Graphenecoatinglighttransmission(550nm)	65%	UV spectrometer
Coating hardness	2H-3H	ASTMD3363-00

of 50 nm maximum thickness. This assures a good balance between transparency and sheet resistance.

GXT - coating is highly mechanical stable and can be bend, roll and scrunched up many times without appreciable decrease on performance. GXT - Coating can be used to wrap or coat different objects and making it conductive.

Due to the extremely low amount of coating material, which is anyway carbon based, at the end of its life GXT – coating is a fully recyclable as PET plastic.

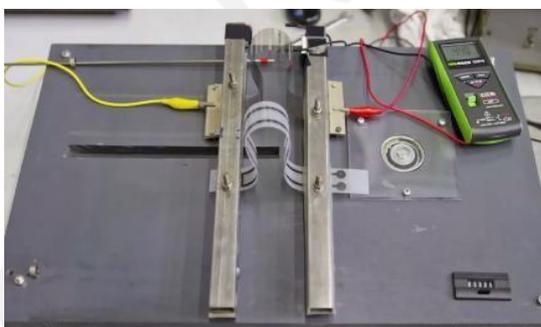


Figure 2: Fatigue test on graphene coated PET, sheet resistance measure before (left) and after (right) more than 50.000 cycles.