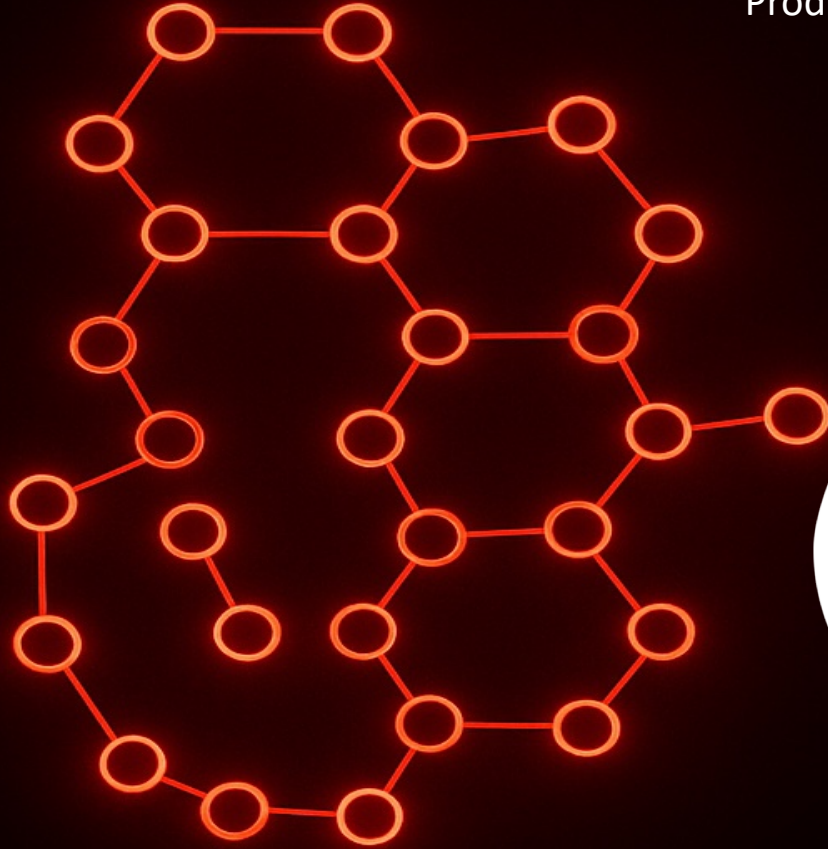


TECHNICAL DATA SHEET

Product: Graphene Oxide (GO) Powder - CAS Number:7782-42-5



BTCORP

GENERIQUE NANO PVT LTD

Manufacturer: BTCORP Generique Nano Pvt Ltd

Address: SPL R2, Hoskote Industrial Area, Bengaluru,

India – 562114 Email: btc@bt-corp.co | Contact: +91-80-29701996


Website: www.bt-corp.co

SEM IMAGE GRAPHENE OXIDE



2



200 nm


EHT = 10.00 kv
WD = 5.2 mm

Signal A = InLens
Mag = 80.00 K X





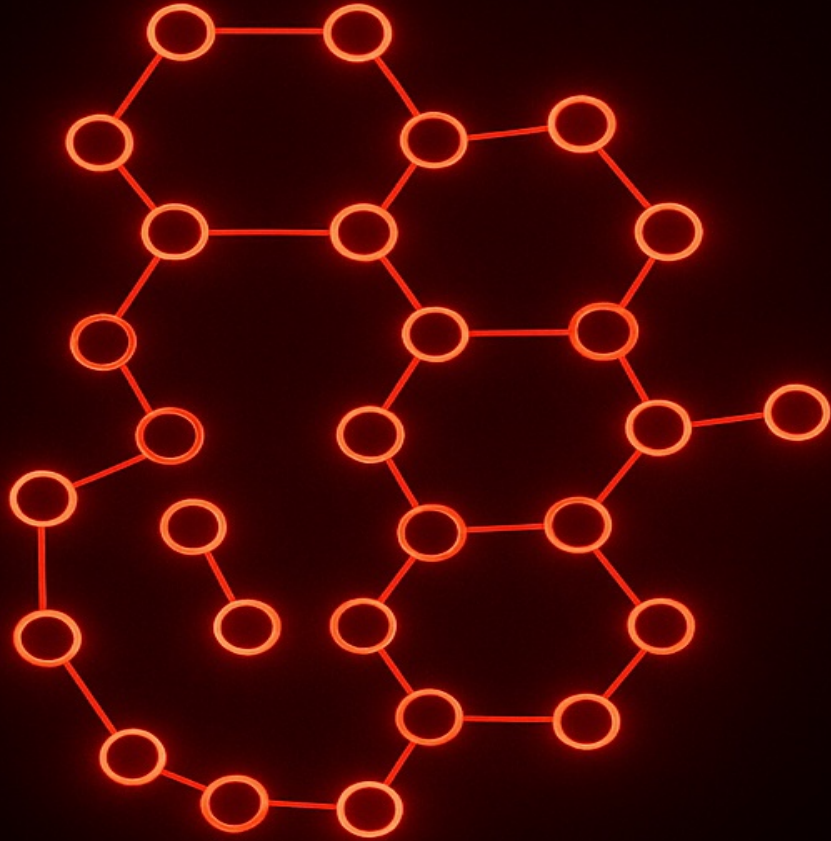
SEM ANALYSIS (Scanning Electron Microscopy)

Instrument: ZEISS – InLens Detector

EHT: 10.00 kV | Magnification: 80.00 KX | Scale: 200 nm

Observations:

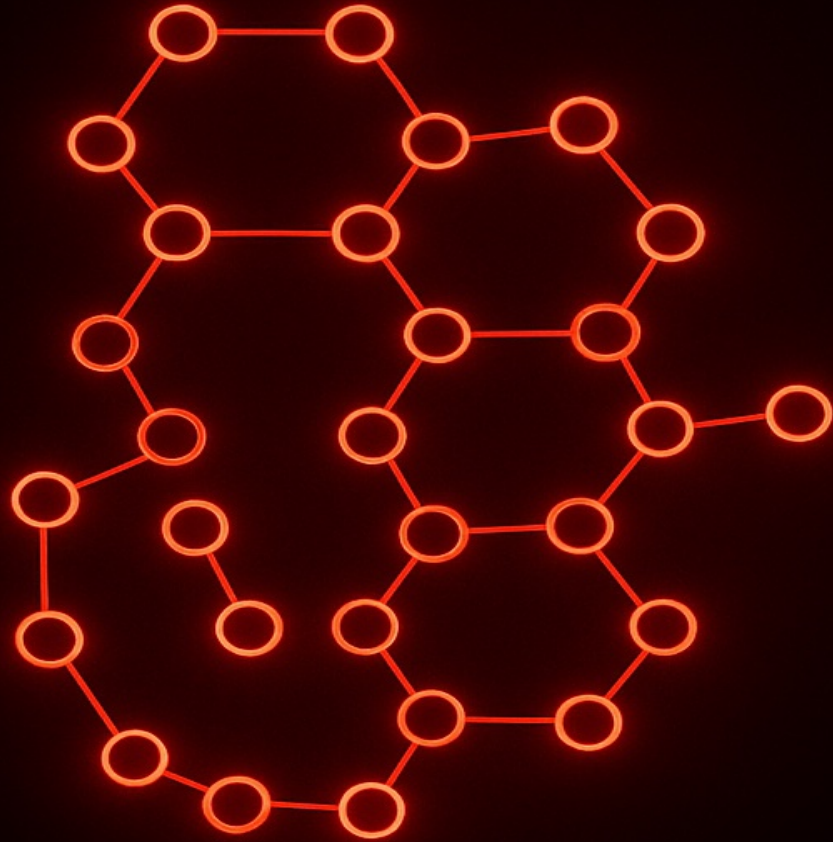
- Thin, sheet-like, wrinkled lamellae confirming GO morphology
- Flaky, crumpled topology indicating **excellent exfoliation**
- Bright regions show thicker oxygen-rich domains
- Minor white spherical particles = residual oxidized carbon clusters (KMnO₄ traces)



SEM

Few-layer GO with high exfoliation, high surface area, and uniform sheet morphology. Suitable for coatings, composites, inks, dispersions.

Property	Observation	Evaluation
Morphology	Wrinkled lamellae	Typical GO
Particle Size	300–800 nm	Uniform
Thickness	Few nm	Thin nanosheets
Purity	Minor residues <1%	Acceptable
Surface Area	High (wrinkled)	Excellent



ELEMENTAL ANALYSIS (EDS / XPS)

Element	Atomic %	Interpretation
Carbon (C)	~66–70%	Graphitic carbon backbone
Oxygen (O)	~28–32%	Functional groups: C–O, C=O, COOH
Sulfur (S)	<1%	Mild oxidation residue
Others (Mn, Na, K)	<0.3%	Negligible impurities

SURFACE AREA ANALYSIS (BET + SSA)

Parameter	Value	Technique
BET Surface Area	≈70 m ² /g	N ₂ adsorption
Specific Surface Area (SSA)	≈350 m ² /g	Based on layer geometry

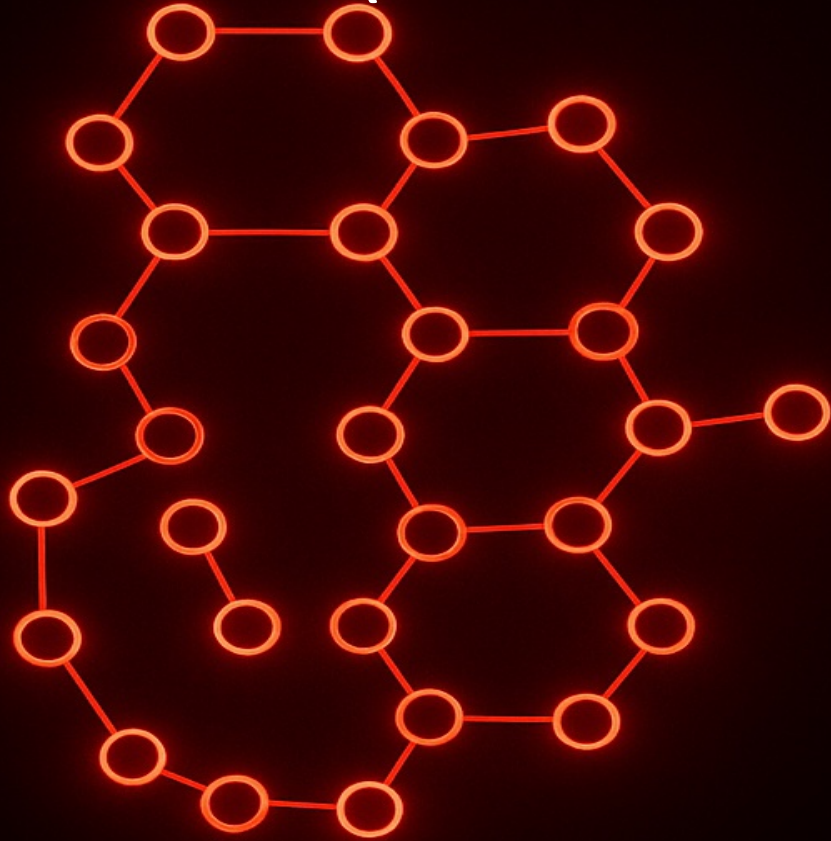
Elemental Conclusion:

High O/C ratio (~0.45) indicates excellent oxidation, making GO hydrophilic and easily dispersible.



TEM ANALYSIS

(Transmission Electron Microscopy)

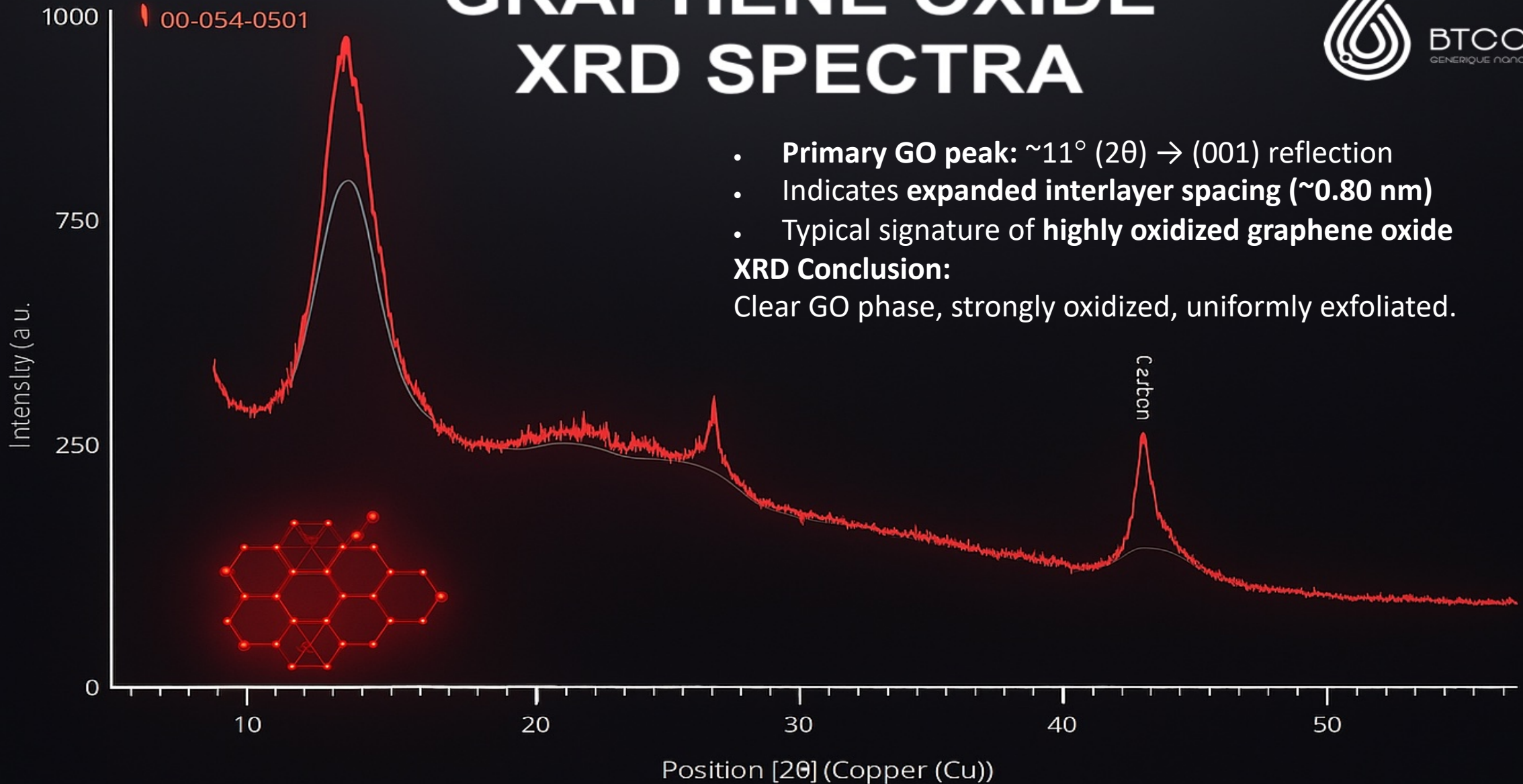


Property	Observation	Assessment
Morphology	Wrinkled, transparent sheets	Excellent exfoliation
Layer Count	2–5	Few-layer GO
Sheet Size	300–800 nm	Large sheets
Crystallinity	Amorphous, oxygen-functionalized	Typical GO
Dispersion	Minimal agglomeration	Excellent

TEM Conclusion:

Graphene oxide is few-layer, ultrathin, uniformly oxidized, and structurally intact.

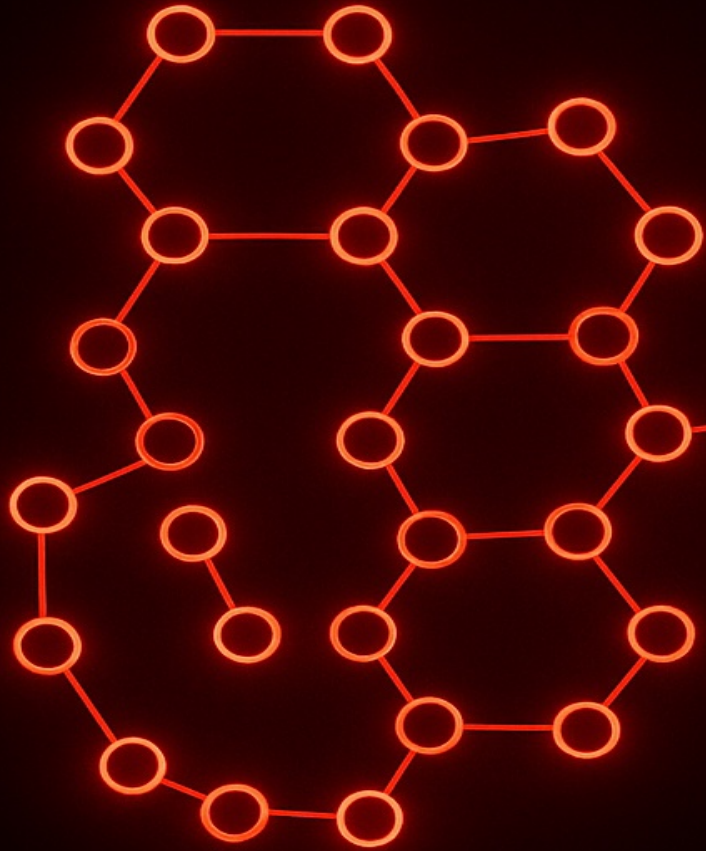
GRAPHENE OXIDE XRD SPECTRA



- **Primary GO peak:** $\sim 11^\circ$ (2θ) \rightarrow (001) reflection
 - Indicates **expanded interlayer spacing** (~ 0.80 nm)
 - Typical signature of **highly oxidized graphene oxide**
- XRD Conclusion:**
Clear GO phase, strongly oxidized, uniformly exfoliated.



XRD Summary – Graphene Oxide (GO)



Parameter	Observation	Interpretation / Conclusion
Primary Peak (001)	$2\theta \approx 10\text{--}12^\circ$	Confirms Graphene Oxide; indicates expanded interlayer spacing due to oxygen functional groups and water molecules.
d-Spacing	$\sim 0.75\text{--}0.90$ nm (estimated)	High oxidation; typical for GO synthesized via chemical oxidation route.
Secondary Peak	$\sim 42^\circ$ (α -carbon)	Presence of small sp^2 carbon domains; normal for GO. Not excessive.
Graphite Peak (002)	Absent at $\sim 26.5^\circ$	No graphite contamination. Sample is not rGO or partially reduced.
Peak Broadness	Wide peak at $10\text{--}12^\circ$	Indicates few-layer to multilayer GO with small crystallite size and high disorder.
Background Profile	Broad hump from $15^\circ\text{--}30^\circ$	Amorphous carbon–oxygen network typical of oxidized GO.
Crystallinity	Mostly amorphous	Consistent with exfoliated, oxidized GO nanosheets.
Oxidation Level	High (inferred from peak shift & intensity)	Good presence of oxygen functional groups ($-\text{OH}$, $-\text{COOH}$, $-\text{C}-\text{O}$).
Phase Purity	High	No peaks corresponding to graphite or impurities.
Material Identity	Matches GO reference pattern (00-054-0501)	Confirms sample as Graphene Oxide.
Overall Quality	High-quality, fully oxidized GO	Suitable for dispersions, composites, coatings, inks, electronics.

Applications of Graphene Oxide (GO)



Water Purification & Desalination



Ceramic & Cement Composite Strengthening



Membrane Filtration (UF/NF/RO Enhancement)



3D Printing Nanocomposite Additive



Antimicrobial & Antiviral Surface Coatings



Biomedical Applications (Drug Delivery, Tissue Engine)



Battery Electrodes (Li-ion, Na-ion, Supercapacitors)



Energy Harvesting Materials (EMI Shielding /



Conductive Inks & Printable Electronics



Solar Cells & Perovskite Stability Enhancement



Polymer Reinforcement (Mechanical strength + Barrier Properties)



Transparent Conductive Films (TCF)



Thermal Management Films & Pads

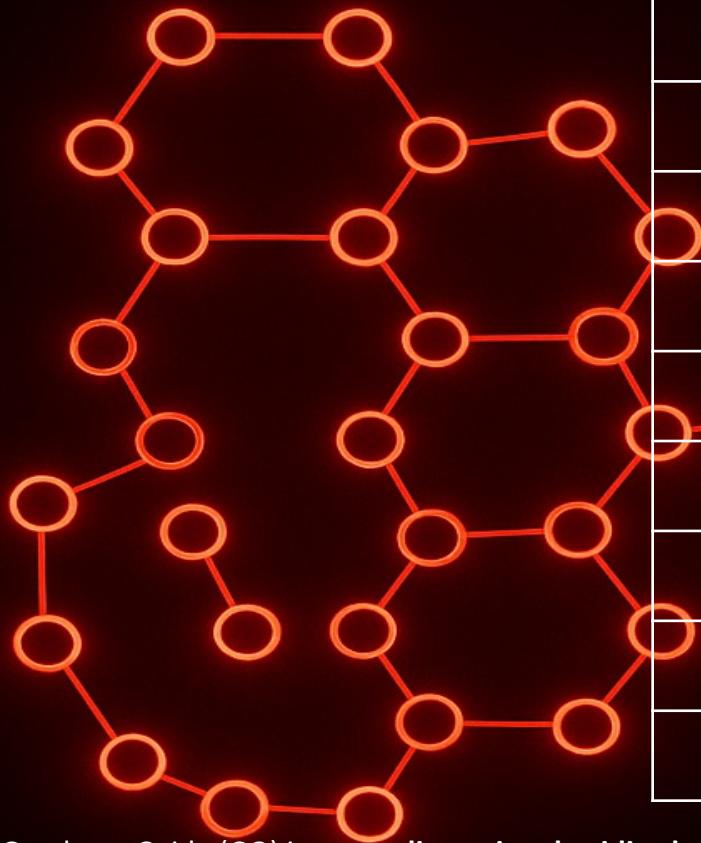


Adsorption of Heavy Metals & Organic Pollutants





TECHNCIAL DATA SHEET SUMMARY GRAPHENE OXIDE POWDER



Property	Observation	Result
Phase Structure	(001) at $\sim 11^\circ$	GO phase
Layer Count	2–5	Few-layer
Interlayer Spacing	~ 0.80 nm	Expanded (oxidized)
Surface Area	70–350 m ² /g	High
Particle Size	300–800 nm	Consistent
Morphology	Wrinkled nanosheets	Excellent
Oxygen Content	$\sim 30\%$	Strong oxidation
Purity	$>99\%$	High
Overall Grade	High-Purity GO	QC Passed

BTCORP Graphene Oxide (GO) is a **two-dimensional oxidized carbon nanomaterial** produced through controlled oxidation and exfoliation of high-purity graphite. The material offers **excellent water dispersibility, high surface activity, and strong chemical compatibility**, ideal for **functional coatings, conductive inks, polymer composites, membranes, and nanofluids**.
Produced from natural vein graphite using a proprietary process & equipment.

Disclaimer:
Typical values are for general guidance only and not specifications. Information is provided in good faith without warranty. Users must follow safe-handling practices, consult the product MSDS, and ensure suitability and regulatory compliance for their application. For updated technical details, please contact BT CORP.