Colonial Chemical

Cola®Dry Graphene

A Ceramic Sealant Infused with Graphene

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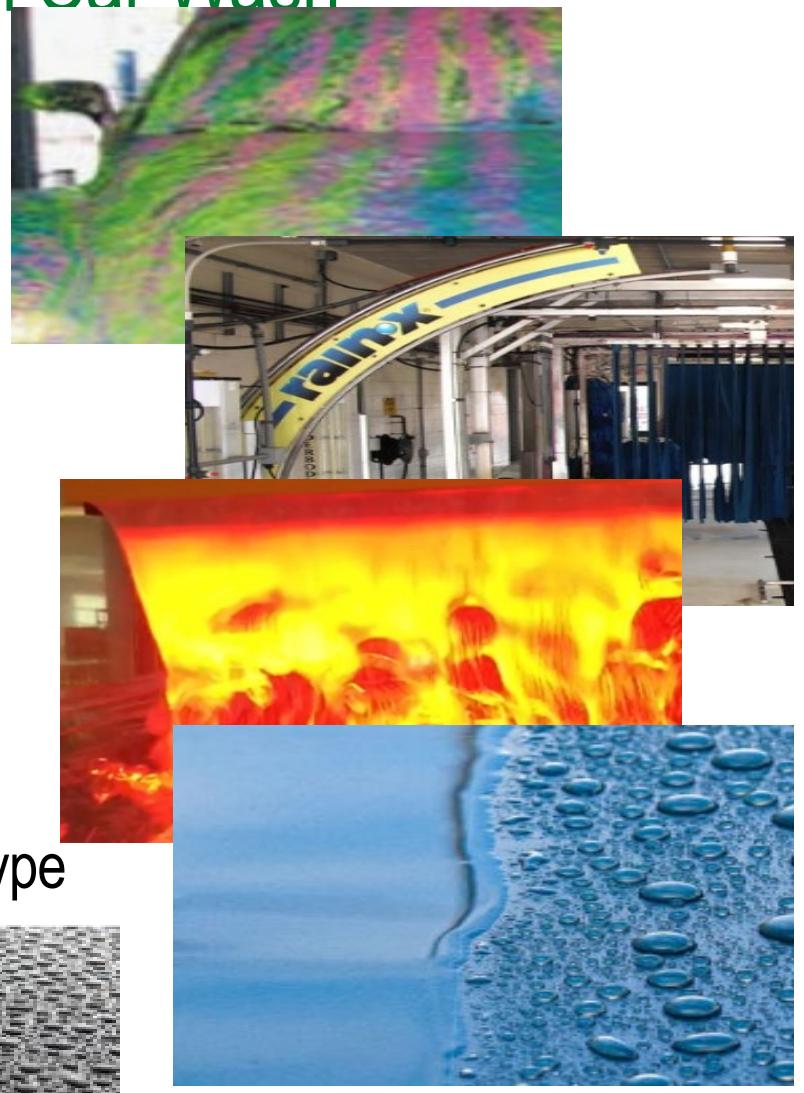
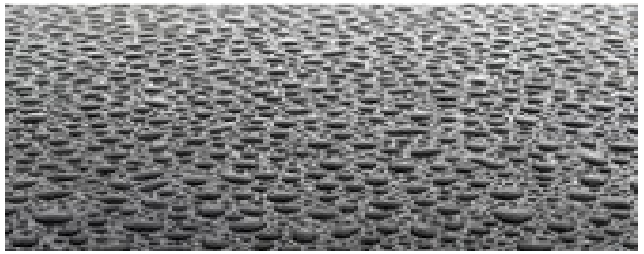
Outline

- Graphene — A new “buzz word”? What does it do?
- Challenges — Formulating with graphene for car wash
- **Cola®Dry Graphene** — New product and its applications
- Q&A

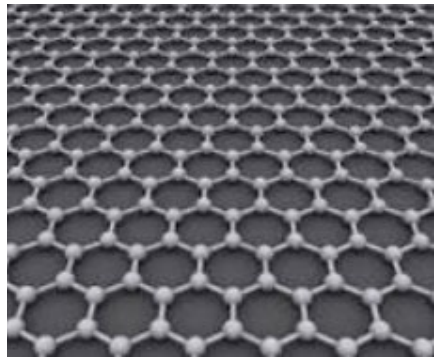
Major Marketing Themes of Wax and Protection in Car Wash

- 1960s: Hot waxes
- 1970s: Foam polishes and sealar waxes
- 1980s: Pressure waxes and glaze
- 1990s: Triple foam conditioners and polishes
- 2005: Rain-X online, total body protectants (30-day wax effect guaranty), Teflon coating
- 2011: Hot Lava Waxes (spray bar of big bubbles with a little carnauba wax)
- 2019: Ceramic sealants and coatings (indicating silica type of ceramics in durability)
- 2021: **Graphene sealants**

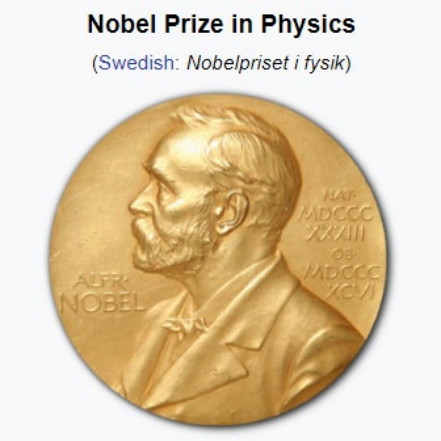




Why Graphene?



- A single layer of carbon atoms arranged in a hexagonal lattice nanostructure (two-dimensional)
- Exceptionally high tensile strength, electrical conductivity, **transparency**
- 2004 Nobel Prize in Physics for their "groundbreaking experiments regarding the two-dimensional material graphene"
- **Excellent water and soil barriers**
- **100 times** as strong as strongest steel



Can you now perceive benefits of "Graphene"?

Challenge for Formulate with Graphene?

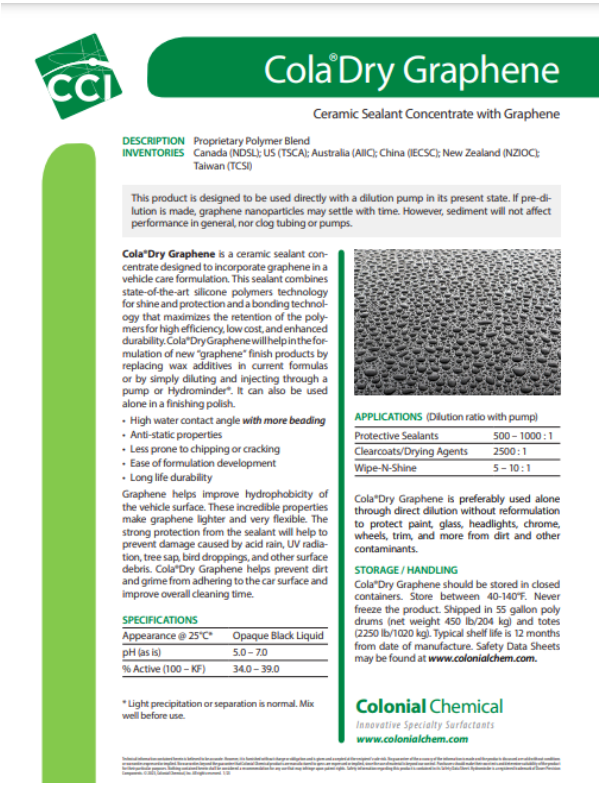
- Not soluble in water, alcohol and most solvents
- High surface energy and stick to surfaces
- Resist acids and alkaline
- Extremely hard to stabilize in water-based
- Performance depends on graphene concentration and how well it's dispersed
- Thickening alone would NOT disperse it well!
- **We made it work!**

Cola®Dry Graphene

LISTINGS TSCA (US), NDSL (Canada), AIIC (Australia), IECSC (China), NZIoC (New Zealand), TCSI (Taiwan)

Specifications	Analysis
Appearance, 25°C	Opaque black liquid*
pH (as is)	5.0 – 7.0
Active % (100 – KF)	34.0 – 39.0

*** Light precipitation at bottom of container is normal, and will not affect performance**



Cola®Dry Graphene

Ceramic Sealant Concentrate with Graphene

DESCRIPTION Proprietary Polymer Blend
INVENTORIES Canada (NDSL); US (TSCA); Australia (AIIC); China (IECSC); New Zealand (NZIOC); Taiwan (TCSI)

This product is designed to be used directly with a dilution pump in its present state. If pre-dilution is made, graphene nanoparticles may settle with time. However, sediment will not affect performance in general, nor clog tubing or pumps.

Cola®Dry Graphene is a ceramic sealant concentrate designed to incorporate graphene in a vehicle care formulation. This sealant combines state-of-the-art silicone polymers technology for shine and protection and a bonding technology that maximizes the retention of the polymers for high efficiency, low cost, and enhanced durability. Cola®Dry Graphene will help in the formulation of new "graphene" finish products by replacing wax additives in current formulas or by simply diluting and injecting through a pump or Hydrominder®. It can also be used alone in a finishing polish.

- High water contact angle ***with more beading***
- Anti-static properties
- Less prone to chipping or cracking
- Ease of formulation development
- Long life durability

Graphene helps improve hydrophobicity of the vehicle surface. These incredible properties make graphene lighter and very flexible. The strong protection from the sealant will help to prevent damage caused by acid rain, UV radiation, tree sap, bird droppings, and other surface debris. Cola®Dry Graphene helps prevent dirt and grime from adhering to the car surface and improve overall cleaning time.

SPECIFICATIONS

Appearance @ 25°C*	Opaque Black Liquid
pH (as is)	5.0 – 7.0
% Active (100 – KF)	34.0 – 39.0

* Light precipitation or separation is normal. Mix well before use.

APPLICATIONS (Dilution ratio with pump)

Protective Sealants	500 – 1000 : 1
Clearcoats/Drying Agents	2500 : 1
Wipe-N-Shine	5 – 10 : 1

Cola®Dry Graphene is preferably used alone through direct dilution without reformulation to protect paint, glass, headlights, chrome, wheels, trim, and more from dirt and other contaminants.

STORAGE / HANDLING

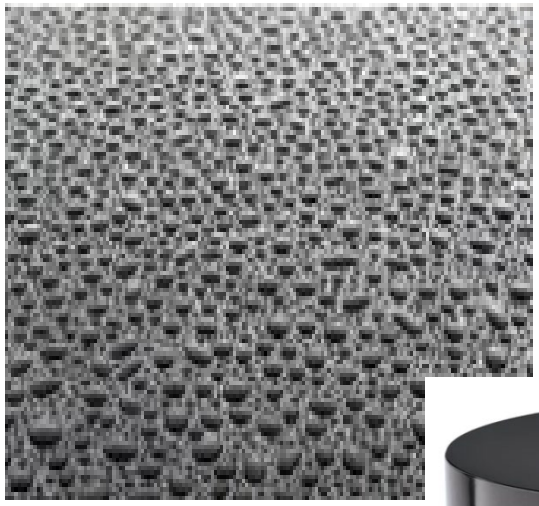
Cola®Dry Graphene should be stored in closed containers. Store between 40-140°F. Never freeze the product. Shipped in 55 gallon poly drums (net weight 450 lb/204 kg) and totes (2250 lb/1020 kg). Typical shelf life is 12 months from date of manufacture. Safety Data Sheets may be found at ***www.colonialchem.com.***

Colonial Chemical
Innovative Specialty Surfactants
www.colonialchem.com

Top Applications for Cola®Dry Graphene

Wheel Shine & Protection
(hand applied or automatic)

Sealants and Finishes



Applications

Applications	Dilution Ratios at Use	Benefits
Rim Protectants	20-50:1 Dilution 10-30% Hand applied	Reduce brake dust from building up and make it easy to re-clean
Ceramic Sealants	500-1000:1	High gloss protection with up to 30 to 40 days of beading/water repellency
Finishes and Polishes	30-50%	Used in detail shops for top finish in compounding products
Clear Coat / Drying Agent	2000-2500:1	High beading. More durable than MSO-based drying agents
Self-Cleaning Surface	20-50%	Build barriers to prevent soil buildup and for ease of re-cleaning
Windshield (Rain-X type)	10-20%	Water sheeting/beading off glass surface by wiping-on and wiping dry

Q&A

- ***Is Graphene another marketing gimmick?***
  - Depends on Graphene concentration and how well it is dispersed in water-based formulas
- ***Can Cola®Dry Graphene be reformulated?***
  - Not encouraged. Pre-dilution or adding water-soluble dyes and fragrance might be okay
  - Pre-dilution to lower concentration risk of losing stability of graphene dispersion, but we can help
- ***Would minor separation and precipitation affect performance?***
  - Minor precipitation or separation with time is normal and would not affect performance.
- ***How to apply the product? Would Graphene clog tubbing and pumps?***
  - Apply with a direct injection pump. Not recommended to dilute with a hydrominder. No clogging observed.

Q&A (continued)

- ***Can it share a rain bar with another sealant?***
  - Yes, in most cases with compatible chemistry.
- ***Does it leave black spots on vehicles?***
  - Not at use level. Even when being applied at higher concentrations in hand polishes or windshield treatments, thin layer of graphene is transparent
- ***Would Graphene stick to the mixer/containers?***
  - Possible, it may stick on mixers and containers and would not be easily washed off with water, but you can wash it off with some surfactants at elevated temperature (50-60C)

Reference Chart Cola®Dry N4, DAB, QS100, CR-502, Graphene for Car Washes

Cola®Dry	N4	DAB	QS100	CR-502	Graphene
Type	Mineral Seal Oil Microemulsion	Silicone Wax Additive	Silicone Wax Additive	Ceramic Sealant	Ceramic Sealant with Graphene
Formulation Requirement	Ready-to-dilute No formulation	Yes	Yes	Ready-to-dilute Not suggested	Ready-to-dilute Not suggested
Applications	Drying agents in car washes	Water-based formulation	Hand polishes and waxes	Sealants MSO-free drying	Sealants Self-clean MSO-free drying
Rinse Off	Yes	Yes	No	Yes/No	Yes/No

Samples are ready for request!

Question? We can help!

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https://colonialchem.com/products/coladry-graphene/

Thank you!