

# Creating Material Change



## **FLEXC0002 Graphene Heater Ink** Technical Data Sheet



*Innovation underpins everything we do*  
[www.haydale.com](http://www.haydale.com) **in** Haydale-ltd  
T: +44(0)1269 842946 E: [info@haydale.com](mailto:info@haydale.com)

# Screen Printable Graphene Ink

|                         |  |
|-------------------------|--|
| <b>Product name:</b>    | FLEXC0002 Graphene Heater Ink  |
| <b>Synonyms:</b>        | Graphene Ink, FLG Ink  |
| <b>Chemical family:</b> | Functional Graphene Ink  |
| <b>Properties:</b>      | Electrically Conductive, Flexible  |
| <b>Typical uses:</b>    | Garments – Gloves, Insoles, Jackets<br>Heating – Underfloor, Wall-Mounted Units, Low-Voltage, Mobile Home<br>Automotive – Heated Mirrors, De-Misters<br>Food – Plate Warmers, Food Heaters |

## Key Features

- Contains functionalised HDPlas® Graphene
- Designed for screen printing
- Electrically conductive
- Carbon, organic solvent-based ink (no metal)
- Curable at 120-140°C
- Flexible on appropriate substrate and easy to install
- Self-regulating and uniform heat distribution
- High heat efficiency at low power

## Handling Guidelines

- Printing equipment: screen printer; semi-automatic, manual, fully automatic
- Recommended squeegee: polyurethane, durometer 70 to 75
- Mesh count: meshes of 61-77 threads per cm
- Substrates including cotton, polyester / cotton blends, PVC, polyester, PET, TPU, glass, perspex, rigid PVC, plexi glass, mirrored glass
- Drying conditions: can be dried at 130°C for 3-4 minutes infrared or gas drying tunnel
- Clean-up solvent IMC00001 on press wash and mesh opener. Warning, do not use other screen cleaners as this may result in the ink gelling and the mesh blocking prematurely
- Storage: when not in use, the product should be kept sealed in its container and stored at controlled temperatures between 7-20°C. Warning, do not allow to freeze
- Shelf-Life: ink in an unopened container has a recommended shelf life of 6 months from date of delivery

*All values reported here are results of experiments conducted in our laboratories and are intended to illustrate the products performance. They are not intended to represent the final product specifications.*

| Test   | Specification                                 |
|--|---|
| Viscosity - Malvern Rheometer<br>-25°C at Sheer Rate 300 s-1 | <5 Pa.s                                       |
| Thickness - Micrometer                                       | Typical 13 µm wet emulsion;<br>4 µm dried     |
| Solids Content - Loss on<br>Drying                           | 25 - 29%                                      |
| Fineness of Grind - Hegman<br>Gauge                          | First Streak <20 µm                           |
| Sheet Resistivity - 4-Point<br>Probe                         | <25 Ω/sq normalised to 50 µm                  |
| Coverage   | 231cm <sup>2</sup> /g single pass             |
| Adhesion   | ASTM rating 5B when printed<br>on PET and TPU |
| Pencil Hardness  | Typical 2H when printed on<br>PET and TPU     |

## Health and Safety

These inks are intended for research and industrial use by trained personnel. It is important for workers to avoid overexposure to chemicals contained in these products. Always consult the Material Safety Data Sheet (MSDS) and product labels before using the products. Keep product container closed when not in use to prevent solvent evaporation and spilling hazard.

## Working with Haydale

This is just a selection of our ink products and applications. Contact our print team today for more information on formulations available for your specific application or product. **Our experts are here to help.**

Contact us: **T:** +44(0)1269 842946 **E:** info@haydale.com



The content supplied in this technical data sheet ("Information") supersedes all previous versions supplied. Version 2, April 2022

The Information should be used solely as guidance for the safe handling, storage, processing and/or use of the Product and is only typical of the methods described. The Haydale Group (Haydale Group means Haydale Limited, as a subsidiary of Haydale Graphene Industries plc., and any subsidiary or holding company from time to time and any subsidiary from time to time of any holding company of Haydale Limited) gives no express or implied warranty or guarantee or representation as to the behaviour of the Product described herein during any handling or storage or processing or use of the Product. To the extent permissible by law the Haydale Group shall under no circumstances whatever be liable whether in contract, tort (including negligence), breach of statutory duty, or otherwise, for any damage, including loss of profit, or any indirect or consequential loss arising under or in connection with any handling or storage or processing or use of the Product.