

Creating Material Change



HDPlas[®] Plasma Enhancement and Functionalisation Service



Innovation underpins everything we do
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Plasma Enhancement and Functionalisation Service

Haydale is a world leader in plasma treatment and functionalisation, specialising in providing a bespoke solution. We have built on strong foundations and operational experience to enable us to offer the best in plasma functionalisation of advanced materials and other surfaces. Bespoke solutions are currently available with varying levels of plasma treatment and functionalisation. Hydrophilic, hydrophobic, carboxylic, amine and oxidative modifications are frequently requested, and our consultancy services and tailored treatments have delivered success in a range of materials.

Haydale has plasma treated over 250 different types of material that it has characterised and fingerprinted, enabling specific properties to be targeted in future projects.

- HDPlas® treated nanomaterials (such as carbon nanomaterials or nanoceramics) show greater uplifts compared with their untreated counterparts. Improvements on thermal, mechanical and electrical applications are shown in elastomers, composites, inks and coatings due to the greater filler to matrix interaction.
- Powders (with more traditional dimensions) are susceptible to the plasma surface treatments, reducing (re-)agglomeration, improving wettability and reducing downstream processing time, as well as improved uplifts in the final product due to better chemical interaction with the matrix.
- Larger substrates such as metallic and non-metallic components, wafers and films are all susceptible to plasma surface modification and we offer tunable levels of surface treatment to control wettability by various fluids.



Plasma benefits

- Sophisticated plasma reactors deliver tunable levels of functional groups, chemically bonded to substrate surfaces.
- 3-dimensional treatment directed only at exposed surfaces, thus maintaining structural integrity.
- Various types of plasma available that confer different surface chemistries including cleaning plasmas for targeted removal of chemical contaminants.
- No solvents or harsh chemicals are used in this dry and environmentally friendly process.
- A scalable proven process already used in industry.

Additional features and options

- Nanomaterials can be supplied in a range of fluids, selected for specific composite industries, including but not limited to thermoplastic (Polypropylene, Nylon, HDPE, PLA etc.) and thermoset resins (Epoxy, Phenolics, Polyester, Polystyrene, Polyurethane etc.), aqueous and non-aqueous mediums etc.
- Plasma reactors are designed to process a broad range of powders, nanomaterials and components with a superior range of process control and precision.
- National Physics Laboratory verified process yields modification of surface chemical species.
- Batchwise process with fast turnaround and no downstream processing required.
- Transposable process and established Research and Development team ensuring targeted, professional approach to technical challenges.

The content supplied in this technical data sheet ("Information") supersedes all previous versions supplied. Version 1, October 2019

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