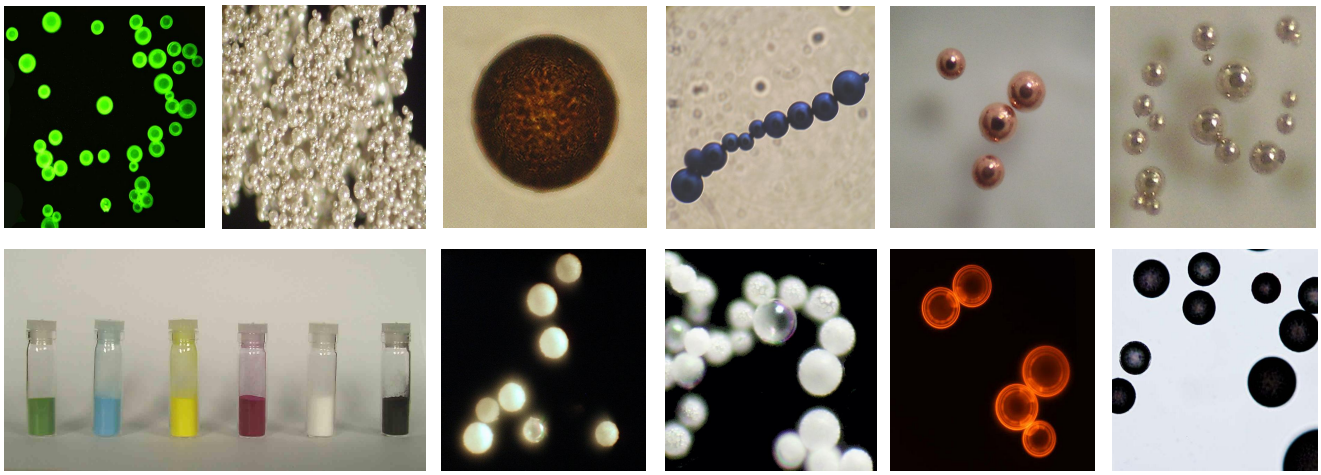
# micro sphere technology



# catalogue

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## INTRODUCTION

### Company

Microsphere Technology Limited (MTL) is an world leading innovative materials technology company, located near Edinburgh, Scotland. The company's core technology is the ability to coat hollow glass microspheres with a range of technologically relevant materials such as metals, pigments and dyes. These low density composite materials offer significant advantages over conventional materials such as weightsaving, buoyancy, ease of handling and reduction in raw material requirements.

### Knowledge

Knowledge and experience gained through the development of microsphere products for a large range of applications ensures that MTL can become the perfect technology partner. MTL offer specialist consultancy services in assisting in any microsphere related area, working with clients to achieve and produce new coated microsphere materials or to customise our own range of materials to produce your ideal coated microsphere. With these specialist services available you can gain the technological edge.

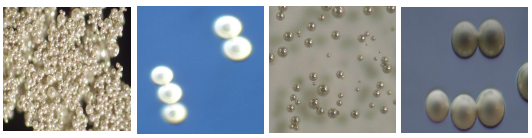
### Products

The team at MTL have the ability to coat a variety of microsphere base materials, including hollow glass microspheres, solid microspheres and cenospheres.

Using proprietary coating techniques, MTL take uncoated microspheres and create high value-added products by coating industrially relevant materials onto the surface. By selecting the appropriate size and density and by controlling the thickness of the applied coatings, MTL can offer clients products with specifications to meet the requirements of their application. MTL's coated hollow glass microspheres have many potential applications in such diverse areas as aerospace, defence, marine and automotive coatings, as well as the diagnostic, cosmetic and water sectors.

## PRODUCT INDEX

## CONDUCTOSPHERES™

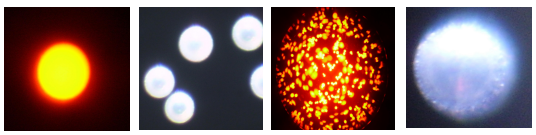


New to the MTL product range are CONDUCTOSPHERES. Silver-coated hollow glass microspheres specifically optimised for use in EMI shielding, CONDUCTOSPHERES are designed for use in paints, polymers, composites and resins. The optimised silver coating thickness provides the material with good conductive and shielding properties, whilst maintaining the excellent weightsaving benefits associated with the hollow core material. CONDUCTOSPHERES have been demonstrated to be a more efficient conductive filler than materials such as nickel and graphite powders and flakes. By incorporating CONDUCTOSPHERES into their products, composite manufacturers can realise significant weightsavings over solid silver particles and other conductive fillers.

Available in different sizes, CONDUCTOSPHERES are a high-tech product for use in military applications, electronics, paints and other industries.

| COATING | PRODUCT REF |
|---|---|
| SILVER | MTL/SIL |

## ISOSPHERES™

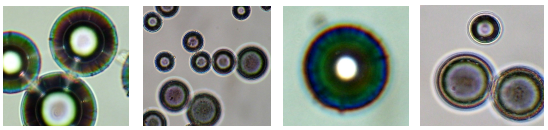


ISOSPHERES are a coated hollow glass microsphere product designed specifically for use in flow visualization and fluid dynamics. Designed with industry experts, ISOSPHERES are available with either a Rhodamine B or Titania coating. With a tight size and density distribution, ISOSPHERES are the optimal product for flow visualization as they stay in suspension longer so that more accurate data may be collected.

MTL have incorporated their vast experience into producing a seeding material that is able to match the quality and technical advancements of the most modern equipment. MTL have the ability to include customer specified fluorescent dyes to cater for individual applications.

| COATING | PRODUCT REF |
|---|---|
| RHODAMINE B | MTL/ISO-R |
| TITANIUM DIOXIDE | MTL/ISO-T |

## PHOTOSPHERES®

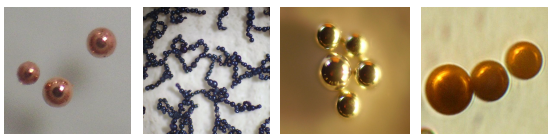


PHOTOSPHERES® are hollow glass microspheres coated with photocatalytic titanium dioxide (titania). In the presence of light in the near UV region, titania generates reactive oxygen species and hydroxyl radicals capable of breaking down many organic and inorganic pollutants in wastewater, as well as destroying micro-organisms. However, titania nanopowders used for this purpose are extremely difficult to recover from treated wastewater by conventional, high throughput filtration techniques.

MTL's PHOTOSPHERES® provide a buoyant, filterable and reusable alternative to solid titania nanoparticles for the photocatalytic remediation of wastewater. PHOTOSPHERES® show excellent photocatalytic activity against a range of water industry relevant organic pollutants and have also been demonstrated to be effective in reducing gaseous pollutants. The material is available in the size range 10 to 30 microns and has a robust, continuous, smooth surface coating of titania which does not shed into the treated water.

| COATING | PRODUCT REF |
|---|---|
| TITANIUM DIOXIDE | MTL/PHOTO |

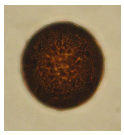
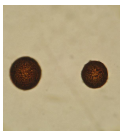
## METAL COATED MICROSPHERES



MTL produce hollow glass microspheres coated with nickel, copper, iron, gold or silver. The metal coating is applied by deposition processes which result in a robust, continuous, smooth coating. The thickness of the metal coating can be varied from a few nanometres to several microns.
Metal coated hollow microspheres can exhibit the magnetic and electrically conductive properties of solid metal particles, but with a substantial weight saving.
If necessary, a protective or functional coating can be applied to the surface of the metal coated microsphere.

| COATING | PRODUCT REF |
|---|---|
| NICKEL | MTL/NI |
| COPPER | MTL/CU |
| SILVER | MTL/AG |
| GOLD | MTL/AU |
| IRON | MTL/FE |

## FERROSPHERES™

MTL produce FERROSPHERES by coating hollow glass microspheres with superparamagnetic iron oxide.
FERROSPHERES are available with an amine functionalised surface ready for conjugating antibodies to create a buoyant immunocapture particle. The advantage of FERROSPHERES over other immunodiagnostic particles is that they are easy to recover from the sample matrix, particularly large volume samples. On standing they will simply float to the surface or, in a sample containing lots of particulate matter, they can be cleanly separated from debris by centrifugation.
We have developed a magnetic pen that allows the FERROSPHERES to be easily manipulated. They can be cleanly retrieved from the surface of the sample and then released into a another solution for further processing.

| COATING | PRODUCT REF |
|---|---|
| IRON OXIDE | MTL/FERRO |

## CONSULTANCY, PRODUCT DEVELOPMENT, CUSTOM PRODUCTS




**MTL can become your perfect technology partner.**

MTL are happy to provide their expertise in microsphere coating in the form of consultancy services. We offer the experience, know-how and skills gained from years of product development and material customisation to help clients identify and meet their coated microsphere needs. Combining advanced technology with experienced staff, MTL have the key abilities to analyse, develop and deliver workable solutions.

MTL also offers custom microsphere production services to complement our more standard products. Our ability to do this is drawn both from our years of experience in coating and working with microspheres and from repeated success in delivering tailored products to customers with specific material requirements. Microspheres customised to your particular application will enable you to have the competitive advantage in your marketplace.

Contact MTL for more information on the benefits coated microspheres can deliver to your product and customers.



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