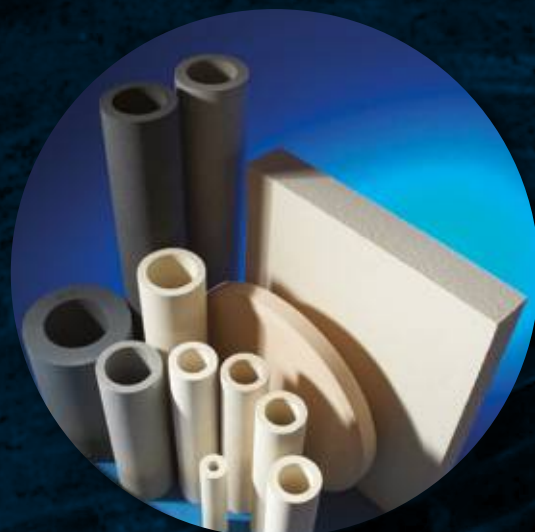




Filtration and Porous Ceramic Products

www.mantectechnicalceramics.com





Mantec Technical Ceramics, with an historical pedigree spanning more than 50 years, is a diverse manufacturing technology company providing bespoke and innovative ceramic-based solutions to global industries.

The Mantec ethos revolves around customer service, product quality, technical development and strong brand identities.

Mantec has its headquarters in Stoke-on-Trent, the heart of the UK ceramics region. This area is world famous for its ceramic expertise and heritage, which enables Mantec to employ the very best in technical know-how. Mantec constantly strives to remain industry specialists in all its fields of expertise and is able to export its ceramic-based solutions around the world.

A mix of wide-ranging ceramic materials combined with class leading and diverse ceramic manufacturing and technological experience fully equips Mantec to provide the innovative and world-class product solutions to a number of key industrial market sectors - including heavy clay, sanitaryware, tableware, aerospace & defence, technical & advanced ceramics, electronics, waste water treatment and others.

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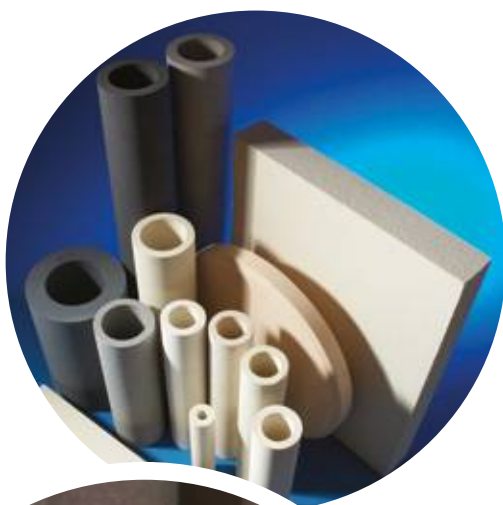
For further details, downloads and specification sheets please refer to our website or scan the QR code on the back cover.

Porous Ceramics

Mantec Technical Ceramics offers unique solutions in tackling specialist applications, which add significant value to its customers' products and processes in a wide range of industries such as aerospace, water and waste water treatment, specialist compressed gas systems, electronics, and food and beverage production. Tightly controlled ceramic pore structures with predictable permeability are two of the key features in delivering technical solutions to these industrial sectors where quality and reliability are paramount.

Technical Ceramics





Porous Ceramics

Mantec Technical Ceramics Ltd has been manufacturing industrial porous ceramics for over a quarter of a century and using this experience along with its in-house skills and expertise has enabled Mantec to bring forward new developments in manufacturing and application technology.

Mantec not only manufactures large batches of product to strict quality controls but also works closely with its customers to design and develop parts to assist them in solving their problems or increasing productivity.

The products are manufactured in the most part from a standard range of ceramic materials although there is a large compendium of specialist recipes that have been developed over the years for specific tasks. Some of these require the application of manufacturing techniques that have been honed over a long period of time.

The standard materials are:

Coralith; which comprises aluminosilicate particles bonded by glass and contains 85% of Al_2O_3 .

Pyrolith; also aluminosilicate particles bonded by glass but with a lower percentage of Al_2O_3 at 36%.

Microlith; A porous siliceous porcelain, which has a very fine pore structure and is used in a number of applications when controlled release is required.

Celloton; A reaction bonded porous mullite, used as a permeable membrane in applications such as soil science.

Further details of these products along with some of their physical properties can be seen on a specification sheet on the downloads section of the Mantec website under the title Materials Data Sheet.



Industrial Filtration

Mantec's porous ceramic filters and housings remove particles from air, gases and liquids not only in normal circumstances but also at high temperatures, high and low pressures and in unusual or extreme conditions.

Puremet Metal Pour Filters

Puremet metal pour filters are unique ceramic filters formed as reticulated, irregular, three-dimensional, open cell structure with a high average surface area. These filters are used extensively in casting aluminium alloys, stainless steel, superalloys, cobalt and copper alloys, zinc and zinc alloys, iron and steel.



Industrial Filtration

The word 'filtration' covers a number of applications in our homes and businesses. The use of filters ranges from heating, ventilating and air conditioning systems to coffee machines.

The need for filtration in situations when the materials or atmospheres are aggressive, or can be described as difficult, sometimes calls for specialist materials. Ceramics, although not only used in these specialist circumstances, are the materials of choice due to their resistance to acidic, alkali and hot atmospheres or liquids.



Puremet Metal Pour Filters

These filters are produced from specifically designed ceramic compositions with zero organic binders. The three-dimensional open structure with a variety of pores per inch (ppi) can be produced in a wide range of sizes and shapes specifically produced to meet the needs of the metal caster's set-up.

The filter fits into the runner system, cup or gate so that all the molten metal passes through it, improving the quality of the final cast.

They are also used as a catalyst or bio-mass support medium due to the wide range of sizes and shapes that they can be manufactured to and the ceramic formulation removing the risk of aggressive interactions.



Further details on both these product groups are available as a specification sheets in the downloads section of the Mantec website under the title Ceramic Filters.



Ceramic Membranes

Ceramic crossflow microfiltration membranes are used in continuous and batch processes where the feed stream flows parallel to the membrane surface. Membranes are available in different configurations including traditional round hole and Star-Sep™.



Ceramic Membranes

Mantec Technical Ceramics Ltd produces a range of membranes and substrates in a wide assortment of configurations for the end user and OEM market. We manufacture the world renowned Star-Sep™ ceramic membrane, which has been specifically developed for energy efficient crossflow microfiltration.

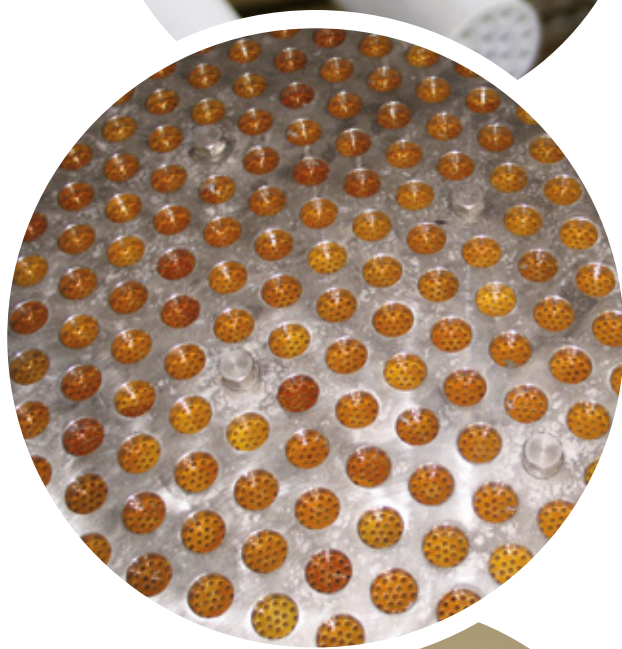
Mantec is associated with many of the leading systems houses, process plant designers and contractors whose clear remit is to deliver cost effective and energy efficient separation systems. For this reason they specify Star-Sep™ membranes.

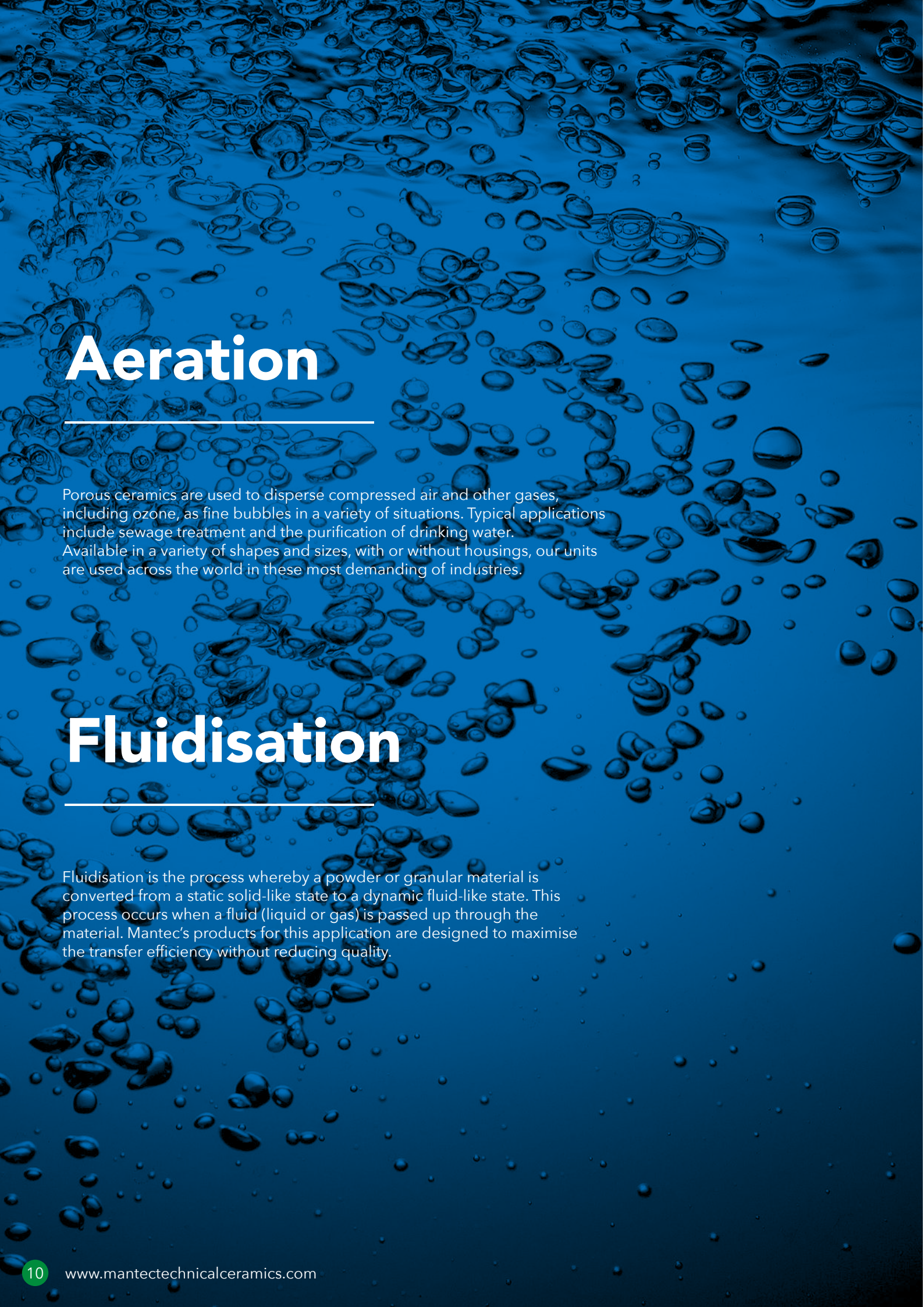
Standard round hole membranes are also available manufactured in house from the same top quality materials. Small numbers of membranes are available from stock although most products are made to order to ensure that production standards are met and only the highest quality product is provided to the user.

The choice of standard substrates has been developed such that the OEM customer can deposit an effective membrane coating onto the channels for use in applications such as pervaporation, microfiltration and ultrafiltration.

Substrates are generally supplied in alpha alumina, although other materials are available. Mantec offers a retrofit service for both membranes and housings. This is covered in a later section.

Further information on the membrane range can be found in the downloads section of the Mantec website under membrane filter configurations and Star-Sep™ ceramic membranes brochure.





Aeration

Porous ceramics are used to disperse compressed air and other gases, including ozone, as fine bubbles in a variety of situations. Typical applications include sewage treatment and the purification of drinking water. Available in a variety of shapes and sizes, with or without housings, our units are used across the world in these most demanding of industries.

Fluidisation

Fluidisation is the process whereby a powder or granular material is converted from a static solid-like state to a dynamic fluid-like state. This process occurs when a fluid (liquid or gas) is passed up through the material. Mantec's products for this application are designed to maximise the transfer efficiency without reducing quality.



Aeration

Porous ceramics have traditionally been used to disperse compressed air, in the form of fine bubbles, into sewage for activated sludge biological purification processes. Mantec's range of alumina-based porous ceramics has been developed to both maximise the transfer efficiency and bring to the industry many unique features.

They are also used for ozone injection into drinking water. Ozone is increasingly used to replace chlorine as an agent for killing bacteria and traces of pesticides in potable water. Unlike the chlorine traditionally used, it disappears quickly and leaves no aftertaste. It is typically dispersed into the water not as a pure gas but as an oxygen/gas mixture, usually delivered at a rate of 4 to 5 mg/litre through a series of fine bubble diffusers.

The Water Regulations Advisory Scheme (WRAS) contributes to the protection of public health by preventing contamination of public water supplies and encouraging the efficient use of water by promoting and facilitating compliance with the Water Supply (Water Fittings) regulations and Scottish Water Byelaws. Mantec's porous ceramic media Coralith C5 has been approved by the Water Regulations Advisory Scheme.

Fluidisation

Fluidisation or activation of finely divided materials by the use of diffused air has been extensively developed during the past 50 years, particularly for the handling of powders in bulk.

Fluidisation is the process of moving, transporting and treating powders and other granular materials by injection of air to make the powder act as a fluid. This means that air passes through a porous filter material where it is finely distributed and then creates a cushion or film to considerably reduce the friction between material and base.

Experience has shown that porous ceramic tiles, used as the permeable membrane through which air is injected and which also supports the powder bed, provide the most efficient means of ensuring the even dispersion of gas, which is essential to the success of an operation.



Flame Arrestors

Mantec manufactures high quality flame arrestors whose proven characteristics effectively allow gases to escape whilst preventing a spark, ignition, or flame from penetrating casings.

Speciality Ceramics

Mantec supplies a wide range of speciality ceramics for applications as diverse as soil science, the controlled release of vapours and the manufacture of optical crystals where the physical and chemical properties are an important characteristic.



Flame Arrestors

Flame arrestor vents can work in two directions by preventing a flame from entering or leaving a hazardous area.

Ceramics have the ability to continuously prevent flame propagation with the added benefit of maintaining their venting characteristics.

The fitting of a porous ceramic flame arrestor vent can prevent a flame entering the system and, due to its inherent strength, can also contain the forces of ignition within the system.

Many applications in the gas and petrochemical industries transmit or vent flammable gases through pipelines. If, however, there is air or oxygen in the system the gases or vapours may be ignited by a source either internal or external to the system. Other applications that use this product include standby power systems and breather vents for lead acid batteries.

Speciality Ceramics

Hydraulic and Pneumatic Piezometer Probe Tips

Used to measure the water pressure in soils and structures, essential in areas where a clear reading is required to indicate the water table level before it could start to erode or undermine civil structures.

Soil Moisture Monitors

Used in agriculture and horticulture irrigation systems as a means of triggering a water supply if the requisite level of moisture in the soil falls below pre-set levels.

Ceramic Crucibles

For over 40 years Mantec's ceramic crucibles and base pots have been key components in the manufacture of optical crystals. The crystals grown in Mantec's crucibles are used as infrared materials and are produced from sodium chloride (NaCl), potassium chloride (KCl) and potassium bromide (KBr).

Ceramics for Controlled Release

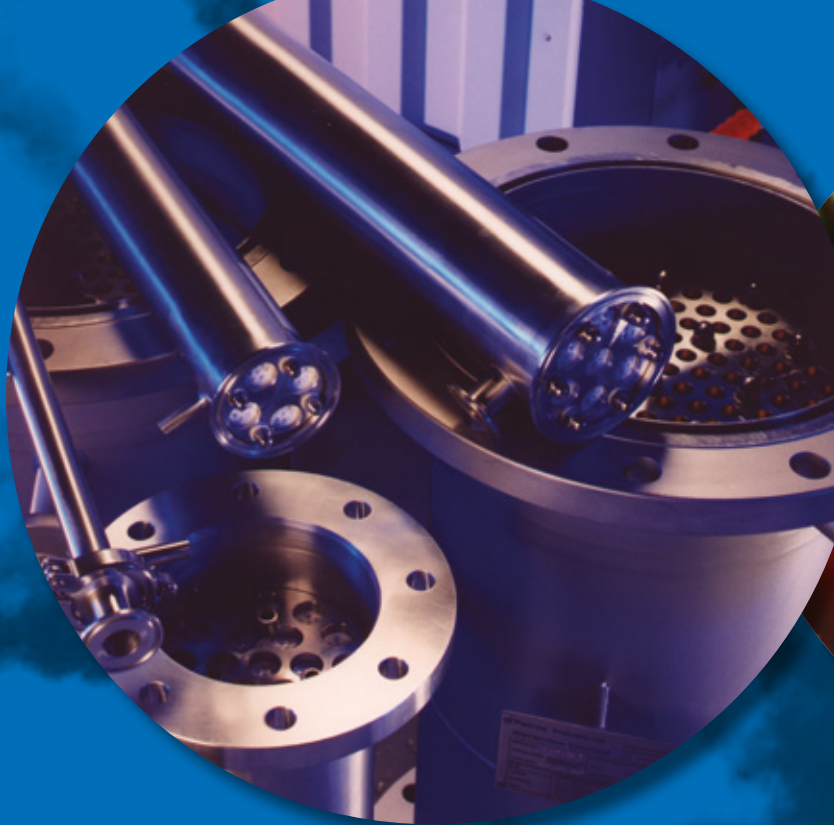
The ability of porous ceramics to absorb liquids and then release them at a controlled rate has triggered the development of porous ceramics for air fresheners and release of disinfectant.

The properties of ceramic materials, which include inertness, strength, rigidity and the ability to withstand high temperatures, and in particular porosity, guarantee its application versatility and make it appropriate as a medium for this type of product.

As well as producing the specialist ceramics, Mantec has a long history of additional services. These include:

- Retrofit membranes and membrane housings
- Laboratory and pilot scale crossflow rigs
- Diffuser housings
- Filter housings for both low and high pressure units including large bespoke units.

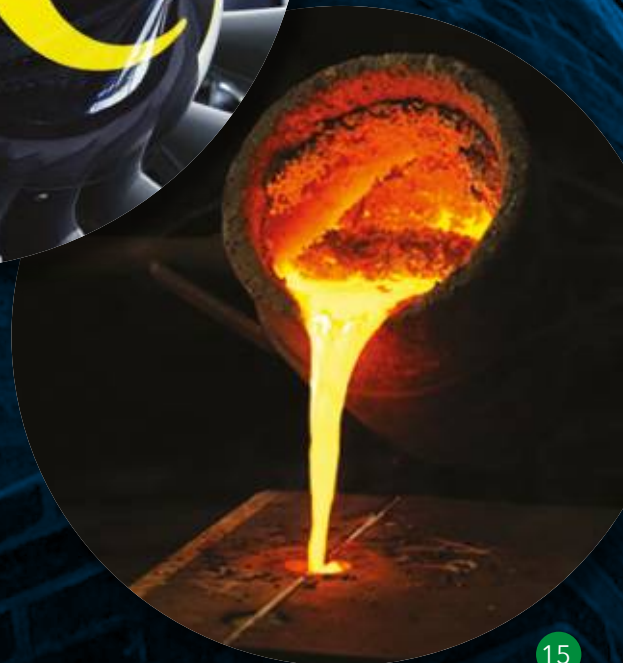
In addition to the filtration and porous ceramic range Mantec also produces insulation materials; pyrometric Bullers™ Rings and Bullers™ Process Control Discs for temperature control; electrical insulators and a range of sub-contract services.



The Mantec Technical Ceramics range of porous ceramic products is used across the world in industries and research situations as varied as pharmaceutical, fish farming, sewage treatment, food and beverage production, and investment metal casting. We can't list all the industries that we do know about and no doubt there are some that we don't.

If your industry and application is not listed here we would like to include it in the future. So, please do not hesitate to contact us and let's see how we can work together to improve your current process, develop a new one or solve a specific issue. We look forward to hearing from you.







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