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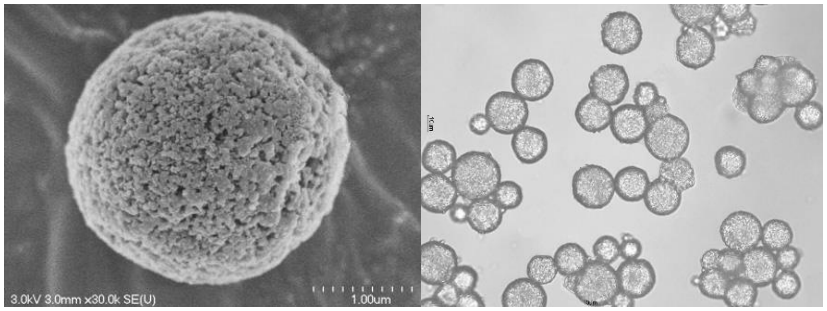
SOLUTIONS FOR ADSORPTION APPLICATIONS: MAT200 SERIES

HOLLOW SILICA MICROSPHERES

MAT200 series are amorphous micro-sized hollow spherical silica particles developed for a wide range of applications. Their high specific area and custom functionalization make them excellent adsorbents for different chemical and biological pollutants present in water and air (filtration/purification applications).



APPLICATIONS

- Waste water treatment
- Water purification
- Gas purification
- Chromatography
- Adsorption of polar and non-polar pollutants (e.g. heavy metals, sulphates, phosphates, phenols, dyes, aromatics, hydrocarbons, halogenated organic compounds, proteins, etc.)

TYPICAL PROPERTIES

Chemical Name	Silicon dioxide (SiO_2)
Structure	Amorphous
Surface Chemistry	Organic polar and non-polar groups
Morphology	Hollow microparticles
Size	Different sizes from 5 to 40 microns
Powder Density	0.1- 0.3 g/mL
Surface Area	> 100 m2/g
Pore Size	15 - 30 nm

SPECIFICATIONS

Forms Supplied
- White powder (free-flowing powder)
- Dispersion in solution (water, alcohols, etc.)

Custom Synthesis
- Special sizes
- Custom surface modifications (functionalization with organic, inorganic or metallic species)

Adsorption performance of our MAT200 series with different chemical and biochemical compounds

Classes	Compounds	Initial concentrations		Adsorption capacity (mg/g)
		MAT200 (g/L)	Compounds (ppm)	
Aldehydes	Furfural	25	25 000	300
Aromatics	Vaniline	25	25 000	360
Polyphenols	Catechol	25	25 000	340
Fatty acids	Butyric acid	25	25 000	410
Sugars	Glucose	25	25 000	310
Proteins	Bovine serum albumin	25	25 000	720
Ammonium	Ammonium	25	25 000	310
Phosphate	Phosphate	25	25 000	400
Sulphate	Sulfate	20	2000	80
Heavy metals	Solution of Al, Ca, Cu, Fe, K, Li, Mg, Mn, Na, Ni, Pb, S, Zn	33	900	6.6
Heavy metals	Solution of Al, Cu, Fe, Li, Mn, Ni, Pb, Se, Zn	10	900	>70
Heavy metals	Se	2	100	>50
Polycyclic Aromatic Hydrocarbons (PAHs)	(Mix of Fluorene, Naphthalene and Phenanthrene)	33	250	2
Oil	Vegetable oil	28	150 000	1000

Values stated in this technical data sheet represent typical values as not all tests are run on each lot of material produced. For formalized product specifications, please contact us.
Before using this product, please refer to the Material Safety Data Sheet (MSDS) label for use and handling instructions.

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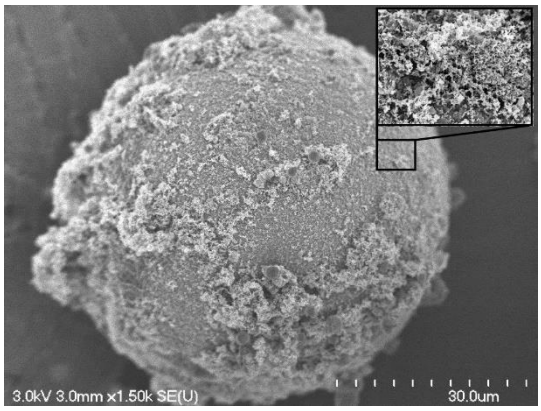
SOLUTIONS FOR ADSORPTION APPLICATIONS: MAT200 SERIES

SILICA-GRAPHENE COMPOSITE MATERIALS

MAT200G SERIES

MAT200G series consist of micro-sized hollow spherical silica particles covered with graphene layers. This results in a composite material having remarkable specific area and excellent adsorption properties for applications in water and gas purification.

Trade Name	**Powder Tapped Density**	**Composition** (wt. % of graphene)	**Particle Size** (D50) of silica particles
MAT200G	0.13 ± 0.03 g/ml	21	20 µm



APPLICATIONS

- Waste water treatment
- Water purification
- Gas purification
- Chromatography
- Adsorption of various polar and non-polar pollutants (e.g. heavy metals, sulphates, phosphates, phenols, dyes, aromatics, hydrocarbons, halogenated organic compounds, proteins, etc.)

TYPICAL PROPERTIES

Name	Silica-graphene composite
Surface Chemistry	Organic polar and non-polar groups
Morphology	Graphene-coated hollow silica particles
Purity	> 98 %
Size	Different sizes from 5 to 40 microns
Powder Density	0.1- 0.3 g/mL
Surface Area	> 200 m2/g

SPECIFICATIONS

Forms Supplied
- Black powder (free-flowing powder)
- Dispersion in solution (water, alcohols, etc.)

Custom Synthesis
- Special sizes
- Custom surface modifications (functionalization with organic, inorganic or metallic species)

Adsorption performance of our MAT200G series

Class	**Compound**	**Initial concentrations**		**Adsorption capacity** (mg/g)
		MAT200 (g/L)	**Compound** (ppm)	
Terpenes	Farnesol	25	25 000	260

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SOLUTIONS FOR ADSORPTION APPLICATIONS: MAT200 SERIES

GRAPHENE FLAKES

MAT200GF SERIES

MAT200GF series consist of nanoflakes of graphene or graphene oxide available in solution or in the form of powder. The size of these flakes ranges from 1-20 µm with a thickness of several nanometers (few layers of graphene or graphene oxide). For adsorption applications, they can be functionalized with various polar or non-polar molecules.

APPLICATIONS

- Waste water treatment
- Water purification
- Gas purification
- Chromatography
- Adsorption of various polar and non-polar pollutants (e.g. heavy metals, sulphates, phosphates, phenols, dyes, aromatics, hydrocarbons, halogenated organic compounds, proteins, etc.)

TYPICAL PROPERTIES

Name	Graphene
Surface Chemistry	Can be oxidized or not. Possibility of various functionalizations
Morphology	Flakes
Purity	> 98 %
Surface Area	> 500 m2/g
Flake Size	1-20µm
Flake Thickness	5-7 nm

SPECIFICATIONS

Forms Supplied

- Black powder (free-flowing powder)
- Dispersion in solution (water, alcohols, etc.)

Custom Synthesis

- Special sizes
- Custom surface modifications (functionalization with organic, inorganic or metallic species)

Adsorption performance of our MAT200GF series

Class	Compound	Initial concentrations		Adsorption capacity (mg/g)
		MAT200GF (g/L)	Compound (ppm)	
Hormone	Estrone	25	25 000	540
DNA	DNA	25	25 000	840

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