PQ silica based supports and catalysts are widely used in the manufacture of process intermediates & fine chemicals, elastomers & polymers, alternative energy, water treatment & environmental controls.

Today’s highly competitive global marketplace requires companies to continuously innovate and rapidly develop improved products or processes. PQ works closely with customers to develop and manufacture customized supports and catalysts to meet these challenges.

Combining PQ’s long history in the production of silica catalysts and supports with state-of-the-art manufacturing processes gives it the capability to tailor the properties of the supports and catalysts to meet specific performance demands.

PQ is also a key global supplier of polyolefin catalysts and supports widely used for the production of polyethylene and polypropylene.

Coupled with a range of laboratory & pilot assets, PQ has the technical expertise critical to the successful development and commercialization of customized chemical catalysts. From the creation of ideas and samples through to commercial manufacturing and supply, PQ can provide technical know-how and assistance to customers at any stage of the value chain.
THE BENEFITS OF PQ PRODUCTS

High Purity
As a result of the strict control of raw materials and advanced process technologies, PQ produces silica supports that have low levels of impurities. PQ is the world leader in the production of sodium silicate, a key raw material in the production of silica supports, so the quality of this critical feedstock is directly managed. High purity imparts silica supports with excellent thermal stability and well controlled acidity.

Uniform Products
Through the careful control of critical process steps, PQ produces products that are highly uniform at both a macroscopic level (batch to batch consistency) and a microscopic level (particle to particle uniformity).

Customizable Catalysts
Through proprietary process technologies and state-of-the-art manufacturing assets, PQ excels in its flexibility when tailoring physical & chemical properties;

Physical properties
- Surface Areas ranging from 100 – 1000 m²/g
- Pore Volumes ranging from 0.5 – 3 ml/g
- Particle sizes ranging from 1µm to 5mm
- Granular, spherical and extruded silicas
- Particle strength

Chemical properties
- Composition
- Purity
- Acidity
- Metal distribution and dispersion
- Surface functionalization

The tailoring of chemical properties is achieved by technologies such as co-gelation, impregnation, ion-exchange, surface reaction and encapsulation.

Access to Experts
Expert technical service is provided by an experienced team at R&D centres in the USA and Europe, who specialize in support, catalyst & process development. Being equipped with this diverse range of specialist knowledge and equipment allows for the rapid development of commercial products and processes from the simplest of ideas.
Delivering Expert Technical Service

Well-equipped analytical laboratories provide excellent capabilities in characterizing silica catalysts and supports for physical and chemical properties. The range of analytical techniques available includes, but is not limited to, the following:

<table>
<thead>
<tr>
<th>PROPERTIES</th>
<th>ANALYTICAL METHODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Porosity</td>
<td>N2 and Hg porosimetry</td>
</tr>
<tr>
<td>Particle size &amp; Shape</td>
<td>Laser diffraction, Dynamic image analysis, Dynamic light scattering, Optical microscopy, SEM</td>
</tr>
<tr>
<td>Particle strength</td>
<td>Individual particle strength, bulk crush strength, attrition</td>
</tr>
<tr>
<td>Composition</td>
<td>AA, ICP, XRF, EDS, IC, GC-MS, HPLC, titration</td>
</tr>
<tr>
<td>Thermal analysis</td>
<td>TGA, DSC</td>
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<tr>
<td>Crystallinity</td>
<td>XRD</td>
</tr>
<tr>
<td>Structural analysis</td>
<td>IR, UV-Vis, Raman, TPD, TPR</td>
</tr>
</tbody>
</table>

Lab and Pilot facilities are available for rapid scale up from grams to kilograms to tonnes and the range of available equipment includes mixing, washing, ion-exchange, filtration, extrusion, drying and calcination. Capability exists for both aqueous and organic processing.

For further information, contact us via email: techsupport@pqcorp.com
PQ’s global manufacturing operations have both the experience and the technical expertise to develop and manufacture products that meet the specifications demanded whilst exhibiting very low statistical variance.

In chemical synthesis catalysis, the surface area, pore volume, and pore diameter of the catalyst support strongly influences the dispersion of active metals and mass transfer of reactants/product, both of which can have a significant effect on catalytic activity.
Due to the importance of the metal to silica interface in catalysis, silica supported metal catalysts are arguably the most significant class of catalyst systems used today. As industry demands continue to change, the portfolio of metal catalysts supplied by PQ adapts to meet those needs.
STORAGE & HANDLING
PQ catalysts and supports must be stored in a dry place and handled sensibly to minimise creation of dust and build-up of static electricity.

HEALTH & SAFETY
Material Safety Data Sheets providing detailed toxicological and handling information on all PQ silica products are available upon request.
Technical Service
PQ Corporation offers a high standard of technical and analytical service to ensure optimum performance of its products. For assistance, contact us via email: techsupport@pqcorp.com

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