



## HWQ Series Phenolic Resin Microspheres

Jiangsu Haipu HWQ series phenolic resin microspheres are specially developed for high-performance porous carbon materials. Its unique three-dimensional porous structure can efficiently load high-capacity silicon materials. It not only solves the fundamental problem of volume expansion of silicon anodes, but also increases the theoretical capacity of anodes to more than ten times that of graphite. It provides a key path to break through the bottleneck of battery energy density and achieve ultra-long range of electric vehicles, directly giving birth to a high-end anode market worth hundreds of billions, and is a core material driving the industrial upgrading of high-end fields such as electric vehicles, low-altitude flight and robotics.

### Phenolic Microspheres for Premium Porous Carbon ▼

Regular Spherical Shape

Low Ash Content & High Carbon Yield

Precise and Controllable Particle Size

### Core advantages

- ✓ **Complete spherical shape with precise and controllable particle size**  
Dispersion index SPAN < 0.8, free of crushed powder and agglomeration. After carbonization, the carbon microspheres feature uniform morphology and stable mass transfer channels, suitable for CVD silicon-carbon deposition process.
- ✓ **Ultra-high carbon yield, more economical for mass production**  
Carbon yield after curing and carbonization  $\geq 52\%$ , with low raw material loss and minimal batch-to-batch fluctuation of carbon yield, greatly reducing the production cost of carbon materials.
- ✓ **Ultra-low ash content, no interference from metal impurities**  
Ash content < 0.1%, no residual strong alkali catalyst, no micropore blockage, and no adverse impact on battery electrochemical performance, adsorption capacity and catalytic activity.
- ✓ **Strong process compatibility and flexible customization**  
Compatible with all process routes including template method, direct carbonization and activation pore-forming; particle size, hue and crosslinking degree can be adjusted on demand, with supply ranging from lab-scale samples to ton-level batches.
- ✓ **Precise temperature control and staged polymerization**  
Adopting precision staged temperature control technology to accurately control the reaction process and directionally guide molecular chain growth, ensuring a controllable reaction.
- ✓ **Extreme stability with minimal error**  
Batch errors of core indicators such as D50, SPAN and strength are controlled within an extremely narrow range, meeting the requirements of high-end manufacturing.

# Key Technical Indicators

\*Customized products can be developed according to user requirements

| Model    | Appearance                               | Average Particle SizeD50/μm | SPAN  | Carbon Yield/% | Ash Content/% | Moisture/% |
|----------|------------------------------------------|-----------------------------|-------|----------------|---------------|------------|
| HWQ-116H | Tawny spherical particles                | 6-9                         | < 0.8 | ≥52            | < 0.1         | < 2.0      |
| WQ-118   | White to pale yellow spherical particles | 6-9                         | < 0.8 | ≥52            | < 0.1         | < 2.0      |
| HWQ-120  | White to pale yellow spherical particles | 9-12                        | < 0.8 | ≥52            | < 0.1         | < 2.0      |
| HWQ-122  | Tawny spherical particles                | 6-9                         | < 0.8 | ≥52            | < 0.1         | < 2.0      |
| HWQ-124  | Tawny spherical particles                | 9-12                        | < 0.8 | ≥52            | < 0.1         | < 2.0      |
| HWQ-126  | Tawny spherical particles                | 9-12                        | < 0.8 | ≥52            | < 0.1         | < 2.0      |

## Typical Application Scenarios



Porous carbon precursor for lithium-ion silicon-carbon anodes and supercapacitor electrodes



Special spherical activated carbon for industrial wastewater treatment, VOC control and lithium extraction from salt lakes



Porous carbon carrier for fine chemical industry, gas separation and catalyst loading



High-temperature resistant thermal insulation carbon foam and lightweight carbon materials for aerospace



Separation fillers for biomedicine, and R&D raw materials for university research laboratories

## Value of Choosing Us

No need for repeated screening and trial-and-error among general industrial phenolic resins. The products are specially developed for porous carbon carbonization scenarios, shortening the R&D cycle.

1

Stable supply capacity, supporting lab-scale samples, pilot tests and industrial batch orders.

3

We support targeted modification development in cooperation with customers to match their proprietary carbonization processes.

2

Supporting process technical references and professional technical support for carbonization applications.

4

## Full-Chain Technical Support

Jiangsu Haipu Functional Materials Co., Ltd. specializes in the R&D and production of special phenolic resins and adsorption separation materials. With an integrated production line covering resin synthesis, carbonization and activation, we provide customers with:

Free sample testing, and process debugging solutions for pore size and electrochemical performance

Precursor molecular modification and directional customized development of pore structure

Stable supply from lab test → pilot test → industrial mass production

Technical guidance for the whole process of carbonization and activation

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