

石墨烯导电剂

产品说明



专注研发，只为更高品质

一、产品概述

1. 石墨烯导电剂 (Graphene Conductive Agent, 简称 GCA) 采用昂星研发的特殊工艺制备, 其结构缺陷较少, 各项性能优异, 尤以导电性能最为突出。
2. 本品加工工艺独特, 极大地减少了片层堆叠, 保留了石墨烯的本征性能。此外, 本品含有少量的官能团, 且片径小, 因而在一些极性溶剂中分散性能优异。因此, GCA产品与电极材料、高分子、金属导电剂等材料兼容性较好, 能提高电池、导电银浆、导电膏等产品的导电性能, 更适合应用于电池导电剂、电子印刷等领域。

二、产品参数

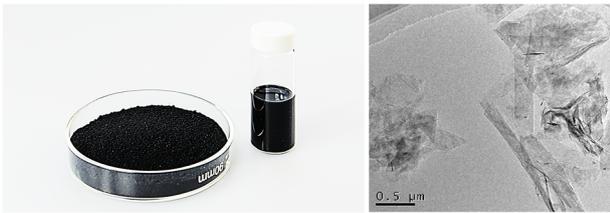


图1. 昂星GCA产品图和TEM图谱

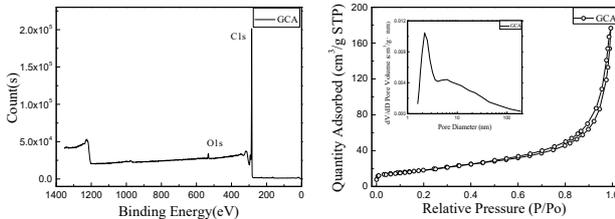


图2. 昂星GCA产品XPS分析和BET分析

技术参数	参数值
形貌	黑色粉体
厚度 (nm)	~10
片径 (μm)	0.1~0.8
碳含量 (wt.%)	~95
氧含量 (wt.%)	~3
灰分 (wt.%)	<1.0
比表面积 (m ² /g)	~80
电导率 (S/m)	~20000

三、产品性质说明

1. 分散性能: 本品在一些极性溶剂 (水、NMP、乙醇等) 中的分散性较好, 且分散后具有较好的稳定性, 加入适量的表面活性剂, 可进一步提高本品的分散稳定性能。本品分散在蒸馏水中易发生沉降, 可通过调节 pH (10~11) 进一步提高其分散稳定性。
2. 导电性能: 通过研磨将不同的导电剂与活性材料混合, 然后测试复合材料的导电性能。结果表明, 相比常规导电剂, 本品对复合材料的导电性能提升效果最为突出。

导电剂	添加量 (%)	电导率 (S/m)
乙炔黑	5	0.4
SP	5	0.3
科琴黑	5	4.6
碳纳米管	5	5.7
市场上石墨烯	5	2.1
本产品	5	6.8

四、应用情景举例

锂电池导电剂

石墨烯导电剂具有优异的分散性和导电性, 添加少量的导电剂, 可以有效提高锂电池的倍率性能和循环稳定性。相比常规的导电剂, 且本品的尺寸小, 分散于电极材料中有利于锂离子的扩散和电子传导, 从而更好的提高电池的性能。

五、注意事项

使用安全: 本产品为黑色粉末, 易飘散, 对人体的肺及呼吸道有害, 使用过程中请做好相应的粉尘防护。

贮存运输: 本品室温下密封保存。包装瓶为PS材质, 请远离热源。请勿与有机溶剂接触。

本说明书为简要产品说明, 具体产品说明请登录公司网站 www.ashinecarbon.com 查看及下载。

如果对上述内容存在任何疑问或需要相关文献, 欢迎联系我们: Sales@ashinecarbon.com

以上产品之物性仅供参考, 不作为本公司出货承诺书或验收准则。以上所提供的数据仅为一般通用信息, 为目前我方所了解的资料。因该产品适用及应用范围新而广, 有些甚至超出我方掌控, 因此, 即使我方没有考察到实际应用中的全部必要信息, 我方也不负任何责任。本公司保留改善产品参数之权利, 最终解释权归本公司所有。

Graphene Conductive Agent

Product Information



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FOR SUPERIOR QUALITY

I. Product Overview

1. The Graphene Conductive Agent prepared with a special process by Ashine is referred to as 'GCA'. Its structural defects are few and many performance indicator is excellent, especially its most prominent performance in electric conductivity.
2. The product has unique processing technology, greatly reducing the stacking of layers and retaining the intrinsic properties of graphene. In addition, the product contains a small number of functional groups and has a small size, giving it excellent dispersibility in some polar solvents. GCA is compatible with electrode materials, polymers and metal conductive agents, and can improve the electric conductivity of batteries, conductive silver slurry, conductive slurry and other products, making it suitable for battery conductive agents, electronic printing and other fields.

II. Product Parameters

Technical Parameter	Parameter Value
Form	Black powder
Thickness (nm)	~10
Diameter (μm)	0.1~0.8
Carbon content (wt.%)	~95
Oxygen content (wt.%)	~3
Ash content (wt.%)	<1.0
BET (m^2/g)	~80
Electric conductivity (S/m)	~20,000



Fig. 1. Ashine GCA Product and TEM Images

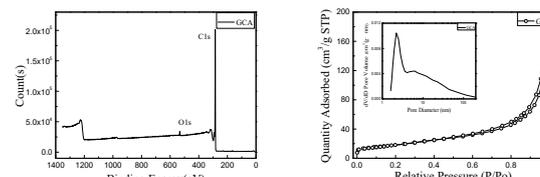


Fig. 2. Ashine GCA Product XPS Spectra and BET Diagram

III. Description of Product Properties

1. **Dispersion:** The product has good dispersibility in certain polar solvents (water, NMP, ethanol, etc.) and good stability after dispersion. Adding an appropriate amount of surfactant can further improve the dispersion and stability of the product. Dispersed in distilled water, it subsides easily and its dispersion stability can be further improved by regulating the pH (10~11).
2. **Electric conductivity:** The composites are prepared by grinding different conductive agents mixed with the active materials, and the electric conductivity of which is tested. The results show that compared with conventional conductive agents, the effects of this product on the electric conductivity of composites are the most prominent.

IV. Application Example

Lithium Battery Conductive Agent

GCA has an excellent dispersibility and electric conductivity, and adding a small amount of conductive agent can effectively improve the rate capability and cycle stability of lithium batteries. Compared with conventional conductive agents, this product has a smaller size and better dispersion in the electrode material, meaning that the diffusion of the lithium ion and the electric conduction are more favorable, so the performance of the battery is improved.

V. Notice

Safe use: This product consists of a black powder which is prone to float. As it can be harmful to the lungs and respiratory tract, please ensure appropriate dust protection when it is used.

Storage and transportation This product is stored at room temperature. The packing bottle is PS material. Please keep away from heat sources and any organic solvents.

This manual is a brief product description. Please visit the company's website at www.ashinecarbon.com to view and download a detailed product description. If you have any questions about the above or require the relevant literature, please contact us at Sales@ashinecarbon.com.

Properties of the above mentioned products are for reference only, and shall not be regarded as shipment commitment or acceptance criteria of the Company. All data provided above is general information we have learned as far. Due to new and wide application of the product, some even beyond our control, we will not bear any responsibilities in case we have not considered all necessary information in actual application. The Company reserves the right to improve product parameters as well as the final right of interpretation.

Conductive agent	Amount added (%)	Electric conductivity (S/m)
Acetylene black	5	0.4
SP	5	0.3
Ketjen black	5	4.6
Carbon nanotube	5	5.7
Graphene on the market	5	2.1
GCA	5	6.8