

热膨胀氧化石墨烯

产品说明



专注研发，只为更高品质

一、产品概述

1. 本产品是以氧化石墨为原料，经过高温脱氧并快速膨胀而获得的热膨胀氧化石墨烯（Thermal Reduced Graphene oxide），简称TRG。
2. 本品具有比表面积高、电导率高、批次稳定性好等优点，可以应用于吸附材料、保温隔热材料、超电容活性材料等领域。

二、产品参数



图1. 昂星TRG产品和TEM图谱

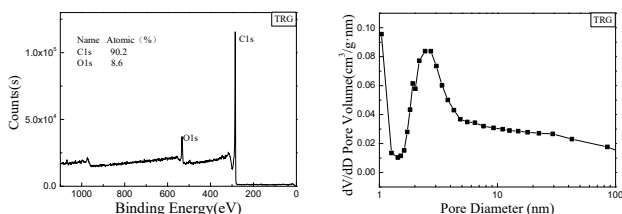


图2. 昂星TRG产品XPS分析和孔径分布分析

产品编号	TRG1210	TRG2210
形貌	黑色蓬松粉体	黑色蓬松粉体
厚度 (nm)	~4	~4
单层片径 (μm)	0.5~10	0.5~10
碳含量 (wt.%)	80±5	78±5
氧含量 (wt.%)	10±3	12±3
硫含量 (wt.%)	<1	<1
比表面积 (m ² /g)	~700	~544
振实密度 (g/L)	~7.7	~7.7

三、产品性质说明

1. 分散性能：相比于氧化石墨，TRG含氧官能团减少，在水溶液中分散性下降，通常不溶于水。在杆式超声条件下，选用DMF、NMP、DMSO 等极性溶剂进行粉碎性分散，可获得TRG 的有机分散液。薄片结构的TRG分散液可用于抽滤制膜。
2. 电导率：相比于氧化石墨和机械剥离石墨，TRG片层上有更多褶皱结构。通用型电导率可达300 S/m，高导电型电导率可达5000 S/m。

四、应用情境举例

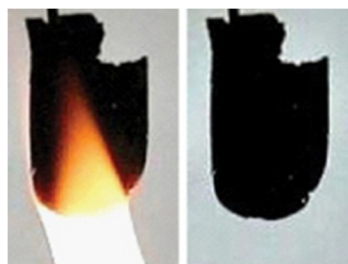


图3. TRG作为阻燃添加剂的阻燃示意图

TRG比表面积巨大且片层有阻隔作用，其在阻燃聚合物中的应用得到比较广泛的关注。添加在聚合物当中，其二维层状结构能形成良好的物理阻隔层。材料在燃烧时，裂解产物要经过由物理阻隔层构成的“弯曲路径”。因此能够抑制气体扩散和降低逃逸的速率，同时能够隔绝氧气和热量向基体内部扩散，从而提高复合材料的阻燃性能。

五、注意事项

使用安全：热膨胀氧化石墨烯粉体易飘散，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

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Thermal Reduced Graphene oxide

Product Information



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I. Product Overview

1. This product consists of thermal reduced graphene oxide with graphene oxide as the raw material after high temperature deoxygenation and rapid expansion. It is referred to as 'TRG' for short.
2. This product has such advantages as high specific surface area, high conductivity and good batch stability. It can be used in adsorption materials, thermal insulation materials, super-capacitor active materials and other fields.

II. Product Parameters

Product Number	TRG1210	TRG2210
Form	Black fluffy powder	Black fluffy powder
Thickness (nm)	~4	~4
Monolayer diameter (μm)	0.5~10	0.5~10
Carbon content (wt.%)	80±5	78±5
Oxygen content (wt.%)	10±3	12±3
Sulfur content (wt.%)	<1	<1
BET (m ² /g)	~700	~544
Tap density (g/L)	~7.7	~7.7



Fig. 1. Ashine TRG Products and TEM Images

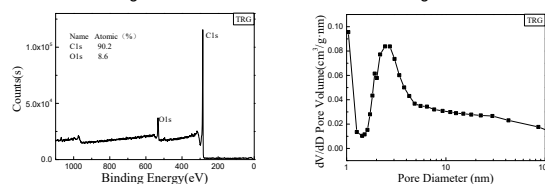


Fig. 2. Ashine TRG Products XPS Analysis and Pore Size Distribution Analysis



Fig. 3. Schematic Diagram of Flame Retardance of TRG as Flame Retardant Additive

IV. Application Example

Because of its high specific surface area and barrier action, TRG has attracted more and more attention in the application of flame retardant polymers. Added to the polymer, a two-dimensional layered structure can form a good barrier layer. When the material burns, the splitting product passes through a curved path made up of a physical barrier. Therefore, the diffusion and escape rate of the gas can be suppressed, and oxygen & heat can be isolated to the interior of the matrix, thus improving the flame retardancy of the composite.

V. Notice

Safe use: : TRG is prone to floating and can be harmful to the lungs and respiratory tract. Please ensure appropriate dust protection when it is used.

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

III. Description of Product Properties

1. **Dispersion:** Compared with graphene oxide, TRG has fewer oxygen-containing functional groups, its dispersion in aqueous solution is lower and generally it is not soluble in water. Under rod-type ultrasonic conditions, DMF, NMP, DMSO and other polar solvents can be used for crushing dispersion to obtain the organic dispersion of TRG. TRG dispersion with a sheet structure can be used for filtration membranes.
2. **Electric conductivity:** Compared with graphene oxide and mechanical peeling graphene, the TRG lamellae has more folded structures. The general conductivity is up to 300 S/m, and the high conductivity is up to 5,000 S/m.

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.

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