

技術資料表
Technical Data Sheet

抗靜電、靜電消散、導電 TYPE

塑料抗靜電、靜電消散與導電系列

Plastic Antistatic, Static Dissipative and Conductive Series

產品 product	塑料抗靜電、靜電消散、導電系列 Plastic antistatic, static dissipative, conductive series
來源 source	上禾伸企業

描述 Description

靜電在自然界幾乎是無所不在，靜電的產生主要來自於磨擦。當兩個絕緣物體的表面相磨擦分離後會發生靜電放電(ESD)，靜電放電會損害或摧毀敏感的電子零件，會擦掉或改變有磁性的媒介，也會引爆或引燃可燃性的環境。

每年單單發生於自然環境中與電子工業的靜電放電造成之損害，是非常巨大難以核算的。

Static electricity is almost everywhere in nature, and it is mainly generated by friction. Electrostatic discharge (ESD) occurs when two insulating surfaces separate by friction. ESD can damage or destroy sensitive electronic components, erase or alter magnetic media, or detonate or ignite flammable environments.

The damage caused by electrostatic discharge in the natural environment and the electronics industry each year is very huge and difficult to calculate.

抗靜電、靜電消散、導電塑膠 Antistatic, static dissipative, conductive plastics

主要功能即是避免靜電放電所造成的危害，此材料不會產生大量的靜電荷，並可在靜電荷累積到危害程度前將其消散。

導電塑膠具備電氣特性之塑料比其他材料具有更多優勢，因為這些導電性塑料均有絕佳的耐候特性，進而防止熱機械應力之影響，且易腐蝕性低。

抗靜電、靜電消散、導電，是將各種具有高、低導電性的添加劑或無機填充粉/纖維，如：抗靜電析出型、抗靜電高分子、碳纖維、金屬纖維、鍍鎳金屬碳纖維、奈米碳管及特殊導電碳黑粉末或金屬粉末等與熱可塑性塑膠結合進行複合改質 (compounding)，配製出具有抗靜電、靜電消散、導電功能，且可使用一般射出成型、押出成型與相關熱塑性塑膠成型設備加工之抗靜電/導電塑膠。

The main function is to avoid the harm caused by electrostatic discharge. This material will not generate a large amount of static charge and can dissipate the static charge before it accumulates to a harmful level.

Conductive plastics Plastics with electrical properties have many advantages over other materials because these conductive plastics have excellent weather resistance, thus preventing the influence of thermomechanical stress and have low corrosion susceptibility.

Antistatic, static dissipative, and conductive are the products of combining various additives or inorganic filler powders/fibers with high or low conductivity, such as antistatic precipitation type, antistatic polymer, carbon fiber, metal fiber, nickel-plated metal carbon fiber, carbon nanotubes, and special conductive carbon black powder or metal powder with thermoplastic plastics for compounding. The products are antistatic/conductive plastics with antistatic, static dissipative, and conductive functions are prepared and can be processed using general injection molding, extrusion molding, and related thermoplastic plastic molding equipment.

EMI 遮蔽簡述 EMI Shielding Overview



電磁波會使各種電子設備、通訊系統、電梯或交通工具等會產生傳導性電磁雜訊干擾，干擾信號影響裝置效能，進而導致設備出現異常或故障，嚴重時則會完全失去信號，稱為電磁干擾 (Electromagnetic Interference，簡稱 EMI)。而電磁干擾來自於自然環境中或是電子設備、通信設備..等等。

例如當我們看電視的時候，旁邊有人使用電吹風或電剃鬚刀之類的家用電器，電視屏幕上會出現的雪花噪點，電飯鍋煮不熟米飯，關閉了的空調會自行啟動.....等等，這些有可能是的電磁干擾現象。

如果電磁干擾信號妨礙了正在監視病情的醫療電子設備或正在飛行的飛機，則會造成不堪設想的嚴重後果。如此就好像是電子設備具有無形的攻擊力一般，對其他電子設備的正常運行造成了擾亂和破壞。

Electromagnetic waves can cause various electronic devices, communication systems, elevators or vehicles to generate conductive electromagnetic noise interference. The interference signal affects the performance of the device, which in turn causes the equipment to malfunction or malfunction. In severe cases, the signal will be completely lost. This is called electromagnetic interference (EMI). Electromagnetic interference comes from the natural environment or electronic equipment, communication equipment, etc.

For example, when we are watching TV, if someone nearby is using household appliances such as a hair dryer or an electric shaver, snow noise may appear on the TV screen, the rice cooker may not cook rice, the air conditioner may start up by itself, etc. These may be electromagnetic interference phenomena.

If electromagnetic interference signals interfere with medical electronic equipment that is monitoring a condition or an aircraft in flight, it will cause serious consequences that are unimaginable. It is as if electronic devices have invisible attack power, disrupting and destroying the normal operation of other electronic devices.

■複合塑料提供產品優秀、穩定的抗靜電、靜電消散、導電效果。

Composite plastics provide products with excellent and stable antistatic, static dissipative and conductive effects.

■複合塑料提供高分子抗靜電級透明級規格，以及非透明級自然色，可以再配色規格，製作成預期塑膠產品色相抗靜電的規格。

Composite plastics are available in polymer antistatic grade, transparent grade, and non-transparent grade natural color, which can be re-matched to produce the desired hue and antistatic specifications for plastic products.

■複合塑料可平衡及減少高分子塑料表面的靜電，塑料表面經過磨損後，依然能維持穩定的抗靜電效能，且時效性久與穩定。

Composite plastics can balance and reduce static electricity on the surface of polymer plastics. After the plastic surface is worn, it can still maintain stable antistatic performance, and the effectiveness is long-lasting and stable.

■複合塑料抗靜電規格絕大部份規格，是抗水洗規格，產品可經過水洗、泡水、反覆乾溼，抗靜電效果持久，或是功效衰退緩慢。

The vast majority of composite plastic antistatic specifications are water-resistant specifications. The product can be washed, soaked in water, and repeatedly wet and dry, and the antistatic effect is long-lasting or the effect decays slowly.

■複合塑料絕大部份規格非吸濕型的抗靜電效能，可在電子業與生物科技相關產業之無塵室中，控制潔淨度、溫度、濕度、壓差、氣流、振動的環境中使用。

Most of the composite plastics have non-hygroscopic antistatic properties and can be used in clean rooms in the electronics and biotechnology industries where cleanliness, temperature, humidity, pressure difference, airflow and vibration are controlled.

■複合塑料有抗靜電、靜電消散、導電功能外，亦可搭配其他複合功能性，如耐磨、耐溫、耐熱、抗 UV 耐候、高剛性、耐衝擊性、低溫耐衝、導熱、阻燃、發泡....等等。滿足塑膠產品複數、多元具有多項功能性塑料的需求。

In addition to antistatic, static dissipative, and conductive functions, composite plastics can also be combined with other composite functionalities, such as wear resistance, temperature resistance, heat resistance, UV resistance, high rigidity, impact resistance, low temperature impact resistance, thermal conductivity, flame retardancy, foaming, etc. Satisfy the demands of multiple and multi-functional plastic products.

■複合塑料抗靜電規格亦有吸濕型規格，抗靜電功效期限可達 1~2 年，低成本、經濟型規格，適用於環境在常溫 23°C 以上，空氣中有某些濕度，利用塑料抗靜電劑表面吸濕能力，達到抗靜電、靜電消散效能。

The composite plastic antistatic specification also has a hygroscopic specification, and the antistatic effect period can reach 1~2 years. It is a low-cost, economical specification that is suitable for environments with a room temperature above 23°C and a certain humidity in the air. It uses the surface moisture absorption capacity of the plastic antistatic agent to achieve antistatic and static dissipation performance.

靜電/導電範圍簡述 Static Electricity/Conductive Range Brief Description

品項 Item	一般塑膠 General plastic	抗靜電級 Antistatic grade	靜電消散級 Static dissipative grade	導電級 Conductive grade	EMI 遮蔽級 EMI shielding level	金屬類 Metal
體積、表面阻抗 volume, surface resistance	10 ¹² 以上	10 ¹² ~10	10 ¹² ~6	10 ⁶ ~1	10 ⁴ ~1	10 ⁻¹ ~5

單位 unit : Ω•cm / Ω。測試方式 Test method : IEC 60093

上禾伸企業-抗靜電、靜電消散、導電系列塑料品項介紹

SHS Enterprise Co., Ltd.- Introduction to antistatic, static dissipative and conductive plastics

NO.	抗靜電功效添加劑與簡述 Antistatic effect additives and brief description	功能時效(年) Functional validity (years)	表面阻抗範圍Ω Surface impedance range
a.	吸濕型抗靜電經濟型規格-無法水洗 Hygroscopic antistatic economical specifications - cannot be washed	1~2	10 ⁸ ~10
品項 Plastic items		PP、PE、EVA、ABS、AS、PS 工程塑膠 Engineering plastics POM、PBT、PC、PET、PA6、PA66 彈性體 Elastomer TPE、TPV、TPU、TPEE 合金 alloy PC/ABS	
b.	吸濕型抗靜電規格-可水洗 Hygroscopic antistatic specification - washable	1~2	10 ⁹ ~10
品項 Plastic items		PP、PE、EVA、POM、POE 彈性體 Elastomer TPE、TPU 低硬度 Low hardness、PVC 軟硬 Soft and Hard	
c.	高分子永久型抗靜電規格-透明 High polymer permanent antistatic specification - transparent	3~5 年以上 3~5 years or more	10 ⁹ ~10
品項 Plastic items		PE、PP、PMMA、PC、ABS、PA12	
d.	高分子永久型抗靜電規格-可配色用自然色 High polymer permanent antistatic specification - can be matched with natural color	3~5 年以上 3~5 years or more	10 ⁸ ~10
品項 Plastic items		PP、PE、EVA、ABS、AS、PS、 工程塑膠 Engineering plastics POM、PBT、PC、PET、PA6、PA66、PA12 彈性體 Elastomer TPE、TPV、TPU、TPEE 合金 alloy PC/ABS、PC/PBT	
e.	CNT 奈米碳管-黑色 CNT carbon nanotubes-black	與塑膠共存 Living with plastic	10 ⁴ ~8
品項 Plastic items		PP、PC、PC/ABS、PC/PBT、PA6、PA66 高性能工程塑料 High-performance engineering plastics PEI、PSU、PESU	



f.	導電碳黑 Conductive carbon black	3~5 年以上 3~5 years or more	10 ³⁻⁸
品項 Plastic items	ABS、PP、PC、POM 可客製化其他塑料品項規格 Other plastic items can be customized		
g.	碳纖維/剛性強化/耐熱-黑色 Carbon fiber/rigidity reinforcement/heat resistant-black	與塑膠共存 Living with plastic	10 ³⁻⁸
品項 Plastic items	PP、ABS、HIPS 工程塑膠 Engineering plastics POM、PBT、PC、PA6、PA66 合金 alloy PC/ABS、PC/PBT 高功能工程塑料 High-performance engineering plastics PEI、PSU、PESU、PPS、PA46、PA6T		

※歡迎來電、來信索取-抗靜電塑料相關物性技術資料！

Welcome to call or write to us to request the technical data on the physical properties of antistatic plastics !

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