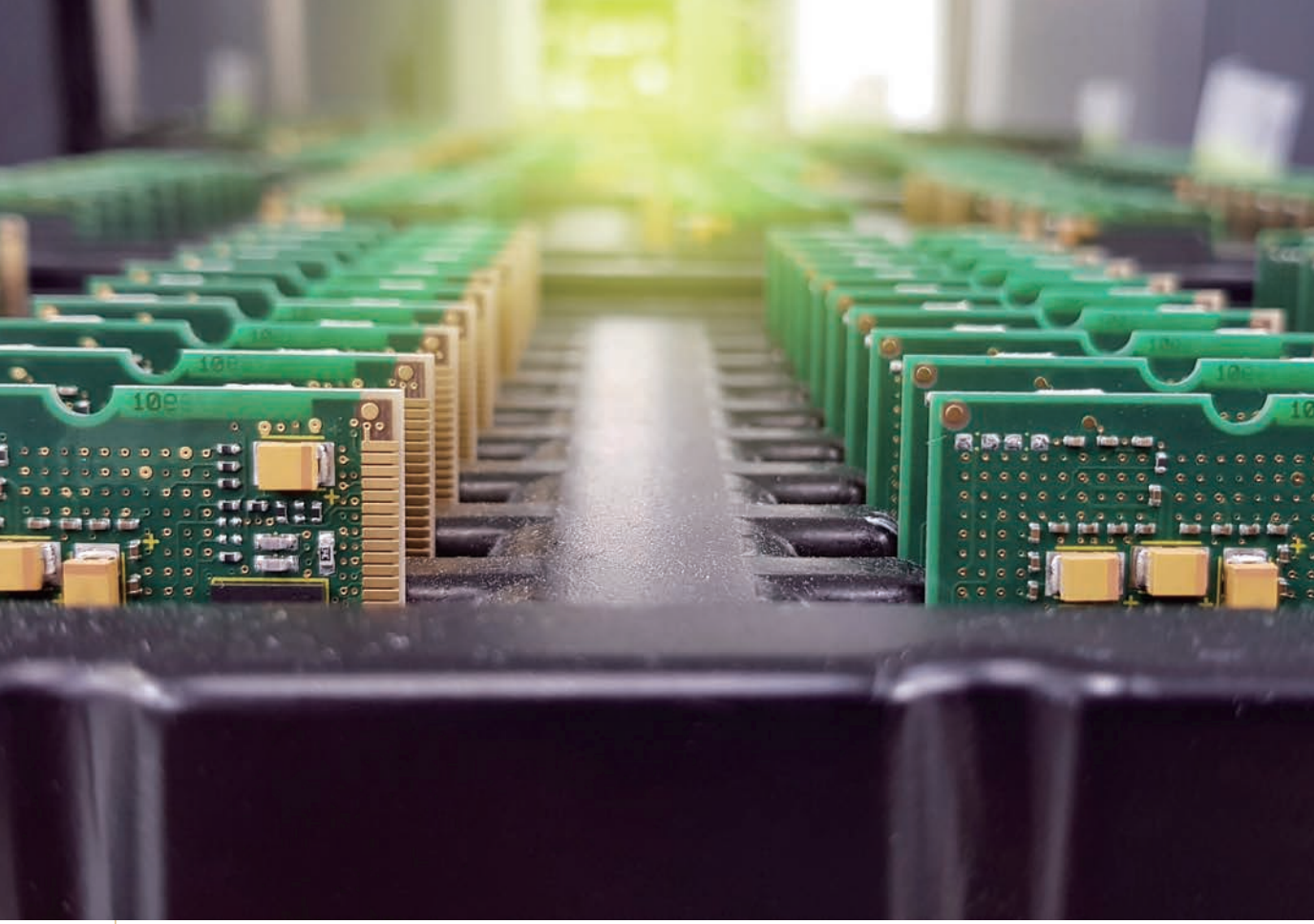

SANYO PRODUCT TOPICS

A wide range of applications prevent problems caused by static electricity from precision electronic components to medical applications

Plastics are widely used in society. However, they are highly insulating and easily electrically charged. The accumulated static electricity may cause various problems. We will introduce technologies to increase the conductivity of plastics and protect products from problems caused by static electricity.

"Electrification" and "Discharge" that lead to product defects

All objects in the world have positive and negative electric charges, but they are usually in balance and remain electrically stable.
In materials that do not conduct electricity well (insulators), such as plastics, this balance can easily break down, and either positive or negative static charge often occurs. This electrically charged state is called electrification.
On the other hand, the phenomenon of accumulated electricity flowing is called discharge. Since charged materials are electrically unstable, they discharge electricity in an attempt to return to a stable state. In winter, when you touch a doorknob, you feel an electric "bang" and pain, which is caused by the charged electricity flowing all at once to the doorknob.
This condition can cause a variety of problems. In our daily lives, dust is absorbed by electrification and electronic parts are destroyed by electrical discharge. In factories, there is a danger of "dust explosion," in which sparks created by electrical discharge ignite combustible dust floating in the air, causing an explosion.

Among antistatic agents, the polymer type with semi-permanent functionality

Antistatic agents prevent problems caused by static electricity. Antistatic agents are used by applying or mixing them into plastics that are prone to static electricity.
Antistatic agents are substances that facilitate the flow of electricity, but they must have adequate conductivity to avoid the risk of sparking (direct discharge) if too much is allowed to flow.
Antistatic agents can be broadly classified into three types: low-molecular-weight surfactants, conductive fillers such as carbon black, and polymeric types.
Surfactants are effective in small quantities, but their ability to conduct electricity depends on humidity, and they are not persistent.
However, their ability to conduct electricity is dependent on humidity, and they are not persistent, meaning that their effect fades over time. Carbon black has low resistance and longevity, but requires an addition of 20-30% of the plastic and is difficult to disperse evenly in the plastic. Due to its black color, it can only be used in black products, and it has the disadvantage of falling out of the plastic and causing staining.
The polymeric type is kneaded into the plastic and compatibilized, so it is not dependent on humidity and has no problem of falling off. Since the effect lasts semi-permanently, it is currently used in a wide range of applications.

"PELESTAT" and "PELECTRON" which blend well with plastics and demonstrate high conductivity

Sanyo Chemical sells PELESTAT as a polymer-type antistatic agent and PELECTRON with enhanced performance. PELESTAT and PELECTRON products are characterized by having both a component that facilitates the flow of electricity and a component that mixes easily with plastics. They are designed so that they do not significantly affect the performance of the plastic itself since they are kneaded into the plastic. In addition, the antistatic agents are designed to collect on the surface layer of the product during molding in order to make it easier for electricity, which tends to accumulate on the surface layer, to flow. These high performances have been highly evaluated and are used in dust boxes of vacuum cleaners and covers of air conditioners as applications to prevent dust adhesion. In the explosion-proof field, it is used in flexible container bags and helmets for storing and transporting powdery and granular cargo. In the medical field, they are used in inhalers for powdered medicines, as well as in materials for transporting powdered drug ingredients. In the field of electronic components, demand is increasing for

Flexible Container Bag

trays used to transport electronic components, as the miniaturization and higher performance of electronic components have made them less resistant to static electricity.

Technology to Support Industries in a Wide Range of Fields

In addition to the performance of PELESTAT and PELECTRON products, Sanyo Chemical's ability to make proposals based on its accumulated know-how and its ability to respond to detailed product design have been highly evaluated by customers, and the company's track record is growing.
In April, we launched a new "Products and Technologies Website" to actively provide information to customers, and are also considering the development of new applications in the electronic materials and medical fields.
In response to growing demand in the electronic materials field, we are also strengthening our production system. In July this year, we started production at the Rayong Plant (Rayong Province, Thailand) of our affiliate in Thailand, Sanyo-Kasei (Thailand) Limited, establishing a combined annual production capacity of 4,700 tons with Japan.
Polymer-type antistatic agents PELESTAT and PELECTRON are products that support industries in a wide range of areas where plastics are utilized. Sanyo Chemical will continue to contribute to society by leveraging its technological capabilities and accumulated know-how.

Powder drug inhaler

■Sanyo Chemical's main polymer-type permanent antistatic agents

	PELESTAT 300	PELESTAT 230	PELESTAT NC6321	PELESTAT 6500	PELECTRON PVL	PELECTRON AS
Appearance	Pale yellow Pellet	Pale yellow Pellet	Pale yellow Pellet	Pale yellow Pellet	Pale yellow Pellet	Pale yellow Pellet
Melting point (°C)	approx. 135	approx. 163	approx. 203	approx. 191	approx. 135	approx. 195
MFR (g/10min)	approx. 30 190°C/21.18N	approx. 10 190°C/21.18N	approx. 20 215°C/21.18N	approx. 20 215°C/21.18N	approx. 15 190°C/21.18N	approx. 30 215°C/21.18N
Refractive index	1.493	1.496	1.514	1.514	1.496	1.505
Td*1 (°C)	approx. 240	approx. 250	approx. 285	approx. 285	approx. 250	approx. 285
Surface resistivity*2 (Ω/sq.)	approx. 1×10^8	approx. 5×10^7	approx. 1×10^9	approx. 1×10^8	approx. 3×10^6	approx. 4×10^6
Recommended molding method	Injection molding	Injection molding	Injection molding Extrusion molding	Injection molding Extrusion molding	Injection molding Extrusion molding	Injection molding Extrusion molding
Recommended resin	PP, PE, etc.	PP, PE, etc.	ABS, t-ABS*3, PC/ABS, PBT etc.	ABS, t-ABS*3, PC/ABS, PBT etc.	PP, PE etc.	ABS, PC/ABS, PC etc.
Features	–	–	Low ionic contamination	–	Low resistance	Low resistance

*1 Thermal decomposition temperature, TG-DTA, in air
*2 PELESTAT and PELECTRON were molded independently, humidified at 23°C, 50% for 24 hours, and then surface resistivity was measured with a super-insulation tester.
*3 Transparent ABS

Please contact our sales department when handling our products.
Read the "Safety Data Sheet" (SDS) in advance. It is the responsibility of the user to determine the suitability and safety of the product for their intended use.