



Perseus Tech. International Corp.

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Nano-Silver-Antibacteria Polymer (NSAP series)

1. Introduction

Nano-Silver-Antibacteria Polymer (NSAP) product has functions such as anti-bacteria, anti-fungus, deodorization. NSAP series is used to add into the plastic resin by certain mixing ratio in order to make the plastic resins become anti-bacteria, anti-fungus, deodorization.

Silver is known to kill more than 650 kinds of bacteria and suppress the viral activity. The NSAP maximizes silver's multi-functions by nano technology. The main difference with normal silver colloids is that the NSAP is made by nano technology. NSAP is safe & easy to apply into conventional products.

We can adjust the proper NSAP particle per customer requirement for adding in their existing plastic resin to have the anti-bacteria function. And adding NSAP almost will not affect their original product property.

2. Application

There are many different application areas for NSAP series. Some of the applications can be described as follows:

1. Baby Supplies

Baby feeding bottles (plastic resins: PC, PES, etc.) - we developed NSAP for PC, PES, for baby feeding bottles and Nipple (plastic resin: silicon), Baby tooth brush (silicon), Cleaning brush for baby products (PBT)

2. Plastic Containers (Food/Medical/Cosmetic)

Concerned plastic resins for those fields are mainly "PP, PE, PC, and PET".

By applying NSAP into those plastic resins, the NSAP-added plastic container can maintain food's freshness

For medical / cosmetic, the skin trouble and side effects relating to those products, major problem is the bacterial activity inside the bottles and around the cap, pump, valve, and various components of the bottle. Adding NSAP is effective against those bacterial activities and minimize those problems.



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3. Home appliances (Refrigerator, vacuum cleaner, humidifier, air conditioner, air purifier, etc)

The main plastic resin for home appliances is "ABS". The common problem for home appliances is how to keep the environment clean. NSAP-added products are environmental-friendly and a strong natural killer against bacteria and suppress the fungus-/viral-activities.

4. Packaging / Wrap Film

The main function for this field is to maintain Food's freshness. The function of anti-bacterial capacity by adding NSAP can be most effectively and NSAP is the best solution.

5. 3C product

3C product is always contacted with human directly. The anti-bacteria function is necessary for the reduction of chance to get sickness. NSAP can be added to the plastic resin of the 3C product's covering, casing of cell phone, key-board, MP3...etc.

(3) Features of NSAP series:

1. Environment friendly and nontoxic.
2. Harmless to human body.
3. Multi-functions such as anti-bacteria, sterilization, anti-fungus, deodorization.
4. No resistance to virus.
5. Broad range of anti-bacteria spectrum.
6. Economical processing.
7. Cost and function competitiveness compared with other product

(4) Major property of NSAP series

1. Major component of NSAP series : Nano-particle silver(not iron)
2. nano-silver particle dimension : 20 nm
3. Color of NSAP: very light green
4. Anti-anion, anti-acid, weather proof
5. concentration of nano-silver polymer : ~ 450 ppm (2500 ppm also available)



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6. ph value : NA
7. Specific weight : > 1.25
8. Applicable material: PP, PE, PS, PET, PEN, PPS, PVC, TPE, ABS, Nylon...etc. most of the plastic, fiber material.

(5)Environment Harmless

NSAP do not contain the material of Pb, Cd, Hg, Cr(IV), PBB, PBDE.

(6) NSAP series applying mixing ratio

1. NSAP series product can be mixed with the different plastic polymer directly before injection. ◦
2. Mixing ratio: 1:9 (for 450ppm), 1:25 ~1:50(for 2500ppm).

The mixing ratio of 1:9 means that 1 kg of NSAP can mixed with 9 kg plastic particle to get the anti-bacteria function. This depends on the different plastic material which can be discussed per customer requirement.

(7)Storage

NSAP shall be stored in the cool, dry area and prevent the sun light directly before application.
The storage period of NSAP is two years in above condition.