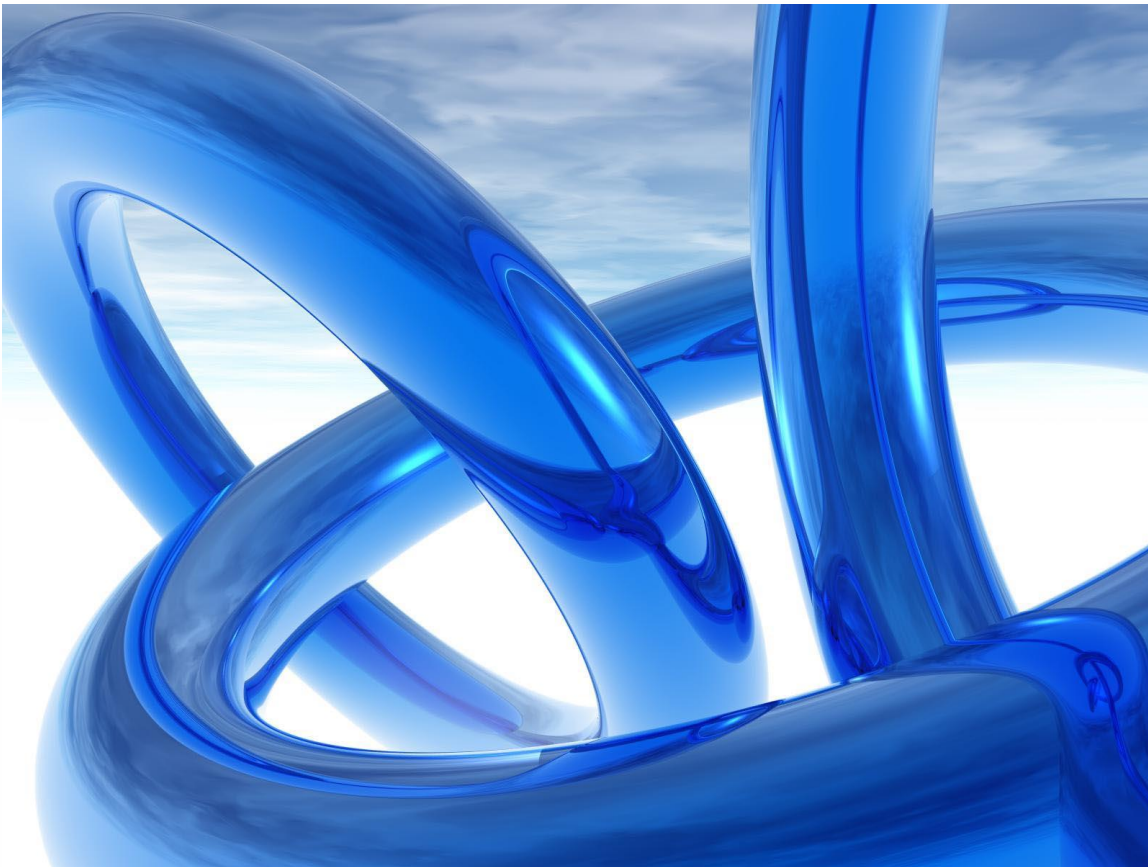


---

## Antistats

---



**Antistatic masterbatches from Ampacet brings electrostatic dissipative control properties for a wide array of applications including electronic packaging and more.**

## Summary

Antistatic masterbatch products provide permanent or long-term electrostatic dissipative control properties in a polymer and are widely used in electronic component package films and consumer product packaging to prevent dust build up. Antistatic products can contain migratory chemicals and non-migratory polymers.

## Product Overview

**Antistatic products are available in two general chemistries:**

**Migratory** antistat masterbatches contain antistatic additives that work when the final polymer part is formed. The low molecular weight antistat additive begins to migrate to the polymer's surface to form a microscopically thin coating. This coating actively captures water vapour from the air. The captured water, in turn, becomes the conductor to dissipate static electricity. If the antistat additive on the surface gets wiped away through use, more of the additive migrates out of the polymer to replace it. Popular additive chemistries contain amine or are amine-free. Amine-based products have wide usage utility but are not recommended for use for electronics packaging or contact with polycarbonates. Amine-free products are used frequently for electronics packaging.

**Non-migratory** antistat masterbatches contain clear polymeric antistat additives that are non-migratory and provide antistatic properties by forming static electricity percolating networks and are independent of atmospheric humidity. That is, the additive itself is conductive and if you load enough of the additive into the polymer, electricity can tunnel through the polymer if the gaps between the additives and the non-conductive polymer are small enough.



## Typical Product Applications

- Electronics and food packaging
- Medical applications (example: surgical drapes and gowns)
- Packaging of explosives, munitions or light-sensitive products
- Dust control, enhanced shelf appeal (example: bottles on the shelf, VFFS for powdered materials)
- Static reduction during processing (example: film wind-up stations, polymer fines attraction)

HDPE bottles and film (104355-N)

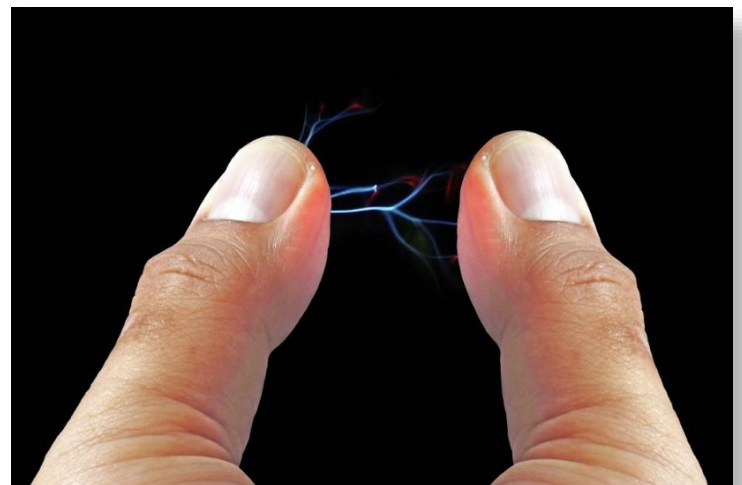
## Antistat Products/Codes

| Production Code    | Resins for use in | Properties                                   | LDR suggested |
|--------------------|-------------------|--|---------------|
| 10053 AS PE MB     | PE                | Migratory, wide uses except electronics pkg. | 2-4%          |
| 101140 AS PE MB    | PE                | Migratory, wide uses especially food pkg.    | 5-8%          |
| 104355-N HDSTAT    | PE, EVA           | Migratory, electronics pkg., dust abatement  | 1-5%          |
| 4000004-N AS PP MB | PP                | Migratory, electronics pkg., dust abatement  | 1-5%          |
| 7000041-N AS MB    | Many resins       | Non-migratory, multi-layer film skin layers  | 15% - 40%     |

## Technical Specifications

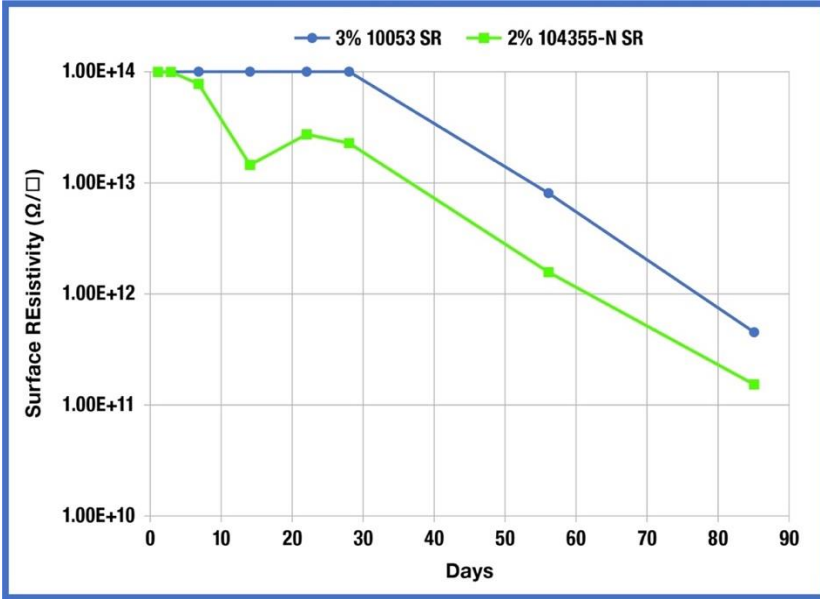
| Product                | Chemistry      | Max Temperature | FDA *                               | Comments   |
|------------------------|----------------|-----------------|-------------------------------------|--|
| 10053                  | 5% amine       | Up to 450°F     | Up to 2% in films;<br>3% in molding | Many usages except contact with polycarbonate and electronics pkg. |
| 101140                 | 6% amine-free  | Up to 500°F     | Up to 16%                           | Food & electronics packaging                                       |
| 104355-N/<br>4000004-N | 20% Amine-free | Up to 500°F     | Application dependant *             | Bottles, films & VFFS for packaging dust and static abatement      |
| 7000041-N              | Polymeric      | Up to 600°F     | Up to 17%                           | Can meet NFPA-99 and MIL-PRF-81705D                                |

(\* ) Ask Ampacet for details about regulatory compliance information.

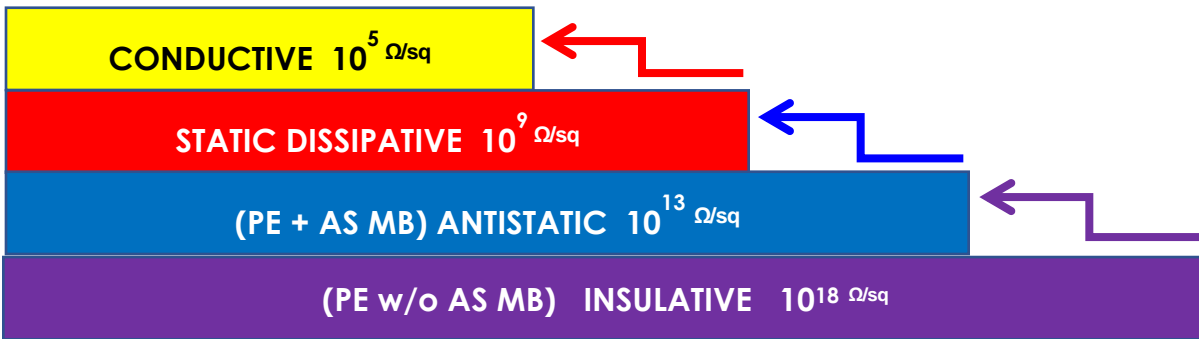


## Performance Data Film – 10053 vs 104355-N

- HDPE Film
  - Monolayer
- Superior Performance in Static Decay
  - Main function for Dust Control
- Faster rate of migration leads to better Surface Resistivity performance



Surface resistivity, often expressed in  $\Omega/\text{sq.}$ , measures the electrical resistance of the surface of the plastic. Two electrodes are placed on the same side of the surface of the plastic sample. A DC electric charge is passed through the electrodes. Resistance is calculated from the current measured in amps that passes over the plastic.



For more information on **Antistatic** masterbatches, uses and complete Regulatory Status, contact your Ampacet Account Executive or visit [www.ampacet.com](http://www.ampacet.com).

The information and recommendations contained in this document are based upon data collected by Ampacet and believed to be correct. However, no warranty of fitness for use or any other guarantees or warranty of any kind, expressed or implied, is made to the information contained herein, and Ampacet assumes no responsibility for the results for the use of products and processes described herein. No liability whatsoever shall attach to Ampacet for any infringement of the rights owned or controlled by a third party in intellectual, industrial or other property by reason of the applications, processing or use of the aforementioned information or products by the buyer.

Ampacet Website: [www.ampacet.com](http://www.ampacet.com)

**Global Regional Headquarters:**

Ampacet North America: 660 White Plains Road, Tarrytown, NY 10591-5130

Ampacet South America, S.A.: Dardo Rocha 2454 – 2o Piso, (B1640FTH) San Isidro, Buenos, Aires, Argentina

Ampacet Europe, S.A.: Zoning Industriel Riedgen, L-3451 Dudelange, Luxembourg

Ampacet Asia: Eastern Seaboard Industrial Estate (Rayong), 64/19 Moo 4, Highway 331, Pluakdaeng, Rayong 21140

