Imagine a thermoplastic compound with a uniform surface resistivity of $10^4$ to $10^9$ ohms/sq with loading levels of just 4-7%. One that maintains a resin’s key physical properties including ease of processing, shrink rate, impact strength, and surface finish. At RTP Company, we not only imagined it, we made it a reality.

Nanotube Compounds (NTC’s) contain hollow carbon nanotubes that are thousands of times smaller in diameter than carbon fibers. This “nanoscale” size means an extremely high aspect ratio (length:diameter), thus giving conductive properties at very low loadings. A more uniform conductive surface reduces the “hot spots” found with a carbon fiber filled compound. These structures also enable thin-wall molds to fill at lower temperatures.

NTC’s are not subject to static buildup like other dielectric plastic. They reduce cycle time and offer lower specific gravity than competitive conductive materials. NTC’s are a weight-saving alternative to other heavier materials. With low particulate generation, they are an ideal choice for applications where cleanliness is a consideration.

NTC’s are ideally suited for wafer processing, disk-drive components and cleanroom applications. They are beneficial in automotive applications needing static discharge protection, such as fuel system components. Other automotive uses are body attachments like mirror housings, door handles, wheel covers, bumpers, fenders, and interior parts. In such applications, their conductivity makes them excellent candidates for electrostatic painting without using a conductive primer.

Nanotube Compounds from RTP Company…another innovation from the leader in specialty compounding.
NANOTUBE COMPOUNDS
Uniformly Conductive Thermoplastics from RTP Company

RTP Carbon Nanotube Compounds

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon 6</td>
<td>PPS</td>
</tr>
<tr>
<td>Nylon 6/6</td>
<td>PEI</td>
</tr>
<tr>
<td>Nylon 12</td>
<td>PEEK</td>
</tr>
<tr>
<td>PC</td>
<td>PC/PBT</td>
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<tr>
<td>PBT</td>
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</tbody>
</table>

Nanotubes allow compounds to meet the stricter cleanliness requirements of the electronics industry. Shown here is an RTP Company R&D engineer using a gas chromatograph to test a nanotube compound for ionic contamination.

Liquid Particle Count

![Bar chart showing liquid particle count with high and low categories for Carbon Nanotubes, Carbon Black, and Carbon Fiber](image)

Product Development Contact

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Carbon nanotube compounds provide critical ESD protection in removable storage drive.

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