THERMALLY CONDUCTIVE COMPOUNDS

HEAT TRANSFERRING THERMOPLASTICS FROM RTP COMPANY

- Engineered for consistent heat dissipation
- Injection molding allows creative designs at a lower cost
- Lower weight than traditional heat sink materials
- Inherent corrosion resistance

ADDITIONAL BENEFITS

- **Achieve thermal conductivity up to 35 W/(m·K)**
- **Customizable thermal performance with variety of additives**
- **Can be electrically insulative or conductive**
- **Available in wide variety of thermoplastic resins**
- **Part consolidation simplifies device assembly**
- **Molded in color eliminates costly secondary operations**
- **Ideal for LEDs and portable electronic devices**

Imagine thermoplastic compounds that transfers heat like metal instead of insulating like traditional plastics. Increasing your design freedom by allowing part consolidation while reducing production costs using a single-step manufacturing process. At RTP Company, we not only imagined them, we've made them a reality.

While metals are often chosen for their high thermal conductivity, many applications do not require this high level of thermal transfer. In fact, air movement (or convection) more often determines how effectively a system dissipates heat.

RTP Company compounds thermally conductive additives into a wide variety of plastic resins to produce compounds optimized for thermal management in a wide range of operating temperatures and environments. Selecting a proper base resin provides chemical resistance, eliminating corrosion that can lead to failure of metal heat sinks.

Typically, thermally conductive compounds provide a 50% weight reduction over comparable aluminum heat sinks, especially significant in energy conscious transportation uses.

For many designs, heat sinks made of thermally conductive compounds and processed via injection molding offer greater design flexibility. This allows designers to maximize convection delivering better thermal performance while minimizing manufacturing costs.

Our thermally conductive compounds have been successfully used for heat sinks in applications such as: LED luminaires and LED lighting fixtures, consumer electronic devices, aerospace and automotive cooling systems, motor and battery housings, temperature sensors, and heat exchangers.

Thermally conductive compounds…another innovation from RTP Company, your global compounder of custom engineered thermoplastics.

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ISO 9001 REGISTERED FACILITIES

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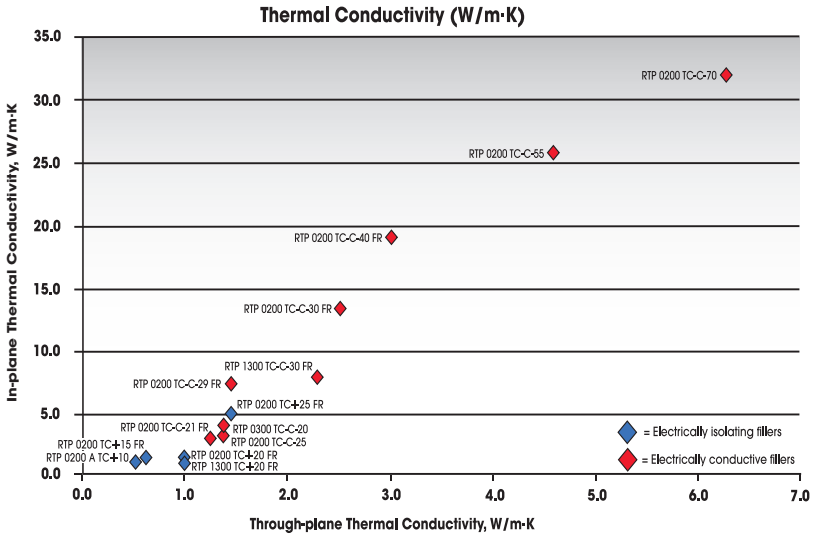
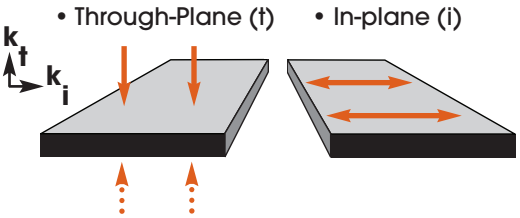
Range of Thermal Performance



Additive Orientation

Thermal conductivity (k) of thermoplastic compounds can be orientation dependent when high aspect ratio additives (fibers, flakes, etc.) are used because they tend to align with polymer flow during molding. This orientation can result in non-isotropic thermal conductivity where values in-plane tend to be higher than through-plane.



Higher in-plane values can be beneficial in dissipation of heat away from a single point source.

Comparative Properties for Common Compounds*

PRODUCT	RESIN	COLOR	ELECTRICAL ISOLATION	SPECIFIC GRAVITY	THROUGH PLANE W/(m·K)	IN-PLANE W/(m·K)	VOLUME RESISTIVITY ohm-cm	DIELECTRIC STRENGTH kV/mm	FR UL94
RTP 0200 TC-C-20 FR	PA 6/6	Black	No	1.68	1.3	2.8	10^3	–	V-0
RTP 0200 TC-C-21 FR	PA 6/6	Black	No	1.54	1.3	4.0	10^3	–	V-0
RTP 0200 TC-C-25	PA 6/6	Black	No	1.68	1.4	4.1	10^3	–	–
RTP 0200 TC-C-29 FR	PA 6/6	Black	No	1.69	1.5	7.1	10^3	–	V-0
RTP 0200 TC-C-30 FR	PA 6/6	Black	No	1.65	2.3	14.0	10^3	–	V-0
RTP 0200 TC-C-40 FR	PA 6/6	Black	No	1.82	3.0	19.2	10^3	–	V-0
RTP 0200 TC-C-55	PA 6/6	Black	No	1.59	4.6	25.7	10^3	–	–
RTP 0200 TC-C-70	PA 6/6	Black	No	1.71	6.3	32.0	10^3	–	–
RTP 0300 TC-C-20	PC	Black	No	1.5	1.4	4.5	10^3	–	
RTP 1300 TC-C-30 FR	PPS	Black	No	1.7	2.2	8.0	10^3	–	V-0
RTP 0200 A TC-I-10	PA 6	H R White	Yes	1.51	0.5	1.1	10^{11}	15	
RTP 0200 TC-I-15 FR	PA 6/6	White	Yes	1.64	0.7	1.2	10^{13}	10	V-0
RTP 0200 TC-I-20 FR	PA 6/6	White	Yes	1.8	1.0	1.5	10^{13}	11	V-0
RTP 0200 TC-I-25 FR	PA 6/6	White	Yes	1.86	1.5	5.0	10^{12}	15	V-0
RTP 0300 TC-I-15	PC	White	Yes	2.4	0.75	1.0	10^{13}	5	
RTP 1300 TC-I-20 FR	PPS	Tan	Yes	2.9	1.0	1.0	10^{13}	3	V-0

H R White= Highly Reflective White ** Custom compounds can be formulated to meet specific application requirements.*

RTP Company: Your Global Compounder Of Custom Engineered Thermoplastics