



### FEATURES

- Suitable for injection molding or extrusion
- Visible under x-ray imaging
- Customizable for density, color, and other physical properties

### BENEFITS

- Shield people from x-ray generating sources
- Retain desirable attributes of lead while avoiding toxicity issues



When compounded with the proper resin base, additives like tungsten can provide radiopacity.

### RADIATION-ABSORBING THERMOPLASTICS



Radiopaque compounds allow medical devices like catheters to be seen via X-ray for proper positioning and removal.

Radiopaque Compounds are used in medical devices that are inserted into the body for diagnostic or surgical procedures. These compounds contain additives that render the devices visible under x-ray imaging or fluoroscopy, which continuously updates a moving image on a display. The additives, called radiopacifiers, attenuate energy differently, thus providing the contrast in a x-ray image.

The additive technologies selected by RTP Company for Radiopaque Compounds absorb higher levels of x-rays compared to surrounding tissue,

which provides visibility on x-ray imaging. This visibility provides the contrast needed to accurately locate or position the device inside the body during critical procedures. The type and amounts of radiopaque additives used will affect the image contrast and sharpness.

Since radiation exposure can harm people, it is often necessary to shield or enclose x-ray generating devices with a material that resists radiation penetration. Lead has historically been used as a commercial shielding material, but not without environmental and health concerns. Radiopaque Compounds preserve the desirable attributes of lead (radiation absorption, ease of forming, and density) while avoiding its toxicity and disposal concerns. Testing has shown that when compared to lead, Radiopaque Compounds offer similar radiation-shielding properties and can sometimes be used as a "drop-in" replacement.

Radiopaque Compounds can be formulated using a variety of thermoplastic polymers and additives to customize a product's specific gravity and physical properties for your specific requirements. RTP Company engineers carefully select materials for a precise balance of properties.

### COMMON RADIOPACIFIERS

In order for a thermoplastic compound to absorb radiation, it should contain a radiopaque additive. The type and amount depends on the base resin and on the wall thickness, surface smoothness, color, and other desired properties of the device. The most widely used radiopacifiers are barium sulfate, bismuth, and tungsten.

**Barium Sulfate** - This is the most widely used radiopaque additive for thermoplastic compounds, as it is very stable and inexpensive. Compounds containing barium sulfate can be successfully colored, including dark colors and black.

**Bismuth Compounds** - While bismuth is more expensive than barium sulfate, it has a higher density. Bismuth may produce a brighter, higher-contrast, and sharper x-ray image than does barium sulfate.

**Tungsten** - Compatible with most polymers, tungsten is more than twice as dense as bismuth and provides a high level of radiopacity. Loading levels up to 95% by weight are possible. Most compounds containing tungsten are dark gray in color, which limits coloring options.



RTP Company Corporate Headquarters • 580 East Front Street • Winona, Minnesota 55987 USA website: [www.rtpcompany.com](http://www.rtpcompany.com) • email: [rtp@rtpcompany.com](mailto:rtp@rtpcompany.com)

TELEPHONE:	U.S.A. +1 507-454-6900	SOUTH AMERICA +55 11 4193-8772	MEXICO +52 81 8134-0403	EUROPE +33 380-253-000	SINGAPORE +65 6863-6580	CHINA +86 512-6283-8383	WIMAN CORPORATION +1 320-259-2554	ESP™ +1 800-432-2386
------------	---------------------------	-----------------------------------	----------------------------	---------------------------	----------------------------	----------------------------	--------------------------------------	-------------------------



No information supplied by RTP Company constitutes a warranty regarding product performance or use. Any information regarding performance or use is only offered as suggestion for investigation for use, based upon RTP Company or other customer experience. RTP Company makes no warranties, expressed or implied, concerning the suitability or fitness of any of its products for any particular purpose. It is the responsibility of the customer to determine that the product is safe, lawful and technically suitable for the intended use. The disclosure of information herein is not a license to operate under, or a recommendation to infringe any patents.