



DURABLE ABR COMPOUNDS

WEAR AND FRICTION RESISTANT PRODUCTS

FEATURES

- Abrasion resistant
- Durable in extreme conditions, excellent cold temperature impact resistance
- Formaldehyde free
- Lightweight
- Less expensive
- Injection molded or extruded
- Global availability, in many resin/additive combinations and colors

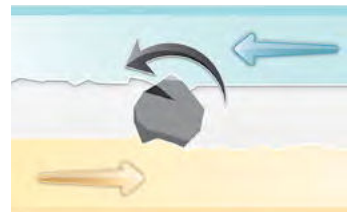
BENEFITS

- Resists abrasion caused by third party abraders
- Offers ultimate durability in extreme conditions for automotive, agricultural, and recreational vehicle applications
- Formaldehyde free for FDA and cosmetic packaging applications
- Lighter in weight compared to metal
- Eliminates costly secondary processing, thereby reducing overall total cost
- Can be injection molded, unlike other solutions that are limited to compression or ram extrusion
- Performance can be further enhanced by utilizing a wide range of resins and additives
- Suitable for both lower and higher volume applications

DURABLE ABR (ABRASION RESISTANT) COMPOUNDS

RTP Company formulates durable thermoplastic compounds that resist abrasion, known as ABR (Abrasion Resistant) Compounds. They are designed specifically for injection molding, offering a whole new way to solve abrasion issues!

Substances that cause abrasion are not easily predicted or managed; third party abraders can generate debris, resulting in system contamination and adverse effects on operations and quality. Typically, abrasion is catastrophic to a system, so minimizing the effects of abrasion is crucial.



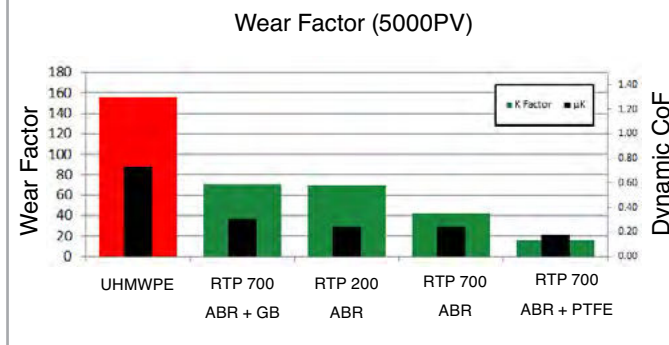
ABR Compounds from RTP Company can reduce abrasion and provide additional properties to meet even the most challenging application requirements. With excellent cold temperature impact resistance, these compounds are ideal materials for automotive, agricultural, and recreational vehicle applications.

In addition, ABR Compounds are formaldehyde free, which opens up many possibilities for FDA and cosmetic packaging applications. They can also be used as a metal replacement for complex parts and assemblies, a particular benefit for automotive applications when lighter weight and better efficiency are needed.

Because ABR Compounds are available in multiple resin and additive combinations, product designers have extreme flexibility to create successful, durable parts. These materials are offered in natural, black, a selection of standard colors or they can be custom-colored. Additional functionality such as wear and friction resistance, flame retardancy, and conductivity can be included in ABR compounds, so one material can solve multiple issues.

Data from multiple, industry-recognized test methods suggests that RTP Company's Abrasion Resistant Compounds demonstrate abrasion resistance comparable to UHMWPE (Ultra-High Molecular Weight Polyethylene). In addition, these compounds are superior to UHMWPE in wear and friction tests (see Figure 1).

FIGURE 1: ASTM D3702 WEAR AND FRICTION



With the added advantage of being injection moldable, our Abrasion Resistant Compounds are not limited to stock shapes that require costly secondary processing, making the design possibilities seemingly endless! Abrasion Resistant Compounds... available from RTP Company - your global compounder of custom engineered thermoplastics!

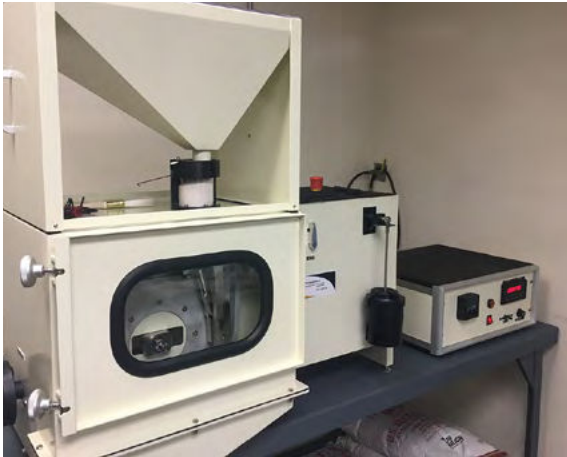


RTP Company Corporate Headquarters • 580 East Front Street • Winona, Minnesota 55987 USA website: www.rtpcompany.com • email: rtp@rtpcompany.com

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



ABRASION TESTING



How Are Thermoplastics Tested for Abrasion Resistance?

RTP Company regularly uses in-house testing equipment to perform abrasion tests and measure the Mass Loss of materials after testing. Less Mass Loss after undergoing the test indicates superior abrasion resistance.

In both Figures 2 and 3, a lower value of mass loss indicates better abrasion resistance by the material.

ASTM G105: Sand Slurry Abrasion Test

This is the test for evaluating average Mass Loss after applying an abrader under wet conditions.

- Specimens are tested against a 60 Shore-D neoprene rubber wheel (1,000 cycles)
- Exposed to sand slurry
- Average Mass Loss is measured

Results of testing are shown in Figure 2. A lower value of mass loss indicates better abrasion resistance by the material.

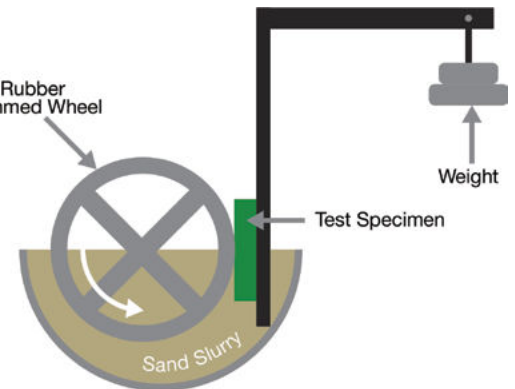
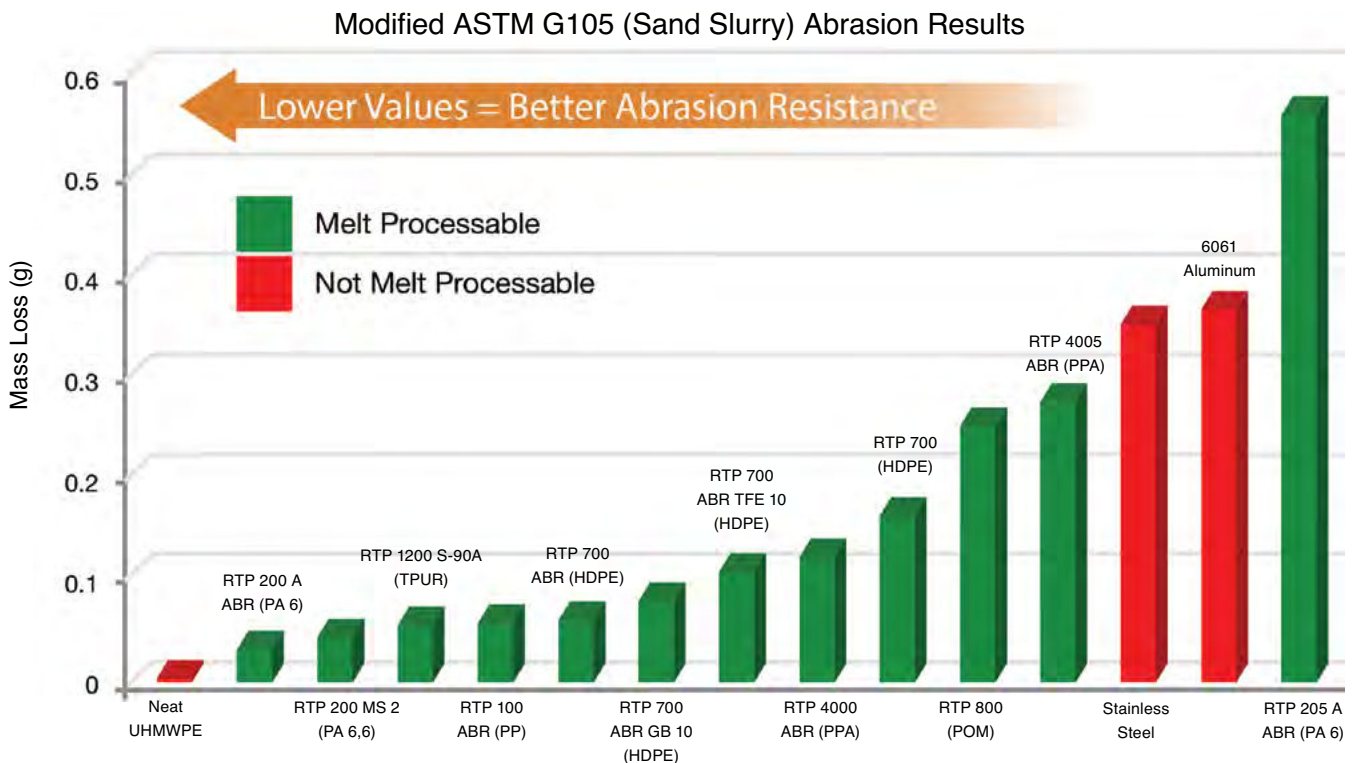


FIGURE 2: RTP COMPANY ABRASION RESULTS - WET SAND



ASTM G65: Dry Sand Abrasion Test

This is the test for evaluating average Mass Loss after applying an abrader under dry conditions.

- Specimens are tested against a 60 Shore-D neoprene rubber wheel (2,000 cycles)
- Exposed to dry sand
- Average Mass Loss is measured

Results of testing are shown in Figure 3. A lower value of mass loss indicates better abrasion resistance by the material.

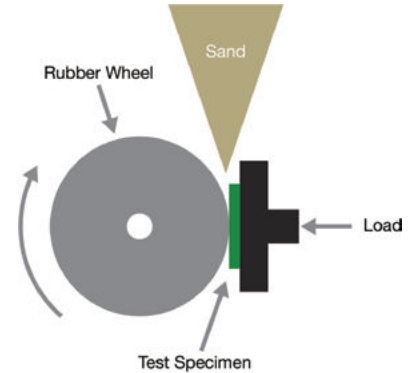
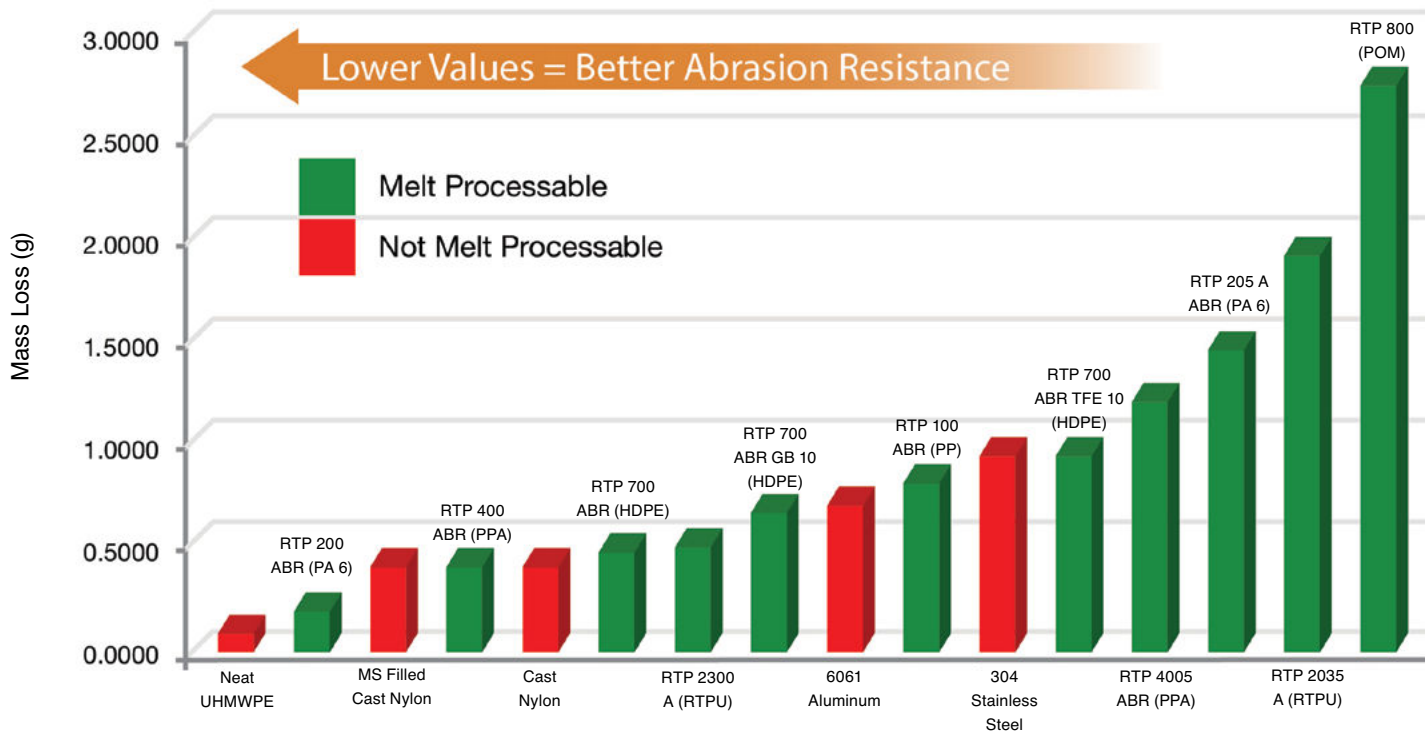


FIGURE 3: RTP COMPANY ABRASION RESULTS - DRY SAND

Modified ASTM G65 (Dry Sand) Abrasion Results



Case Study: ATV gears

Plastic components on ATVs must be able to withstand harsh third party abraders such as unpredictable debris that can have catastrophic effects on mechanical systems.

RTP Company's ABR (Abrasion Resistant) Compounds are specially formulated for injection molding and demonstrate abrasion resistance similar to UHMWPE (Ultra High Molecular Weight Polyethylene), making them an excellent option for abrasion resistance.



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WEAR AND FRICTION RESISTANT COMPOUNDS

FIGURE 4: ABRASION VS. SLIDING WEAR

When reviewing the relationship between abrasive wear (ASTM G65) and sliding adhesive wear (ASTM D3702), we see that RTP ABR compounds are significantly better than traditional abrasion resistance materials like UHMWPE.

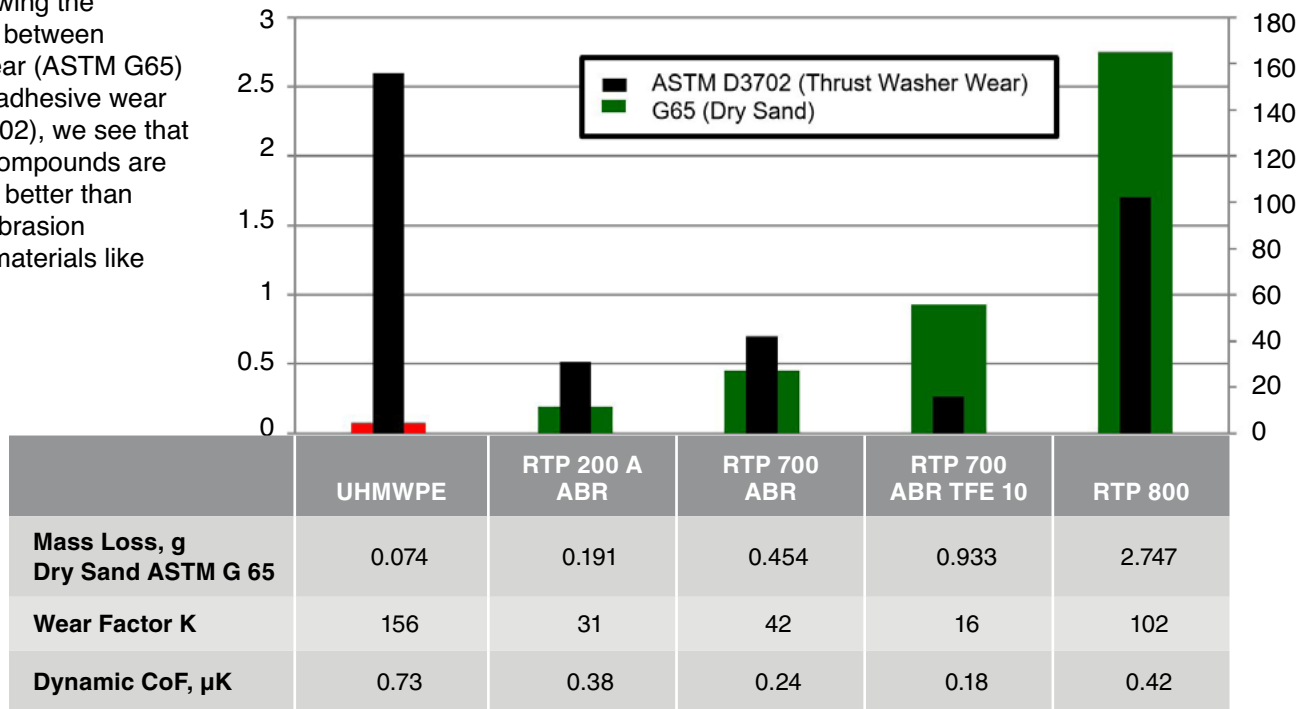


FIGURE 5: MECHANICAL PROPERTIES

Figure 5 shows a comparison of various abrasion resistant materials.

	RTP 100 ABR	RTP 700 ABR	RTP 703 ABR	RTP 200 A ABR	RTP 205 A ABR	RTP 200 ABR
Tensile Strength, psi	4300	4500	7500	6500	15000	7500
Flexural Modulus, psi E6	0.18	0.10	0.40	0.24	0.95	0.30
Notched Impact, ft lb/in	6.0	15.5 (P)	5.0	1.5	2.4	1.2
Unnotched Impact, ft lb/in	No Break	No Break	15.0	No Break	13.0	No Break
Specific Gravity	0.93	0.95	1.10	1.06	1.27	1.07

To learn more about ABR (Abrasion Resistant) Compounds from RTP Company, please contact your local representative, or visit our website at www.rtpcompany.com.



RTP COMPANY: YOUR GLOBAL COMPOUNDER OF CUSTOM ENGINEERED THERMOPLASTICS

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