



THE R.J.  
MARSHALL  
COMPANY

# Magnapur<sup>®</sup>

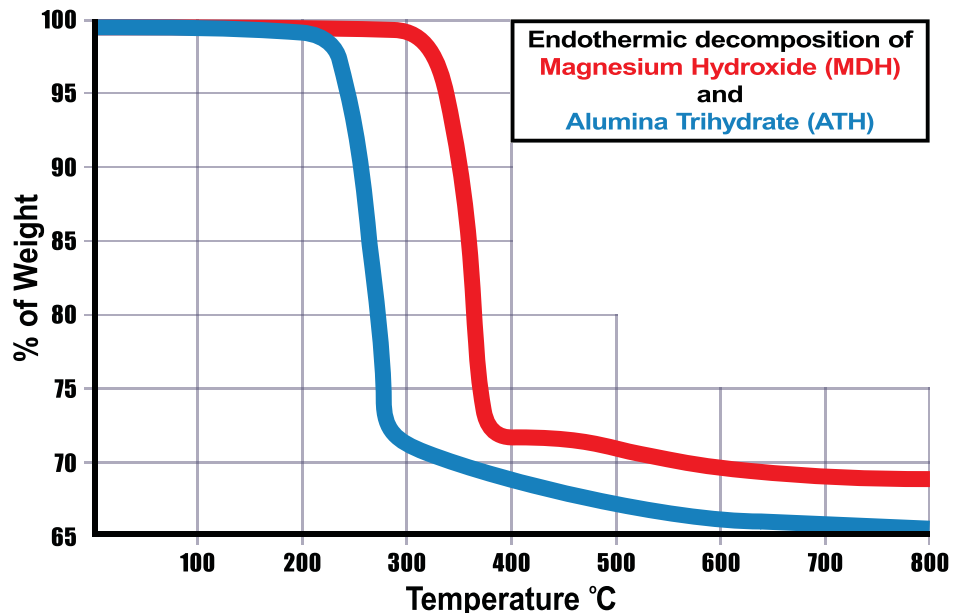
## Magnesium Hydroxide

### Flame Retardants & Smoke Suppressants

The non-toxic, zero halogen Magnapur line includes both a very pure, synthetic, ultra fine Magnesium Hydroxide (MDH) and a pure, natural, fine MDH. These grades are suitable for a wide range of demanding flame-retardant polymeric applications. Endothermic decomposition begins at about 330°C releasing water, which produces a cooling effect, reduces oxygen availability and suppresses smoke evolution. The resulting Magnesium Oxide ash provides a char layer, which further reduces the combustion rate of the system. These combined mechanisms result in an overall powerful flame retardant performance which allows polymer formulators to design products to meet the most demanding specifications in wire & cable insulation and jacketing, sheet, film, and profile applications.

The relatively high decomposition temperature compared to other zero halogen fillers, such as Alumina Trihydrate, allows for a significantly higher processing temperature without the concern of developing porosity in the finished part.

While Magnapur has good dispersibility in many resin systems, further improvements can be gained by using one of our coated grades. These coatings are selected for excellent compatibility in a wide range of resins and to provide the opportunity for chemical coupling with the polymer matrix. This can result in significant increases in physical properties, extrusion smoothness and resistance to moisture.

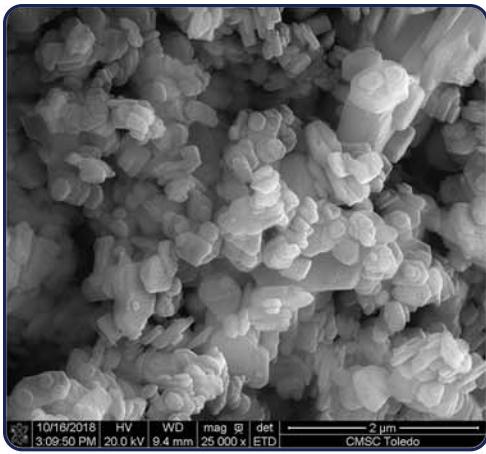


Magnapur can be used as a flame retardant and smoke suppressant in many applications.

Foams ♦ Cables ♦ Flooring ♦ Hoses ♦ Roofing  
Tubes & Pipes ♦ Conveyor Belts ♦ Coated Fabric



Marshall Additive Technologies (MAT), a division of The R.J. Marshall Company, is a premier supplier of highly effective flame retardant and smoke suppressant additives. MAT specializes in cost effective replacements for antimony trioxide and ammonium octamolybdate. MAT also offers flame retardant and smoke suppressant synergist alumina trihydrate, magnesium hydroxide, zinc borate, zinc stannate and zinc hydroxystannate.



Marshall Additive Technologies offers a wide range of magnesium hydroxide products to meet your high temperature processing, flame retardant, and smoke suppressant needs.

Magnapur is available in precipitated and natural forms, both with or without surface coating.

SEM image of precipitated Magnapur shows the crystals hexagonal platelet structure.

## Magnapur Product Codes and Descriptions

*MGP-P10* is an uncoated, very pure precipitated magnesium hydroxide. This 0.8 µm synthetic magnesium hydroxide can be used in many polymer applications including wire & cable insulation and jacketing, foams, hoses, roofing, sheet, film, and profile.

*MGP-P10VC* is a vinyl silane coated, precipitated and very pure magnesium hydroxide. This 0.8 µm synthetic magnesium hydroxide works well with cross linked polyethylene. Can be used in many polymer applications including wire & cable insulation and jacketing, foams, hoses, roofing, sheet, film, and profile. When properly formulated, the addition of the vinyl silane coating can improve many physical, electrical and moisture related performance properties.

*MGP-P7SC* is a stearic acid coated, precipitated and very pure magnesium hydroxide. This 1.0 µm synthetic magnesium hydroxide works in polypropylene and PVC compounds where a high degree of dispersion and process-ability is needed.

*MGP-P7* is an uncoated, very pure precipitated magnesium hydroxide. This 1.0 µm synthetic magnesium hydroxide can be used in many polymer applications including wire & cable insulation and jacketing, foams, hoses, roofing, sheet, film, and profile.

*MGP-N2* is a natural, pure magnesium hydroxide of natural origin (brucite). This 2.0 µm magnesium hydroxide is suitable as a flame retardant in a wide range of applications including wire & cable bedding and jacketing, foams, hoses, roofing, sheet, and profile.

*MGP-N2SC* is a natural, stearic acid coated, pure magnesium hydroxide of natural origin (brucite). This 2.0 µm coated magnesium hydroxide is suitable as a flame retardant in in a wide range of applications including wire & cable bedding and jacketing, foams, hoses, roofing, sheet, and profile.

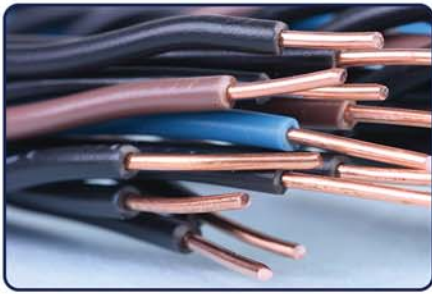
*MGP-N4* is a natural, pure magnesium hydroxide of natural origin (brucite). This 4.0 µm magnesium hydroxide is suitable as a flame retardant in in a wide range of applications including wire & cable bedding and jacketing, foams, hoses, roofing, sheet, and profile.

*MGP-N4SC* is a natural, stearic acid coated, pure magnesium hydroxide of natural origin (brucite). This 4.0 µm coated magnesium hydroxide is suitable as a flame retardant in a wide range of applications including wire & cable bedding and jacketing, foams, hoses, roofing, sheet, and profile.

## Typical Properties

Precipitated	
Mg(OH) <sub>2</sub>	99.7% min
Ca	0.01% max
Fe	0.005% max
SO <sub>4</sub>	0.15% max
Cl	0.05% max
LOI	31%
Density	2.4
Refractive index	1.56 - 1.58

Natural	
Mg(OH) <sub>2</sub>	92.8% min
CaO	2.3% max
SiO <sub>2</sub>	1.3% max
Fe <sub>2</sub> O <sub>3</sub>	0.13% max
LOI	30-33%
Density	2.36
Moisture content	<0.5%



**APPLICATION EXAMPLE**

***MAT Magnesium Hydroxide in Wire and Cable Jacketing***

Formulation Component	Magnapur Precipitated MDH	Competitive Precipitated MDH	Units
	BET surface area 9-11m <sup>2</sup> /g		
	d <sub>50</sub> Particle Size 0.8-1.1µm		
VLDPE	16.65	16.65	% by weight
EVA	20	20	
Magnapur MGP-P10VC (Vinyl Silane coated)	30	0	
Magnapur MGP-P10 (uncoated)	30	0	
Competitive Vinyl Silane coated MDH	0	30	
Competitive uncoated MDH	0	30	
Maleic Anhydride based Coupling Agent	3	3	
Primary Antioxidant (phenolic)	0.35	0.35	
<b>Compound Properties</b>			
Tensile Strength at Break ASTM D412	2270	2390	PSI
Elongation at Break ASTM D412	205	177	%
Melt Flow Index 190C / 21.6Kg	13.3	11.0	g/10 min
Limiting Oxygen Index ASTM 2863	35	35	% O <sub>2</sub>

**Magnapur products ship from our Erie, Michigan location.**

Erie, MI is one of 6 R.J. Marshall Company locations in the United States.



Magnapur Tech Data	Precipitated				Natural			
	MGP-P10	MGP-P10VC	MGP-P7SC	MGP-P7	MGP-N2	MGP-N2SC	MGP-N4	MGP-N4SC
Appearance	Fine White Powder				Fine White Powder			
Particle Size	0.8 µm	0.8 µm	1.0 µm	1.0 µm	2.0 µm	2.0 µm	4.0 µm	4.0 µm
Decomposition temp	330°C	330°C	330°C	330°C	330°C	330°C	330°C	330°C
Stearic Acid Coated			✓			✓		✓
Vinyl Silane Coated		✓						
Loss of Ignition	31%	31%	31%	31%	30-33%	30-33%	30-33%	30-33%
BET	9-11	9-11	6-9	6-9	11-13	9-11	9-11	7-9

### Storage Note:

Product must be stored in a clean, dry storage area that is protected from air and moisture. Pallets should always be stored with poly stretch film. Always close partial bags after use and re-seal partly used pallets with poly stretch wrap. Magnapur slowly reacts with moisture in the air and can form clumps.

The MAT Division is constantly working on developmental materials designed for specific fire retardance and smoke suppression applications, combining enhanced char formation with synergistic effects. We welcome the opportunity to discuss unique needs and to solve fire retardance and smoke suppression problems. MAT has a commitment to advancing the technology of the markets they serve. We have engaged an experienced and resourceful "Tech Team" to help develop new ideas in order to solve problems and advance ideas into productive innovation.

### Commitment to Quality

The R.J. Marshall Company has been producing industrial filler materials and flame retardants since 1978 and maintains laboratory facilities and personnel at every manufacturing location. Incoming raw materials and finished produced products are tested to meet or exceed specifications and are approved by dedicated lab professionals.

As part of our dedication to quality, The R.J. Marshall Company will...

- Develop and nurture an environment conducive to the highest standards of quality, commitment and continuous improvement.
- Partner with and monitor our vendors and suppliers to obtain the most consistent and highest quality materials and service.
- Use statistical methods to understand and manage the actions of our total organization.
- Dedicate ourselves to continuous improvement in all activities of our business.
- Quality will be achieved through prevention of defects rather than detection.



To discuss your specific requirements or to place sample orders or commercial orders, we encourage you to contact us at:

#### The R.J. Marshall Company - Marshall Additive Technologies Division

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NOTE: All statements, technical information and recommendations are based on tests we believe to be reliable. The accuracy or completeness is not guaranteed. The following is made in place of all warranties, expressed or implied. Our only obligation is to replace product proven to be defective. We shall not be liable for injury, loss or damage, direct or indirect, from using or not being able to use the product. Before using, customer must determine the suitability of the product for the intended use and customer assumes the responsibility.