

MoldX[®] Optimized Alumina Trihydrate (ATH)

For Unsaturated Polyester, Vinyl Ester and Modified Acrylic Based Formulations

WHY GO
ANYWHERE?
ELSE?



Eliminate Halogen and Reduce Resin Consumption With Huber's MoldX® Optimized Alumina Trihydrate (ATH) Products.

When things heat up and you need an advanced flame retardant for molding compounds, turn to the exclusive MoldX® optimized ATH product line-up from Huber Engineered Materials. All MoldX products allow for higher loadings — while offering the latest in low viscosity technology — thus providing increased flame retardant efficiency while lowering formulation costs.

MOLDX[®]

OPTIMIZED ALUMINA TRIHYDRATE

Here's What Makes Huber's MoldX[®] A100, A105 and P18 Optimized Alumina Trihydrate (ATH) Valuable For Your Next Formulation

- **Increased Loading Levels**
- **Lower Viscosity**
- **Non-Halogen**
- **Better Glass Wet-Out and Faster Line Speeds**
- **Flame Retardant and Smoke Suppressant in Molded Parts**
- **Reduced Flame Spread**

There are three high performing MoldX products. Each non-halogen grade is designed for specific applications with defining performance characteristics.

MoldX[®] Optimized ATH

Product Overview At A Glance

Product Name	Value Proposition	Applications	Attributes
MoldX [®] A100	Highest ATH loadings for increased flame retardant properties without an increase in viscosity coupled with outstanding mold flow	<ul style="list-style-type: none">• Sheet Molding Compounds (SMC)• Bulk Molding Compounds (BMC)• Hand Lay-Up	<ul style="list-style-type: none">• Halogen Replacement• Smoke Suppression• ASTM E84• UL 723
MoldX [®] A105	High ATH loadings with low viscosity, giving excellent surface quality and fiberglass wet-out at glass contents less than 55 percent	<ul style="list-style-type: none">• Pultrusion (where fiberglass content is less than 55 percent)• Resin Infusion Molding• Wet-Mat Molding	<ul style="list-style-type: none">• Halogen Replacement• Smoke Suppression• ASTM E84 (Flame spread index of less than 25, giving a Class A Rating)
MoldX [®] P18	High ATH loadings with low viscosity coupled with low pull forces at glass contents greater than 55 percent	<ul style="list-style-type: none">• Pultrusion (where fiberglass content is greater than 55 percent)• Resin Infusion Molding• Cured-In-Place-Pipe (CIPP)• Vacuum Bag Molding	<ul style="list-style-type: none">• Halogen Replacement• Smoke Suppression• ASTM E84 (Flame spread index of less than 25, giving a Class A Rating)

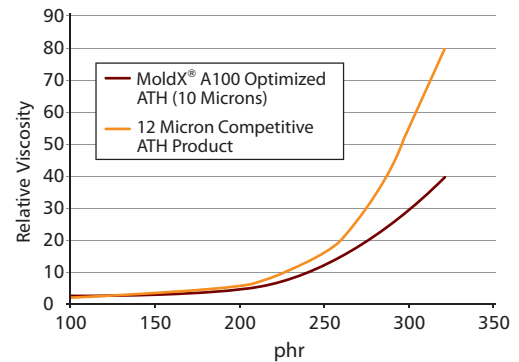
Exclusive Line-Up of MoldX® Optimized ATH Product Grades

MoldX® A100

For SMC, BMC and Hand Lay-Up Applications

MoldX A100 is an optimized ATH fire retardant capable of very high loading levels, from 250 phr to as high as 400 phr. It is the choice for halogen-free product formulations requiring significant smoke suppression. The low viscosity performance means MoldX A100 can be processed on SMC machines and BMC mixers at loading levels not thought possible. The outstanding flow characteristics of A100 make it especially well-suited for molding large, intricate parts.

MoldX® A100 Comparative Viscosity in Unsaturated Polyester Resin at 25°C



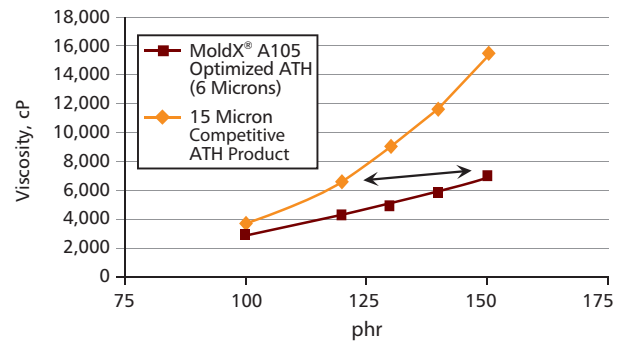
An increase in loading to 320 phr with MoldX A100 gives the same formulation viscosity as a 12 micron ATH at about 270 phr.

MoldX® A105

For Pultrusion, Wet-Mat and Resin Infusion Applications

MoldX A105 is a fine particle size, non-halogen optimized fire retardant that can be utilized in any molding process sensitive to coarse particles greater than 45 microns and composite parts with fiberglass contents of **less than 55%** by weight. The unique particle size distribution makes MoldX A105 particularly suited to applications such as pultrusion, wet-mat molding and resin infusion where filler filtration via flow through the fiberglass mat is a concern. This product also provides a low viscosity that allows formulators to use a higher loading of ATH than normal. Increased loading gives enhanced flame retardant performance, smoke suppression and possibly elimination or reduction in the amount of more expensive fire retardant additives.

MoldX® A105 Viscosity at Room Temperature



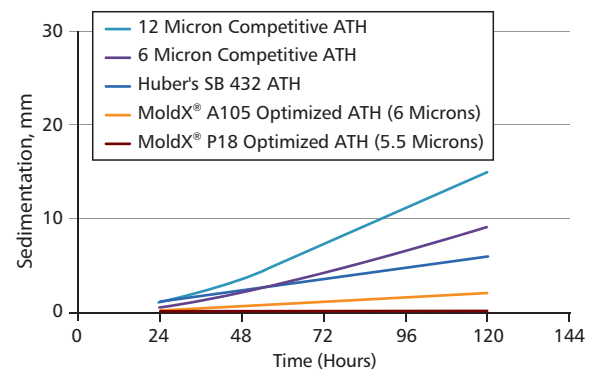
An increase in loading to 150 phr with MoldX A105 gives the same formulation viscosity as a 15 micron ATH at about 120 phr.

MoldX® P18

For Pultrusion, Resin Infusion, CIPP and Vacuum Bag Molding Applications

MoldX P18 is an optimized ATH product designed for fiberglass reinforced polyester applications such as pultrusion, resin infusion, cured-in-place-pipe (CIPP) and vacuum bag molding. MoldX P18 has an optimized particle size distribution with top size particles of less than 18 microns giving excellent processing performance at fiberglass contents **greater than 55%** by weight. The lack of coarse particles allow for the fine particles to flow readily throughout the fiberglass in the composite. As a result, the pultruder can obtain a very low pull force with increased line speeds when compared to other ATH products. Readily achievable loading levels can give fire retardant performance that may permit the elimination of more expensive fire retardant additives.

ATH Settling Behavior in Modar® Fire-Retardant Resin 875 at 25°C

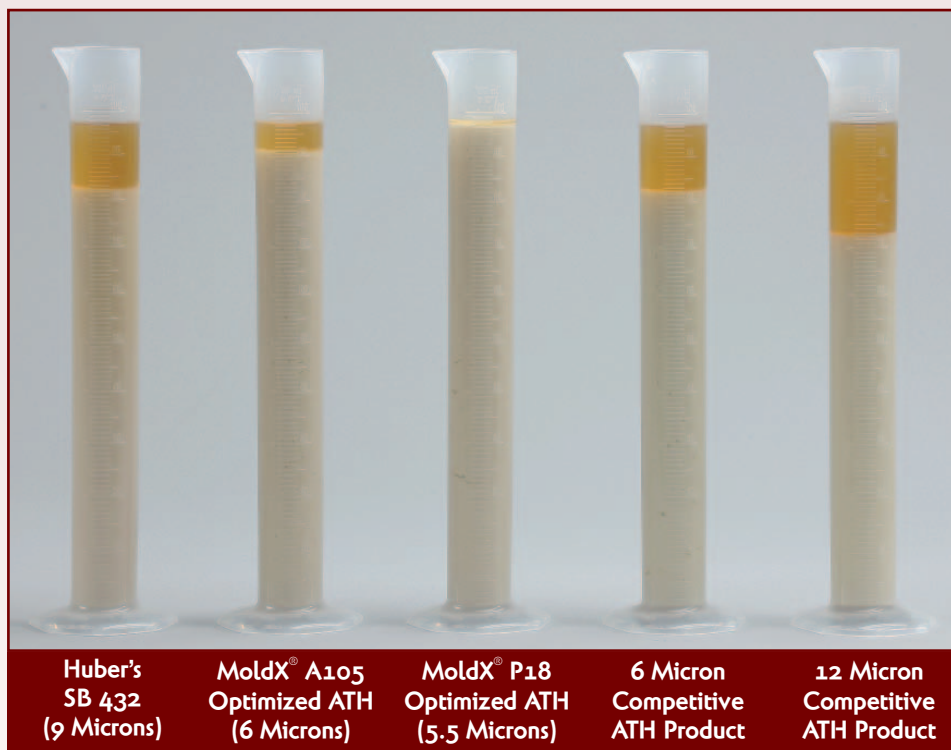


Settling resistance is desirable for pultrusion to allow longer operating times between clean outs.

Note: The data in this brochure was generated in side-by-side testing of one sample of each product.

ATH Settling Results Comparison

100 phr ATH in Modar® 875
fire-retardant resin stored at room
temperature after five days.

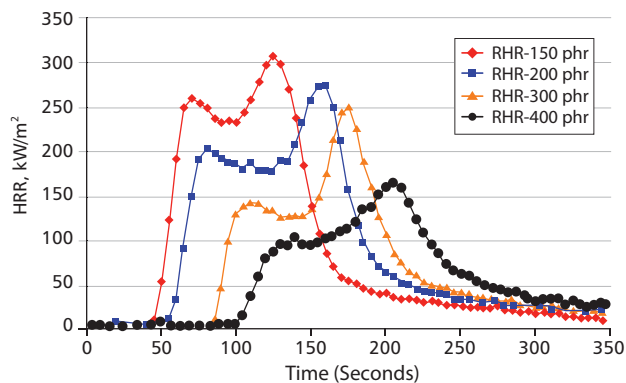


MoldX® P18 ATH Means Lower Pull Forces

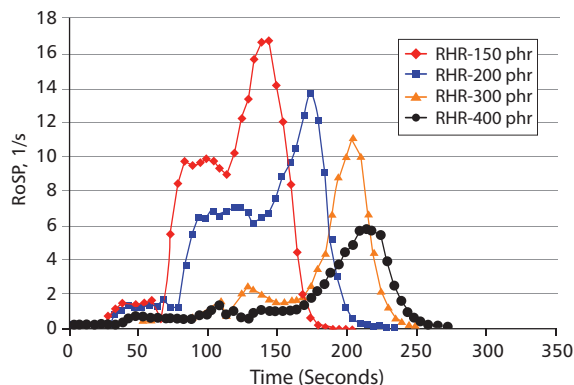
Formulation Ingredients	Formulation I	Formulation II	Formulation III
Isophthalic Polyester Resin	100	100	100
Competitive ATH – 2 Microns	100	-	-
Competitive ATH – 6.5 Microns	-	100	-
MoldX® P18 Optimized ATH	-	-	100
Fiberglass (Weight %)	62%	62%	62%
Performance Comparison			
Viscosity @25C #6 Spindle 10 rpm	2,890	2,490	1,630
Pull Force (Pounds)	1,130	6,634	930



Rate of Heat Release



Rate of Smoke Production



The graphs above show how increased ATH loadings result in a decreased heat release rate and decreased smoke generation. Huber's MoldX[®] optimized ATH products allow for higher loadings at the process viscosity required by the formulator's process. This attribute makes all three MoldX grades very effective for imparting increased flame retardancy and smoke suppression to resin systems.



The non-halogen MoldX[®] optimized ATH product portfolio from Huber offers unparalleled flexibility by allowing for higher loadings with low viscosity technology while imparting outstanding mold flow characteristics. Huber Engineered Materials is your flame retardant and smoke suppression expert with over 30 years of experience offering product use guidance and a dedicated technical team for strong customer focus and support. Before things heat up, contact us today. Let us consult with you about the MoldX solution perfect for your next application.

Call: 1-866-JMHUBER (1-866-564-8237)
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FIRE RETARDANT ADDITIVES



Huber Engineered Materials expresses its thanks to Fibergrate Composite Structures Inc. for photographic assistance.

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ATH/MoldX/Rev1/Oct2012