MoldX® Optimized Alumina Trihydrate (ATH)
For Unsaturated Polyester, Vinyl Ester and Modified Acrylic Based Formulations
Eliminate Halogens 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® A400
MoldX® A110
MoldX® S45
MoldX® P18
MoldX® P12
Here’s What Makes Huber’s MoldX® 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 Retardance and Smoke Suppression in Molded Parts
- Reduced Flame Spread

There are five high-performing MoldX products and each grade is designed for specific production processes.

### MoldX® Optimized ATH

#### Product Overview At A Glance

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<th>Product Name</th>
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| MoldX® A400  | Highest performing MoldX® product with an optimal balance of flame retardance, smoke suppression and mechanical properties | - Sheet Molding Compounds (SMC)  
- Bulk Molding Compounds (BMC)  
- Hand Lay-Up  
- Epoxy  
- Polyurethanes | - Halogen Replacement  
- Smoke Suppression  
- ASTM E84 [Flame Spread Index equal to or less than 15, giving a Class A Rating]  
- UL 723 |
| MoldX® A110  | Highest ATH loadings at a processable viscosity with outstanding mold flow for increased flame retardant properties | - SMC  
- BMC  
- Hand Lay-Up  
- Polyurethanes | - Halogen Replacement  
- Smoke Suppression  
- ASTM E84 [Flame Spread Index equal to or less than 25, giving a Class A Rating]  
- UL 723 |
| MoldX® S45  | High loadings at processable viscosities but at levels below MoldX A110 | - SMC  
- BMC  
- Hand Lay-Up  
- Polyurethanes | - Halogen Replacement  
- Smoke Suppression  
- ASTM E84 [Flame Spread Index equal to or less than 25, giving a Class A Rating]  
- UL 94 V0 |
| MoldX® P18  | Designed for use in applications with high reinforcement content, features high ATH loadings with low viscosity, excellent settling resistance and low pull force at fiberglass content in the range of 50 to 65% | - Pultrusion where fiberglass content is up to 65% by weight  
- Resin Infusion Molding  
- Cured-In-Place-Pipe (CIPP)  
- Vacuum Bag Molding  
- Filament Winding | - Halogen Replacement  
- Smoke Suppression  
- ASTM E84 [Flame Spread Index equal to or less than 25, giving a Class A Rating] |
| MoldX® P12  | Huber’s recommended MoldX product for pultrusion with >65% fiberglass content, featuring low pull force, fast line speeds and excellent resistance to settling | - Pultrusion where fiberglass content is greater than 65% by weight  
- Resin Infusion Molding  
- Vacuum Bag Molding  
- Filament Winding | - Halogen Replacement  
- Smoke Suppression  
- ASTM E84 [Flame Spread Index equal to or less than 15, giving a Class A Rating] |
**MoldX® A400**

For SMC, BMC, Hand Lay-Up, Epoxy and Polyurethane Applications

MoldX A400 is Huber’s highest performing optimized ATH grade. It is engineered to impart outstanding fire retardance and smoke suppression in fiberglass reinforced SMC without halogen additives. Formulations have better mechanical properties because less MoldX A400 is needed to pass the same flame retardant certifications that would be required of competitive ATH grades.

**MoldX® A400 Outperforms Competitive ATH Grades**

Rate of Heat Release at 350 phr

Rate of Smoke Production at 350 phr

Above is the rate of heat release and of smoke production for cured composite panels made via the sheet molding process with the ATH loading level at 350 phr. The panels were 0.100 inches thick. MoldX® A400 optimized ATH easily outperforms competitive ATH products in the critical areas of flammability and smoke suppression.

**MoldX® A110**

For SMC, BMC, Hand Lay-Up and Polyurethane Applications

MoldX A110 is an optimized ATH fire retardant capable of very high loading levels, from 250 phr to greater than 350 phr. It is the choice for halogen-free product formulations requiring significant smoke suppression. The low-viscosity performance means MoldX A110 can be processed on SMC machines and BMC mixers at loading levels not thought possible. The outstanding flow characteristics of A110 make it especially well-suited for molding large or intricate parts.

**MoldX® A110 Comparative Viscosity in Unsaturated Polyester at 25°C**

Why Go Anywhere Else?
**MoldX® S45**

For SMC, BMC, Hand Lay-Up and Polyurethane Applications

MoldX S45 optimized ATH is a non-halogen fire retardant product designed for fiberglass reinforced polyester applications such as SMC, BMC and laminating. MoldX S45 is engineered to allow higher loadings (180 to 230 phr) versus competitive ATH products and offers excellent processing.

**MoldX® P18**

For Pultrusion, Resin Infusion Molding, Cured-In-Place-Pipe (CIPP), Vacuum Bag Molding and Filament Winding Applications

MoldX P18 has an optimized particle size distribution with a D100 (top size) of approximately 18 microns giving excellent processing performance at fiberglass contents from 50% to 65% by weight. The lack of coarse particles allows 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 and outstanding settling resistance with increased line speeds when compared to other ATH products. Readily achievable loading levels give fire retardant performance that permit the elimination of more expensive fire retardant additives.

**MoldX® P12**

For Pultrusion, Resin Infusion Molding, Vacuum Bag Molding and Filament Winding Applications

MoldX P12 is an optimized ATH product designed to be used in the most demanding fire retardant pultrusion applications (for example, when high ATH loadings and fiberglass content of 65% or more is required). When the fiberglass content is greater than 65%, MoldX P12 is recommended. MoldX P12 has a finer top size than MoldX P18, so MoldX P12-based formulations allow for faster line speeds and lower pull force at the highest fiberglass contents.
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.

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**Click:** www.hubermaterials.com/moldx  
**Email:** hubermaterials@huber.com

**FIRE RETARDANT ADDITIVES**

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