AIRTECH
ADVANCED MATERIALS GROUP

High Performance Resins and Solutions for Additive Manufacturing

www.airtech.com
www.airtech3D.com

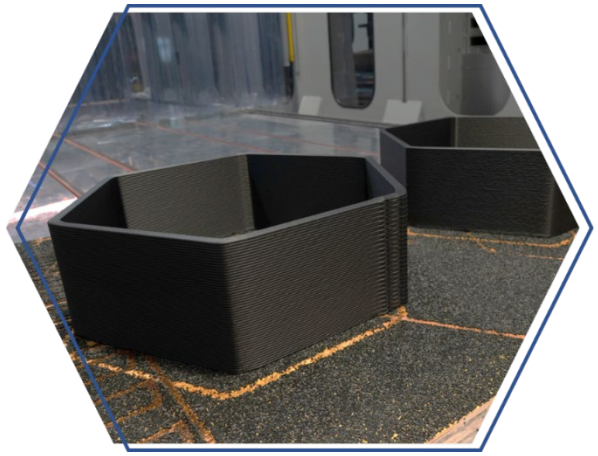
Welcome

Materials **Expertise**

Airtech has been extruding and compounding resins for 50 years and additive manufacturing has allowed us to expand our resin offering not only to our printers but develop a line of unique resins and purges for those who have their own machines.

Performance **Benefits**

- Tools from conception to the production floor in days not weeks.
- Dahltram® I-350CF is a cost effective solution ideal for 176°C (350°F) process.
- Higher strength, higher temperature performance with lower creep.
- Carbon reinforcement offers greater stiffness low warpage for predictable results.
- Lower moisture absorption, better strength to weight, higher stiffness, and higher flexural strength than other high temperature additive manufacturing resins.
- Proven long term stability of high temperature tools with test data supporting hundreds of cycles with no degradation & high stability.



Validation on all 3D print machines

Validating **materials**

With all machine makers to ensure they understand our materials as well as we do.

- Working with machine suppliers to ensure performance
- Helping with extrusion and material handling best practices
- Validating results with 3rd party test data
- Printing test tools on different platforms to validate in use
- Establishing printing parameters for plug and play

Developing **new print resins**

- Our goal is to develop print resins that are capable of meeting expectations and drive technology forward. Ensure materials keep pace with machine development and foster this push forward.

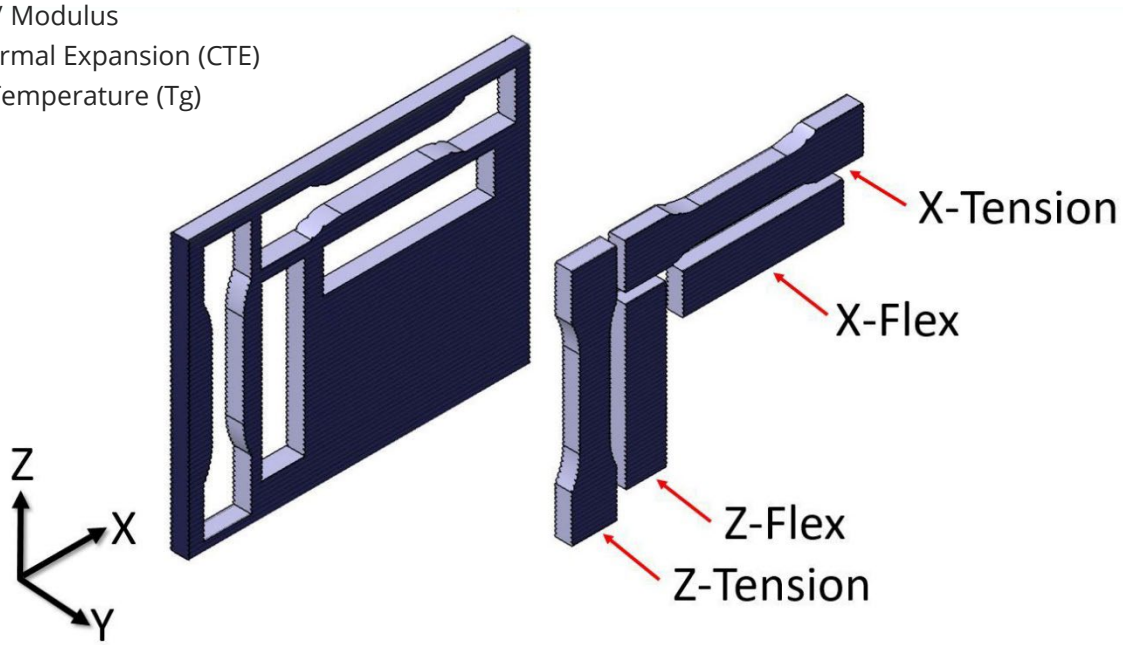
Airtech Dahltram® resins have proven performance on these 3D print machines and many more are in process of validation daily.

Screening and trials

Our screening and trials include extensive contact materials testing with nearly everything we can get our hands on including various cleaners, sealers, release agents, thermoset resins and prepregs.

Mechanical screening tests are done to ensure basic thermo mechanical and physical properties such as:

- Tensile Strength /Modulus
- Elongation at break
- Flexural Strength/ Modulus
- Coefficient of Thermal Expansion (CTE)
- Glass Transition Temperature (Tg)
- and many more...



Dahltram®

Dahltram® T-100GF

Multipurpose Applications

Heat Distortion Temperature	Materials Type
67°C (156°F)	Recycled PETG / Glass Fiber

Description

Dahltram® T-100GF is a cost effective, low temperature use, additive manufacturing polymer with a maximum recommended use temperature of 65°C (150°F). It is reinforced with glass fiber for maximum strength and long-term performance. Dahltram® T-100GF is ideal for multipurpose applications, rapid prototyping, trim tools, holding fixtures, low temperature master models, casting patterns.

Dahltram® S-150CF

Low Temperature Applications

Heat Distortion Temperature	Materials Type
101°C (214°F)	Modified ABS / Carbon Fiber

Description

Dahltram® S-150CF is a cost effective, low temperature use, additive manufacturing polymer with a service temperature of 88°C (190°F). It is reinforced with carbon fiber for maximum strength and long-term performance. Dahltram® S-150CF is ideal for rapid prototyping, trim tools, holding fixtures, low temperature master models.

Dahltram® S-150GF

Low Temperature Applications

Heat Distortion Temperature	Materials Type
101°C (214°F)	Modified ABS / Glass Fiber

Description

Dahltram® S-150GF is a cost effective, low temperature use, additive manufacturing polymer with a service temperature of 88°C (190°F). It is reinforced with glass fiber for maximum strength and long-term performance. Dahltram® S-150GF is ideal for Rapid prototyping, trim tools, holding fixtures, low temperature master models.

Dahltram® C-250CF

High Strength Applications

Heat Distortion Temperature	Materials Type
144°C (291°F)	Modified PC / Carbon Fiber

Description

Dahltram® C-250CF is a cost effective, low to medium temperature use, additive manufacturing polymer with a service temperature of 135°C (280°F). It is reinforced with carbon fiber for maximum strength and long-term performance. Dahltram® C-250CF is ideal for room temperature tooling solutions and low to medium temperature master moulds.

Dahltram® C-250GF

High Durability Applications

Heat Distortion Temperature	Materials Type
144°C (291°F)	Modified PC / Glass Fiber

Description

Dahltram® C-250GF is a cost effective, low to medium temperature use, additive manufacturing polymer with a maximum recommended use temperature of 135°C (280°F). It is reinforced with glass fiber for maximum strength and long-term performance. Dahltram® C-250GF is ideal for room temperature tooling solutions, stretch forming and low temperature master moulds.

Dahltram® I-350CF

High Temperature Applications

Heat Distortion Temperature	Materials Type
212°C (414°F)	Modified PEI / Carbon Fiber

Description

Dahltram® I-350CF is a cost effective, high temperature use, additive manufacturing polymer with a service temperature of 204°C (400°F). It is reinforced with carbon fiber for maximum strength and long-term performance. Dahltram® I-350CF is ideal for high temperature tooling solutions and high temperature master moulds.

Dahltram® U-350CF

High Temperature Applications

Heat Distortion Temperature	Materials Type
215°C (420°F)	Modified PESU / Carbon Fiber

Description

Dahltram® U-350CF is a cost effective, high temperature use, additive manufacturing polymer with a maximum recommended use temperature of 204°C (400°F). It is reinforced with carbon fibre for maximum strength and long term performance. Dahltram® U-350CF is ideal for high temperature tooling solutions, self heated moulds and high temperature master moulds.

Tooling Resins for Additive Manufacturing

Dahltram® S-150CF

Low Temperature Applications

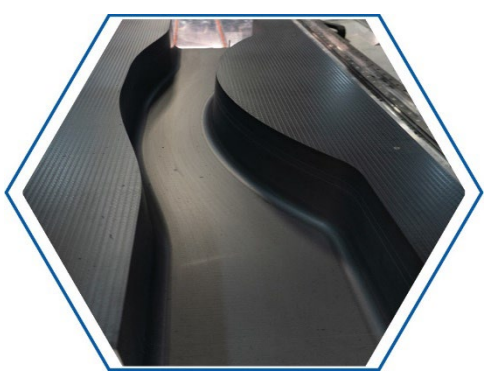
Materials Type	Material Format	Heat Distortion Temperature	Service Temperature
Modified ABS / Carbon Fiber	Pellet	101°C (214°F)	88°C (190°F)

Description

Dahltram® S-150CF is a cost effective, low temperature use, additive manufacturing polymer with a service temperature of 88°C (190°F). It is reinforced with carbon fiber for maximum strength and long-term performance. Dahltram® S-150CF is ideal for room temperature tooling solutions. Additionally, it is vacuum tight and can machined to the tolerances and surface finish required.

Tooling applications

Dahltram® S-150CF is a cost effective solution ideal for rapid prototyping, trim tools, holding fixtures, inspection fixtures, low temp masters, and much more. Additive manufactured tools can go from conception to the production floor in days not weeks. Easy to process and proven on a range of 3D Printer platforms.



Cost **Benefits**

- Large reduction in material waste through traditional subtractive manufacturing supply chain
- Reduced total cost of manufacture compared to conventional tooling
- Dahltram® materials developed for low cost, application matched performance

Dahltram®

Dahltram® C-250CF

High Strength Applications

Materials Type	Material Format	Heat Distortion Temperature	Service Temperature
Modified PC / Carbon Fiber	Pellet / Filament	144°C (291°F)	135°C (280°F)

Description

Dahltram® C-250CF is a cost effective, low to medium temperature use, additive manufacturing polymer with a service temperature of 135°C (280°F). It is reinforced with carbon fiber for maximum strength and long-term performance. Dahltram® C-250CF is ideal for low to medium temperature tooling solutions. Additionally, it is vacuum tight and autoclave capable in all forms and can be machined to the tolerances and surface finish required.

Tooling applications

Provides higher strength, higher temperature performance and higher throughput. Dahltram® C-250CF is a cost effective choice for mould tools working with 121°C (250°F) cure systems. It can also be used for Master models, bonding fixtures and tooling applications where additional strength and temperature resistance is required.
Dahltram® C-250CF is easy to process and proven on a range of 3D Printer platforms.

Shorter Lead Time **Benefits**

- 3D Print manufactures tooling faster than any other process
- Complete tooling structures simultaneously fabricated at high deposition rates
- Laminates are high quality and can easily be machined
- Shorter schedule, for faster time to part

Tooling Resins for Additive Manufacturing

Dahltram® C-250GF

High Durability Applications

Materials Type	Material Format	Heat Distortion Temperature	Service Temperature
Modified PC / Glass Fiber	Pellet	144°C (291°F)	135°C (280°F)

Description

Dahltram® C-250GF is a cost effective, low to medium temperature use, additive manufacturing polymer with a service temperature of 135°C (280°F). It is reinforced with glass fiber for maximum strength and long-term performance. Dahltram® C-250GF is ideal for room temperature tooling solutions, stretch forming and low temperature master moulds. Additionally, it is vacuum tight and autoclave capable in all forms and can be machined to the tolerances and surface finish required.

Tooling applications

Provides higher strength, higher temperature performance and higher throughput. Dahltram® C-250GF is a cost effective choice for mould tools working with 121°C (250°F) cure systems. It can also be used for Master models, bonding fixtures and tooling applications where additional strength and temperature resistance is required. Dahltram® C-250GF is easy to process and proven on a range of 3D Printer platforms.

Modified PC/ Glass Fiber

Dahltram®

Dahltram® I-350CF

High Temperature Applications

Materials Type	Material Format	Heat Distortion Temperature	Service Temperature
Modified PEI / Carbon Fiber	Pellet	212°C (414°F)	204°C (400°F)

Description

Dahltram® I-350CF is a cost effective, high temperature use, additive manufacturing polymer with a maximum recommended use temperature of 204°C (400°F). It is reinforced with carbon fiber for maximum strength and long term performance. Dahltram® I-350CF is ideal for high temperature tooling solutions and high temperature master molds. Additionally, it is vacuum tight, autoclave capable, and can be machined to the tolerances and surface finish required.

Tooling applications

Dahltram® I-350CF is a cost effective tooling solution ideal for all types of mould tooling operating with 176°C (350°F) cure systems. Additive manufactured tools can go from conception to the production floor in days not weeks.
Dahltram® I-350CF is easy to process and proven on a range of 3D Printer platforms.

Tooling Resins for Additive Manufacturing

Dahltram® U-350CF

High Temperature Applications

Materials Type	Material Format	Heat Distortion Temperature	Service Temperature
Modified PESU / Carbon Fiber	Pellet / Filament	215°C (420°F)	204°C (400°F)

Description

Dahltram® U-350CF is a cost effective, high temperature use, additive manufacturing polymer with a maximum recommended use temperature of 204°C (400°F). It is reinforced with carbon fibre for maximum strength and long term performance. Dahltram® U-350CF is ideal for high temperature tooling solutions and high temperature master moulds. Additionally, it is vacuum tight, autoclave capable, and can be machined to the tolerances and surface finish required.

Tooling applications

Dahltram® U-350CF is a cost effective tooling solution ideal for all types of mould tooling operating with 176°C (350°F) cure systems. Additive manufactured tools can go from conception to the production floor in days not weeks. Dahltram® U-350CF is easy to process and proven on a range of 3D Printer platforms.

Dahlpram®

Dahlpram® **Purging Compounds**

Dahlpram® are purging compounds for additive manufacturing FDM extruders. Airtech has been extruding and compounding resins for nearly 50 years, allowing us to develop unique purge resins suitable for all FDM Pellet AM extruders.

Dahlpram® **Benefits**

- Superior performance – protects extrusion equipment by reducing carbon build up
- Versatility – one-stop shop for all large scale purging needs covering a broad temperature range - 254°C to 410°C (490°F to 770°F)
- Ensures quality – prevents material cross contamination during material change overs

Purging Resins for Additive Manufacturing

Dahlpram® 009

Process Temperature	Applications
200°C – 400°C (392°F – 752°F)	• Thermal stabilization on startup • Material changes • Melt pump changes • Colour changes • Cleaning • Machine shut down

Description

Dahlpram® 009 is a cost effective nonabrasive purging compound designed especially for additive manufacturing printers that utilize pelletized feed materials. Dahlpram® 009 can be used over a wide temperature range and works well with all common additive manufacturing resin systems, providing excellent results.

BENEFITS

• Large processing window making it perfect for most purging applications.
• Keeps extruders in good condition, reducing manufacturing cost.
• Ensures good quality production runs.

Dahlpram® SP209

Process Temperature	Applications
200°C – 325°C (392°F – 618°F)	• Difficult material changes • Melt pump cleaning, heavy barrel and screw cleaning • Long term machine shut down

Description

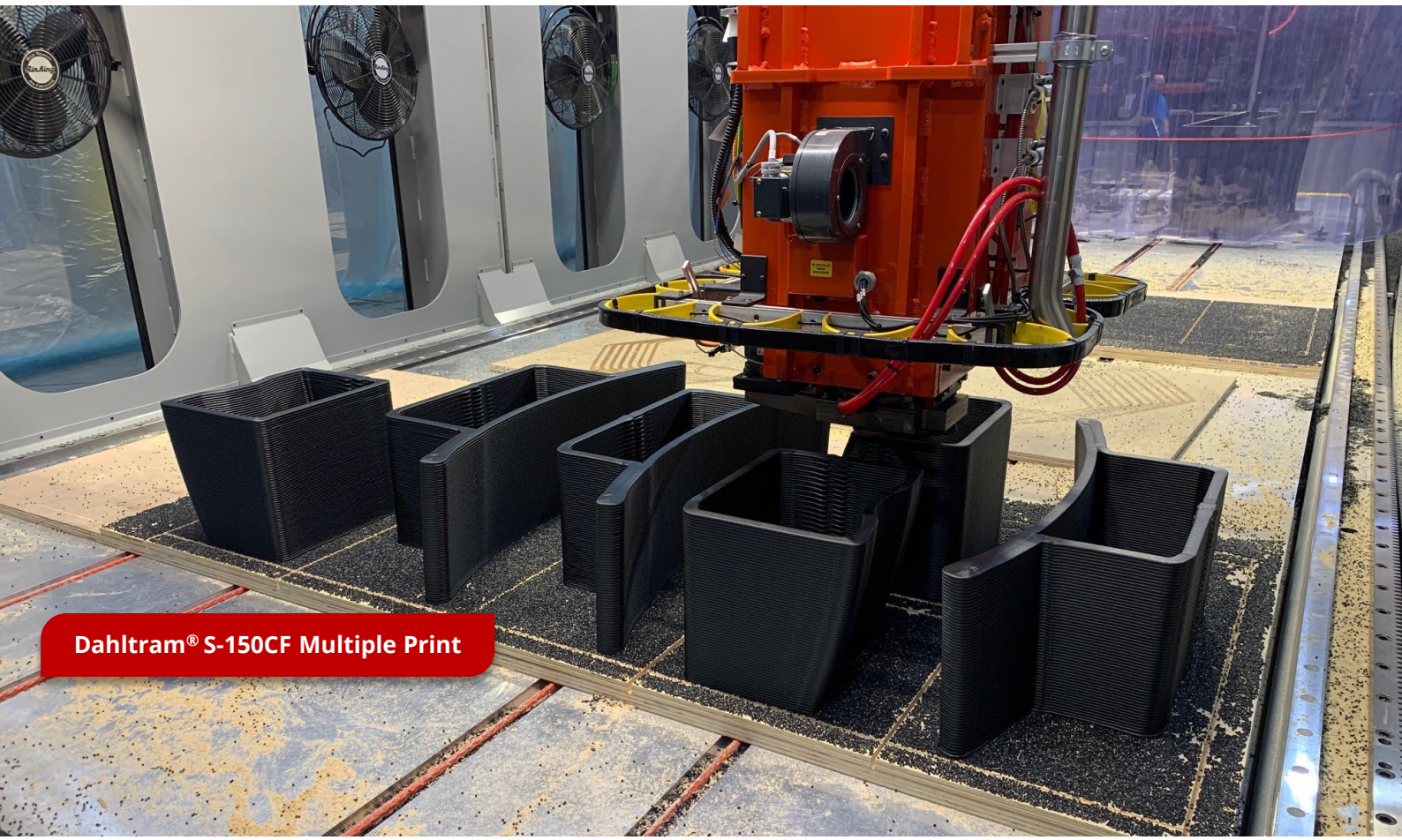
Dahlpram® SP209 is a cost effective nonabrasive purging compound designed especially for additive manufacturing printers that utilize pelletized feed materials. Dahlpram® SP209 is ideal for difficult material changes, melt pump cleaning, heavy barrel and screw cleaning, and long term machine shut downs. Dahlpram® SP209 is specifically designed to handle the most demanding purging applications where most other purge systems fail in a simple efficient manner. Dahlpram® SP209 can be used over a wide temperature range and works well with all common additive manufacturing resin systems.

BENEFITS

• Prevents carbon build up and cross contamination when used regularly.
• Ideal for machine shut down, material and colour changes, and melt pump cleaning.
• Operates over a wide range of temperatures.

Dahlpram® Purge resins improve printed part quality

Dahltram®



Dahltram® S-150CF Multiple Print

Dahltram® C-250CF Vertical Print

Auxiliary Materials for Additive Manufactured Tooling

Tool Valve 125 & Tool Valve 150

Stainless Steel Through-face Vacuum Valves

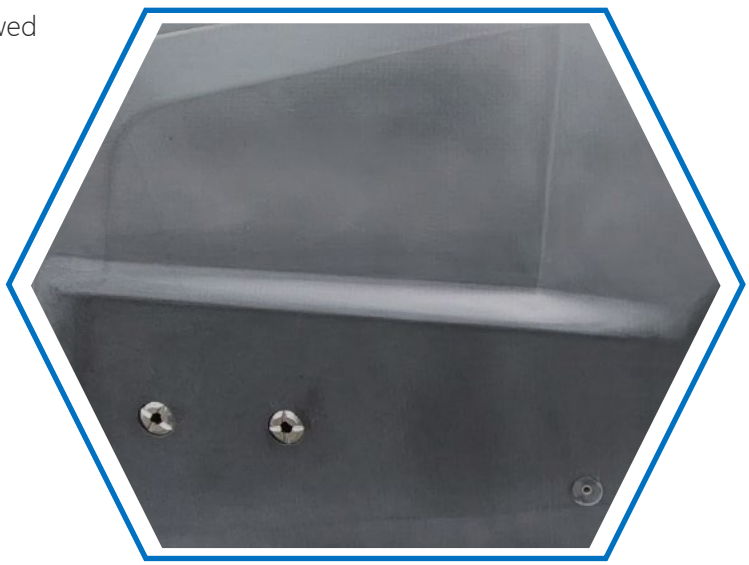
Construction	Applications
5 pieces: Tool Valve, Hex Nut, Spring Washer, Washer, Gaskets	Stainless steel through-face vacuum valves designed for 3D printed tooling. Seals to face of tool.

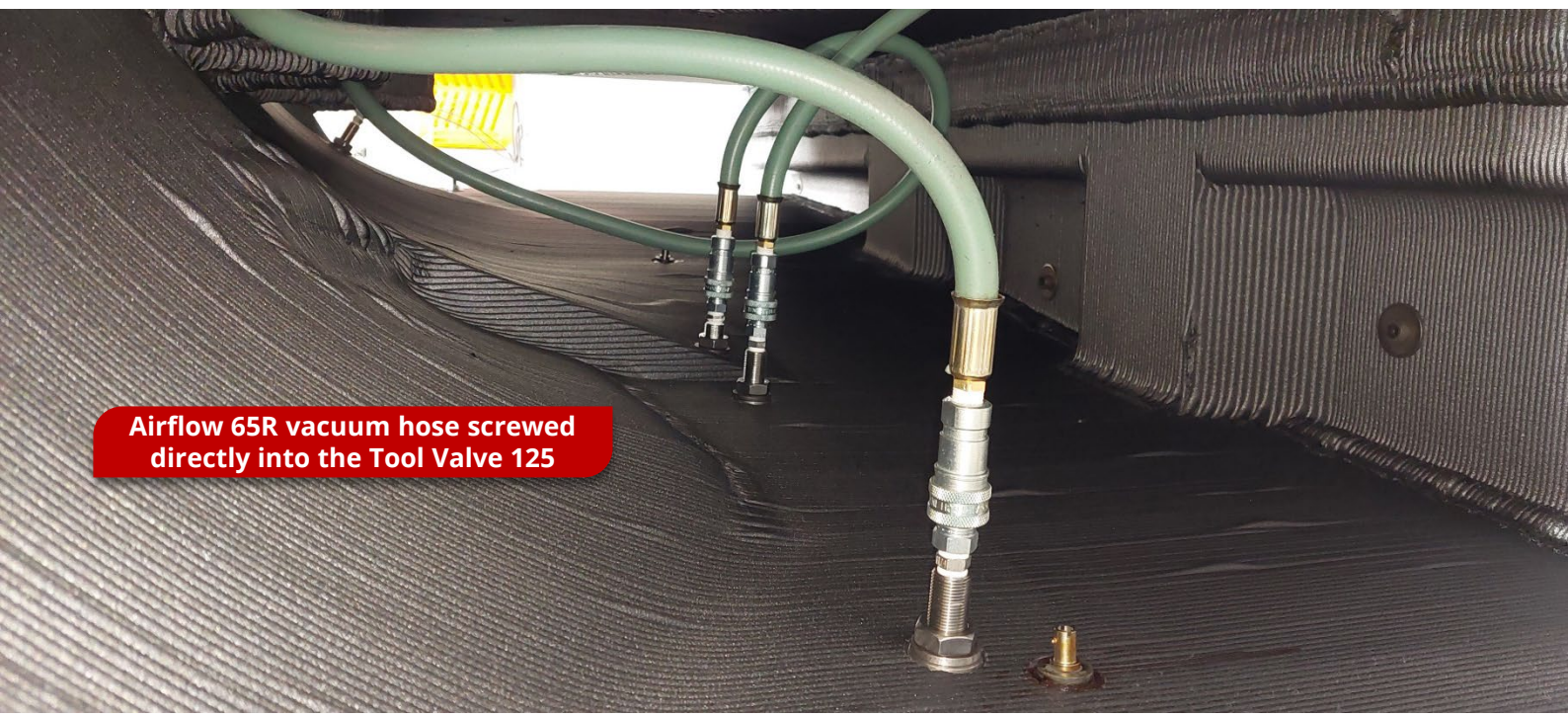
Description

Tool Valve 125 and Tool Valve 150 are machined stainless steel valves that are inserted through the mould. They have a high temperature silicone seal that will operate to 260°C. Tool Valves are designed to work with our Airflow 60R, Airflow 65R and Airflow 800. Tool Valve 150 has a bigger head diameter than Tool Valve 125.

Benefits:

- Flattened head with no sharp edges
- Good sealing because of its maximized sealing surface
- Simple design that allows the vacuum hose to be screwed directly into the Tool Valve
- Easy installation





Airflow 65R vacuum hose screwed directly into the Tool Valve 125

Auxiliary Materials for Additive Manufactured Tooling

TMSF 5001A/ TMH 5001B

High Temperature Surface Filler

Material type	Applications
Epoxy	High temperature fill and fair for structural bonding. Also used in low-mid temp when more serious repair is needed or is a fine detail.

Description

TMSF 5001A/ TMH5001B is a black graphite filled surface. The resin and hardener are low toxicity category and does not contain VCHD or MDA. TMSF 5001A/ TMH5001B is a thixotropic paste that yields a smooth mixed viscosity for easy application and minimum sag on vertical surfaces. TMSF 5001A/ TMH5001B is easy to scribe and resists stress cracking in oven and autoclave applications.

Airfill 2

Quick Setting Filler

Material type	Applications
Polyester	General surface repairs on all 3D printed tooling. Works well on moulds for cures up to 232°C (450°F).

Description

Airfill 2 is a high temperature polyester quick setting filler paste that can stand up to 232°C (450°F). Airfill 2 is typically used for pattern work, temporary mold repairs, trim and drill tools, assembly fixtures, and gel-coat repairs. The thixotropic flow behavior of Airfill 2 allows an easy application and good coverage.

Print-Seal

Master Model and Master Sealer

Material type	Applications
Epoxy	Sealer for gross leaking tools with manufacturing defect or highly damaged tooling

Description

Print-Seal is a solvent free low viscosity two part epoxy developed for sealing porous surfaces. Print-Seal can also be used to restore vacuum integrity to composite and 3D printed tooling.

ToolPrep TP1 & TP2

Liquid Primer for Tool Surfaces

Composition	Applications
Resin solution	Seal and protect moulds and provide surfaces that release sealers & release agents can be applied to.

Description

ToolPrep TP1 & TP2 is a two part low viscosity primer for preparation of tool surfaces to seal, protect and achieve high-quality finish ready for release agent application. After application and cure ToolPrep TP1 & TP2 coating is non-removeable with solvent from the surface. ToolPrep TP1 & TP2 has been developed for Dahltram® 3D printed tooling but can be applied to other tooling types and provide a high gloss surface finish.

ToolPrep Solo

Liquid Primer for Tool Surfaces

Composition	Applications
Resin solution	Seal and protect moulds and provide surfaces that release sealers & release agents can be applied to

Description

ToolPrep Solo is a low viscosity primer for preparation of tool surfaces to seal, protect and achieve high-quality finish ready for release agent application. After application and cure ToolPrep Solo coating is non-removeable with solvent from the surface. The product is simple to apply and does not require polishing if applied correctly. ToolPrep Solo has been developed for Dahltram® 3D printed tooling but can be applied to other tooling types and provide a high gloss surface finish.

Print-on Surfaces for 3D Printers

Print-Lease P4000

FEP Film for UV Curing Printers

Material type	Max. use Temperature	Applications
FEP	260°C (500°F)	Excellent choice for UV curing 3D printers

Description

Print-Lease P4000 is an FEP release film for use on 3D Printers. P4000 provides a smooth surface with high cleanliness with excellent heat and chemical resistance. Print-Lease P4000 is an excellent choice for UV curing printers due to it's high light transmittance. Print-Lease P4000 will separate easily form completed print items.

Print-Lease P5000

Material type	Max. use Temperature	Applications
Fluoropolymer	260°C (500°F)	Excellent choice for UV curing 3D printers

Description

Print-Lease P5000 is a release film for use on 3D Printers. P5000 provides a smooth surface with high cleanliness, excellent heat and chemical resistance. Print-Lease P5000 is excellent choice for UV curing printers. Print-Lease P5000 will separate easily from completed print items.

Print-Lease P9000

High Temp. Film for FDM Printers

Material type	Max. use Temperature	Applications
Polyimide	426°C (799°F)	Excellent choice for FDM printers

Description

Print-Lease P9000 is a release film for use on 3D Printers. P9000 provides high temperature resistance with high cleanliness and excellent chemical resistance. Print-Lease P9000 is an excellent choice for FDM printers.

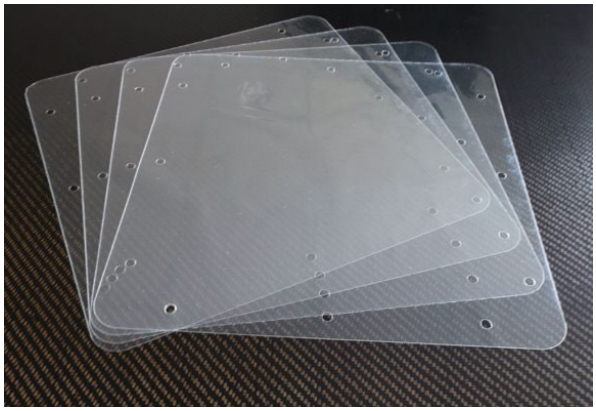
Print-Fix P9000

Self-Adhesive Film for FDM Printers

Material type	Max. use Temperature	Applications
Polyimide	399°C (750°F)	Excellent choice for FDM printers

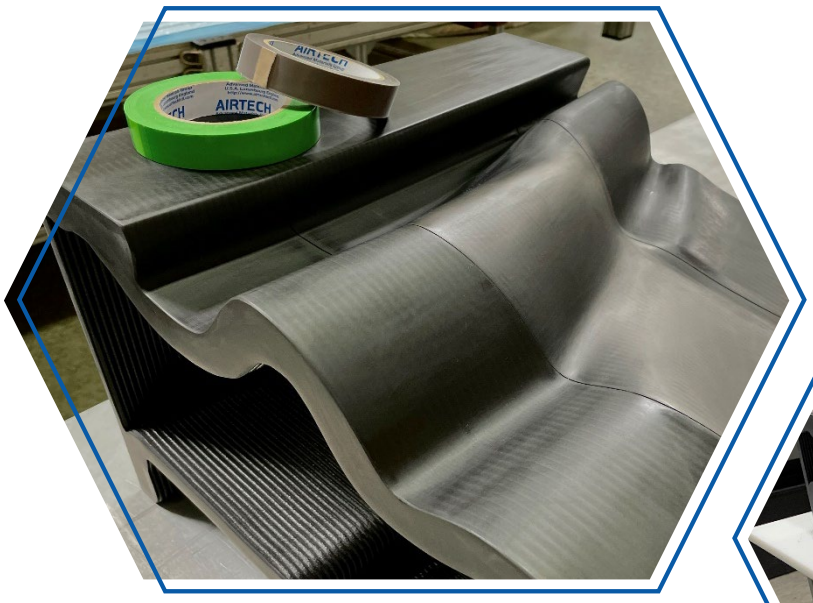
Description

Print-Fix P9000 is a self adhesive high temperature film print base for FDM 3D Printers to fix work pieces and protect print beds. The high temperature silicone adhesive holds the print base firmly on the print bed to prevent movement. A protective liner makes cutting and application easier and faster.

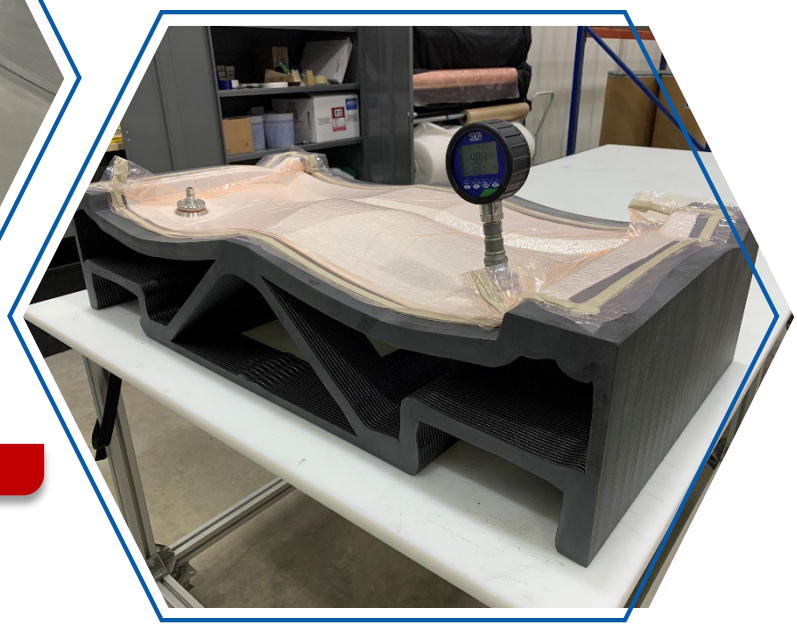


Print-Tech® with Dahltram®

Dahltram® C-250CF 3D printing mould tools



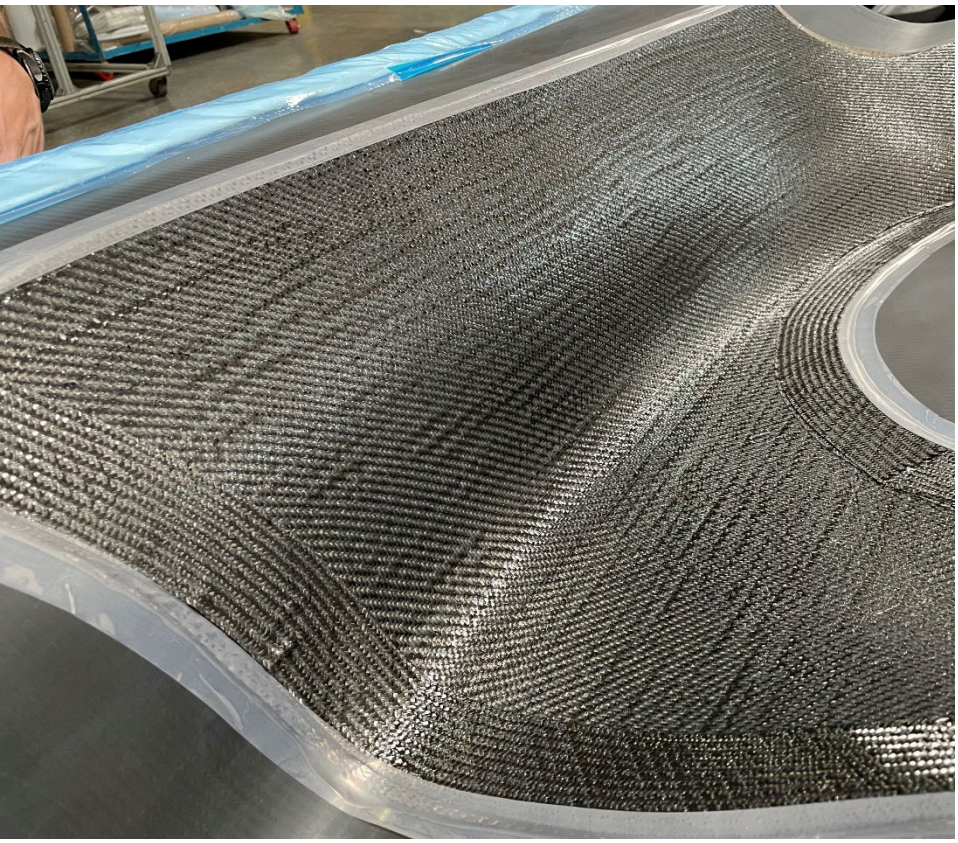
Automotive machined mould surface



Autoclave ready vacuum & pressure tight mould

AIRTECH
ADVANCED MATERIALS GROUP

Tooling & finished composite part faster than any other process

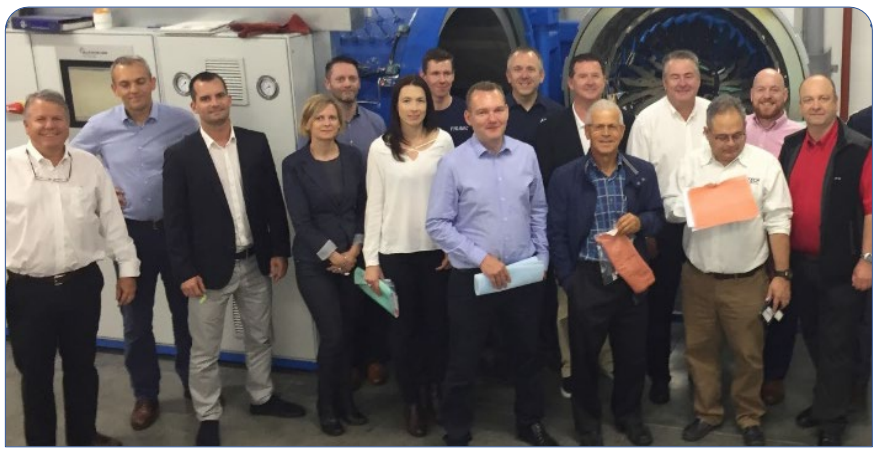


Airtech customer service

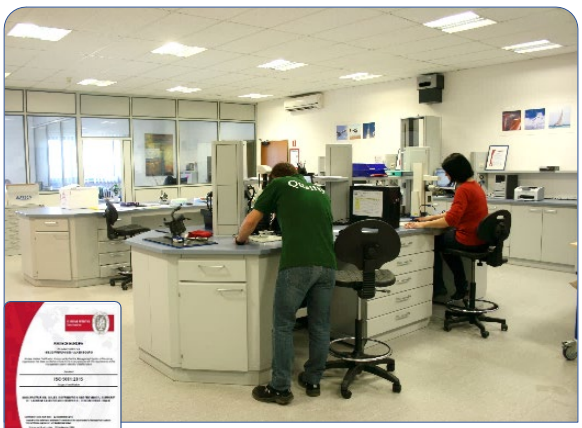
Airtech Worldwide:

Customer Service Team Contacts

Global manufacturing & Local Inventories
Delivering Short Lead Times. AAMG: >98% OTD

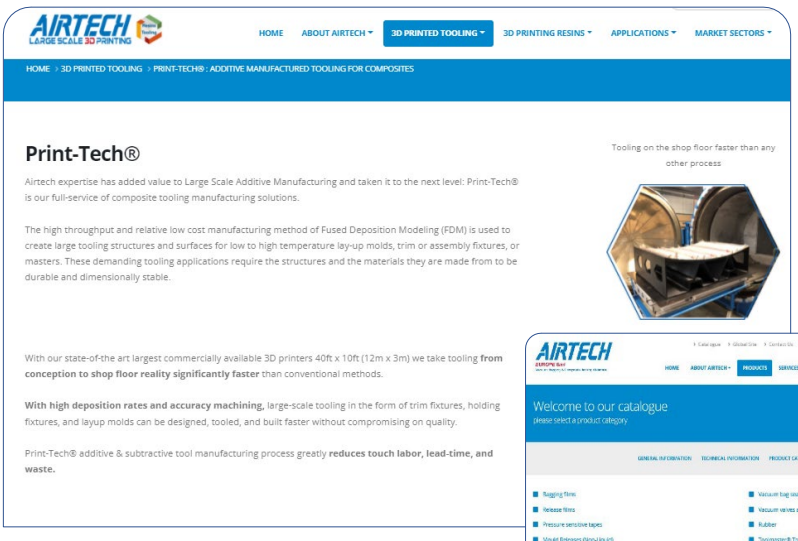


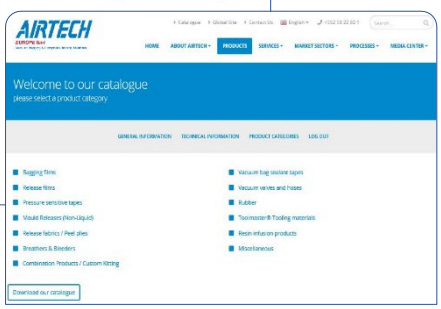
Technical Support, Training Workshop & On-site Training Support



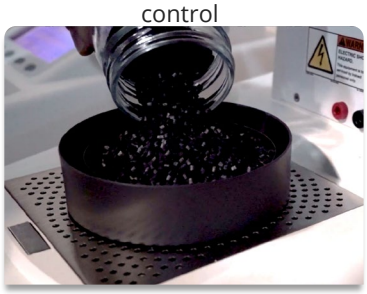
Quality System Accreditation

Resin formulation capability and quality control





Check the www.airtech3D.com website dedicated to Print-Tech® and Dahltram® resins and the online Catalogue with Technical Data Sheets.



Development, Innovation & Continuous Improvement

Dedicated to the needs of our customers

Dahltram® I-350CF resins are being used for additive manufacturing of self heated tooling with Airtech Heat-Tech® Technology.

Need more Information, a Quote or a Sample ?

Please contact our customer service team

Email: airtech@airtech.com

About Airtech

www.airtech.com
www.airtech3D.com

- Airtech Advanced Materials Group is the largest manufacturer of vacuum bagging and composite tooling materials for prepreg/ autoclave, resin infusion, and wet lay-up processes up to 426°C (799°F).
- Our product line consists of vacuum bagging films , release films, pressure sensitive tapes, mould releases (non-liquid), peel plies, breathers & bleeders, sealant tapes, vacuum bag connectors & hoses, rubber, pressure pads, cutting tools, vacuum leak detectors, shrink tape, PTFE coated fibreglass, tooling prepregs and resins, and carbon and glass reinforcements.
- With 50 years of extrusion experience, we've taken the next step into additive manufacturing. Print-Tech® is our new large scale additive manufacturing or 3D printing tooling service for composites. Large scale tooling in the form of trim fixtures, holding fixtures, and layup moulds can be designed, tooled, and built faster without compromise quality. Also, we manufacture a full line of Dahltram® tooling and Dahlpram® purging resins.
- Airtech Advanced Materials Group is family owned. We have seven locations strategically placed worldwide: Huntington Beach, California, USA; Chino, California, USA; Springfield, Tennessee, USA; Differdange, Luxembourg; Chadderton, England; Goa, India and Tianjin, China. All of our facilities offer technical assistance and are ready to meet your composite production challenges.
- Airtech is EN 9100:2018, ISO 9001:2015 and ISO 14001:2015 certified.

Airtech Advanced Materials Group

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