

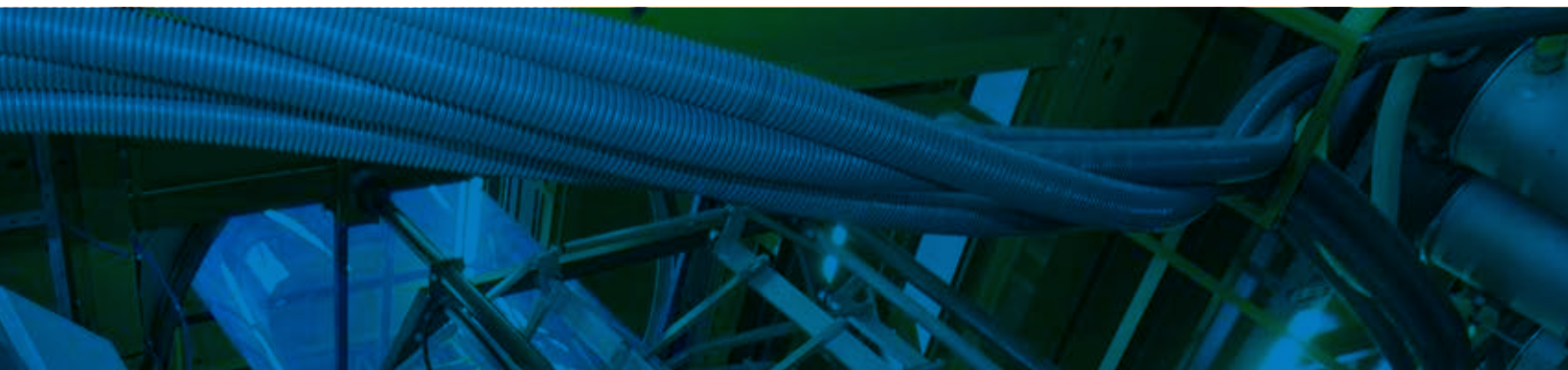


SOLVAY

asking more from chemistry®

Kitted Process Materials

**COMPOSITE
MATERIALS**



In composite part manufacturing processes, significant time is spent by operators tailoring materials to fit the mold tool. This can range from prepregs right through to the range of vacuum bagging process consumables typically required to cure the part. The tailoring process itself can lead to process inconsistency and associated quality variability. Solvay's kitting service solves these issues and enables our customers to focus on what they know best: part manufacturing.



Solvay, Leader in the Composite Industry

We have long recognized the need for risk-reduction in complex, expensive part processing and offer customized solutions to meet these challenges; that makes Solvay the global industry leader for kitted process materials.

We supply process consumables, advanced composite materials and composite tooling to customers for all aerospace and industrial applications. We recognize the need for high quality, complementary products and services. We draw on and apply one of our major strengths – strong customer focus, where application engineering, knowledge transfer, customer-led innovations and flexibility are key principles.

Customers typically supply their CAD or tool form data and have access to highly-skilled engineers who routinely design complex, tailored kits and bag assemblies to simplify the manufacturing process for composite structures, regardless of their size and quantity. The design and prototyping process includes all aspects from individual layer profile definition right through to the design of customized packaging for safe delivery of a complex bagging assembly direct to line if necessary.

Solvay Kitting Service

Our kitting service extends globally and encompasses the pre-cutting of consumables to simple predetermined shapes and dimensions, right through to the assembly of complex multi-layer integrated vacuum bag assemblies. We offer our customers an alternative to preparing and cutting their consumables, leaving them time to focus on their core tasks and competencies.

Our Range of Kits:

Category	Kit type benefits	Kit type applications
2D welded vacuum bag	<ul style="list-style-type: none"> • Reduced operator error when applying the bag (handling & bridging) • Repeatable process (right first time) • Time saving compared to traditional methods (includes bagging and operator movements within the clean room) • Increase mold usage through reduced cycle time • Reduction in waste of material • Reduction in bridged areas resulting in improved consolidation • Easier to remove from inside the part • To improve tack times 	<ul style="list-style-type: none"> • Time consuming bagging applications • Complex shapes • High volume production
Combination products	<ul style="list-style-type: none"> • Easy to apply • Repeatable process (right first time) 	<ul style="list-style-type: none"> • Large parts with straight forward geometries
All in one combination kit	<ul style="list-style-type: none"> • Easy to apply • Repeatable process (right first time) • Consistent parts • Simplified inventories • Standardized cost per part, No variance from material yield or operator's actions • Time saving compared to traditional methods (includes bagging and operator movements within the clean room) 	<ul style="list-style-type: none"> • Large parts with straight forward geometries
Stitched breather	<ul style="list-style-type: none"> • Time saving compared to traditional methods (includes bagging and operator movements within the clean room) • Increase mold usage through reduced cycle time • Reduced operator error when applying the product (pre-cut shape & correct product weight) • Reduction in bridged areas resulting in improved consolidation • Repeatable process (right first time) • Reduction in waste of material • Standardized build process • Standardized cost per part, no variance from material yield • Working capital benefit from correct stock levels • To improve tack times 	<ul style="list-style-type: none"> • Time consuming bagging applications • High volume production
3D welded bag	<ul style="list-style-type: none"> • Time saving compared to traditional methods (includes bagging and operator movements within the clean room) • Improved mold utilization through reduced cycle time • Reduced operator error when applying the bag (Handling & bridging) • Repeatable process (right first time) • Reduction in waste of virgin material • Enables manufacture of parts with multiple complex geometries • To improve tack times 	<ul style="list-style-type: none"> • Complex shapes • Time consuming bagging applications • Can be used for parts from small to large size



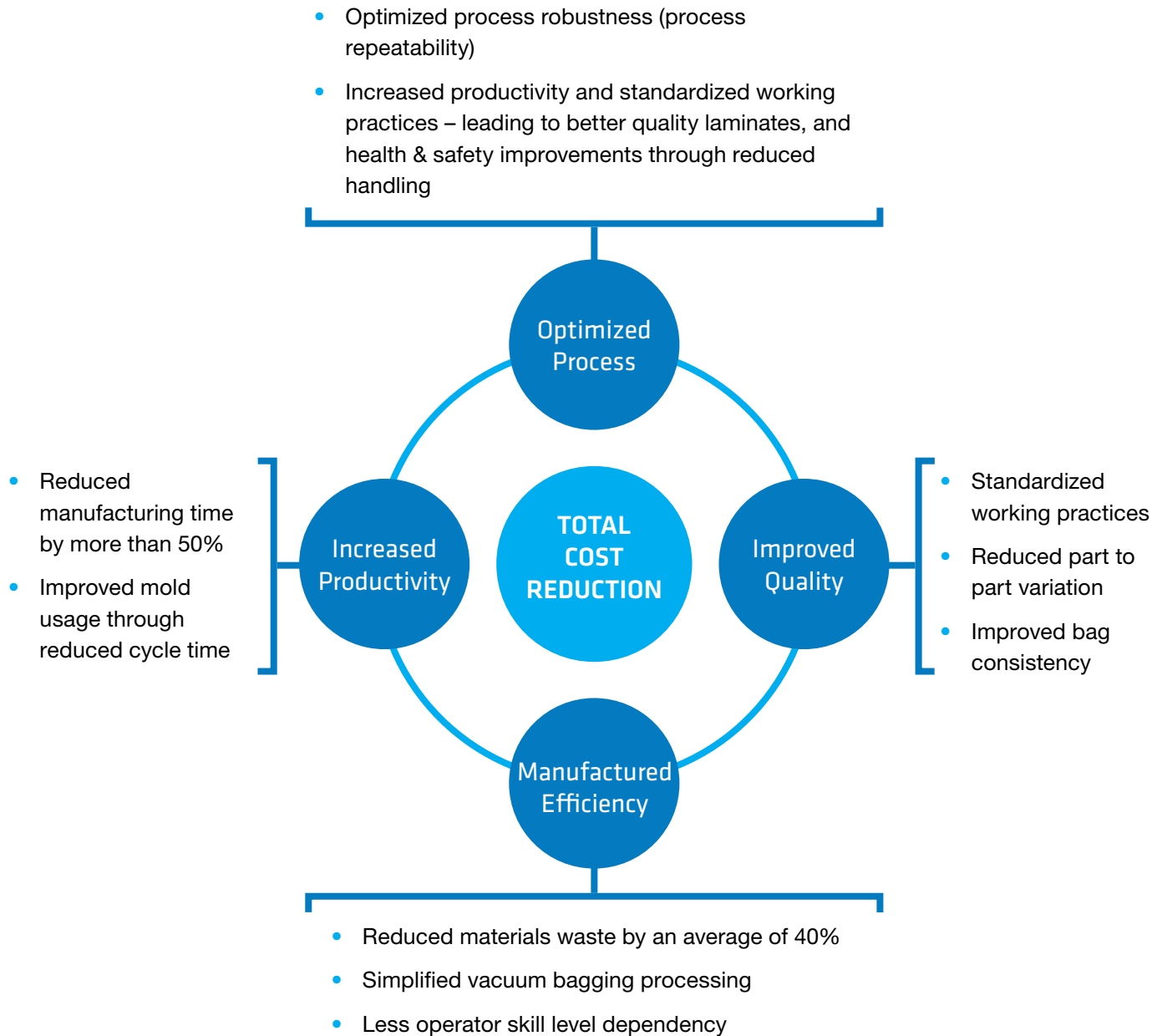
Our Range of Kits (Continued):

Category	Kit type benefits	Kit type applications
Prefolded bag with pleats (vacuum bagging film)	<ul style="list-style-type: none"> • Pre-cut to shape • Ability to accommodate extra wide shapes thanks to film welding capabilities • Optimized workshop space needs • Time saving compared to traditional methods (includes bagging and operator movements within the clean room) • Improved mold utilization through reduced cycle time • Reduced operator error when applying the bag (handling & bridging) • Repeatable process (right first time) • No waste – no need for fine tuning • Pre-determined pleats location and packaged for optimal layout taking into consideration stringers and geometry 	<p>Large parts such as:</p> <ul style="list-style-type: none"> • Wing • Horizontal/vertical stabilizer • Empennage skin panels • Fuselage barrels • Winglets
Pleated combination kit	<ul style="list-style-type: none"> • Pre-cut to shape • Ability to accommodate extra wide shapes thanks to film welding and adhesive capabilities (double sided or continuous hot melt) • Time saving compared to traditional methods (Deposit both bagging film and breather in one shot) • Ensures correct positioning of both layers • Optimized workshop space needs • Improved mold utilization through reduced cycle time • Reduced operator error when applying the bag (handling & bridging) • No waste – no need for fine tuning • Pre-determined pleats location and packaged for optimal layout taking into consideration stringers and geometry 	<p>Large parts such as:</p> <ul style="list-style-type: none"> • Wing • Horizontal/vertical stabilizer • Empennage skin panels • Fuselage barrels • Winglets
Pre-cut format bag	<ul style="list-style-type: none"> • Lean manufacturing process • Simplified supply chain from Procurement to shop floor • Decreased labor cost • Increased mold usage through reduced cycle time • Reduction in waste of material • Reduced operator error when applying the bag (handling & bridging) • Reduced total cost of bagging film per mold • Easy to handle reducing the requirement for mechanical lifting equipment 	<ul style="list-style-type: none"> • Wind turbine shells and spars web

These kits are put together from the wide range of vacuum bagging consumables manufactured and supplied by Solvay, carefully selected to match the application requirements.



Benefits Offered by Solvay's Kitting Services:



Our Process



Once the kits are fully designed and supplied to customer requirements, we follow up with a dedicated and specialized global customer support service.





Solvay

Composite Materials
4500 McGinnis Ferry Rd
Alpharetta, GA 30005-3914 USA
custinfo@solvay.com

Solvay

Composite Materials
Composites House, Sinclair Close, Heanor Gate
Industrial Estate, Heanor, Derbyshire, DE75 7SP, UK
custinfo@solvay.com

US Kitted 2018

www.solvay.com

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