

**MAXIMIZE PRODUCTIVITY
AND MINIMIZE COSTS
WITH NEW AEROSPACE
STRUCTURAL ADHESIVES**



Introduction

Now more than ever, the aerospace industry is under pressure to reduce production times and spending. Manufacturers and operators must find new ways to minimize costs and maximize their productivity.

From Original Equipment Manufacturers (OEMs) all the way through the supply chain, many in the aerospace industry have been facing cost-out initiatives. Now, there's an even greater need to do more with less.

The COVID-19 pandemic has struck a blow to the industry, with planes grounded, production lines halted, and workforces reduced.

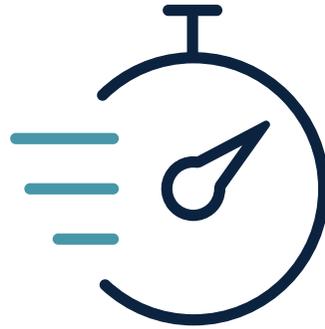
Production and operations are major factors in the total cost of an aerospace system – and therefore present significant opportunities for cost savings. OEMs can minimize costs by reducing their adhesives

inventory complexities and increasing production efficiency. This will prove vital as production begins to ramp up again with a reduced workforce.

Airlines and operators will also be looking to get the most out of their assets. It's important to select products that increase part lifetimes and reduce maintenance frequency. Minimizing the structural weight of an aircraft can also provide increased fuel efficiency.

This guide will look at new ways to minimize costs and maximize your productivity – for today and tomorrow.

Increase production efficiency



Easy-to-use adhesives with fast curing and handling times can help you streamline your production and increase your throughput – even with a smaller workforce.

A generous open time followed by a rapid build of handling strength allows you to perform more bonding operations or bond larger parts, while still completing parts within one working shift. By eliminating these bottlenecks, you can improve your production throughput by up to 80%.

New adhesives with high compressive strength and heat resistance can also be used in liquid shim applications. This provides a custom fit and better mechanical bond, while being easier to use and requiring fewer labor-hours.

To streamline production, you should also look for user-friendly adhesives. A true 1:1 mix ratio by either volume or weight is easy to use, while similar resin and hardener viscosities help improve safety and reduce splash potential if hand-mixing. Non-sag properties also allow for vertical or overhead application. This means the shop may not have to rotate the tooling jig or part.



Reduce inventory complexity



Why make operations more complicated than they need to be? Simplifying your adhesives inventory can help reduce costs and streamline production.

When multiple adhesives are used in the same assembly, both production time and inventory complexities can grow significantly. Your workforce may also need more product application and safety training.

Adhesives with high peel typically suffer from reduced lap shear strength, especially at elevated temperatures. But new adhesives can offer both a high peel and high lap shear strength with a wide service temperature range. This may allow you to use one product for multiple tasks – and cut down your Stock Keeping Units (SKUs).

Versatile adhesives can help OEMs drive out costs from the supply chain, while improving production efficiency.



Extend part lifetimes



High-performance adhesives can help airlines and operators minimize costs by reducing maintenance and increasing the lifetime of parts.

Aerospace parts are often subjected to extreme temperatures, chemicals, lubricants, vibration, or interior wear and tear.

Adhesives with a wide service temperature range can offer high performance in demanding conditions. New adhesives can provide high compressive strength and lap shear strength, even at high temperatures. They can also maintain a high lap shear strength at low temperatures instead of becoming brittle.

With reduced flight hours and flight cycles, airlines may be scaling back Maintenance, Repair, and Overhaul (MRO) or bringing more MRO operations in-house. These high-performance adhesives can help to lengthen the lifetime of assembled parts by reducing maintenance requirements.



Reduce aircraft weight



To maximize fuel efficiency, lighter is always better. High-performance adhesives can help reduce the aircraft's weight and lower operating costs.

High-performance adhesives can replace and reduce the need for mechanical fasteners. These new adhesives are designed for structural bonding, even in demanding, high-temperature applications where high peel, compressive and shear strength are required.

Up to 75% lighter than metallic rivets, bolts, and screws, these adhesives provide significant structural weight savings. For airlines and operators this translates into increased fuel efficiency – providing lower fuel costs or increased revenue weight.



Maximize productivity, minimize weight

EPIBOND® 215 A/B adhesive offers up to 45% better peel, shear and compressive performance than many other structural adhesives.

It can effectively replace many current competitive products to reduce Stock Keeping Units (SKUs) by 80%, and can replace the use of mechanical fasteners with a 75% lighter solution.

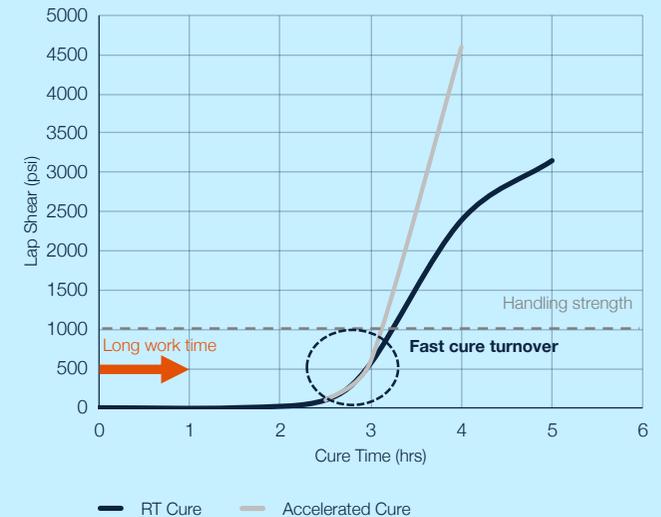
The high-performance adhesive helps to lengthen the lifetime of parts by reducing maintenance requirements.

| Performance | | |
|--------------------------------|-----------------------|--------------------------------|
| Roller Peel | T-Peel | |
| 85 pli / | 71 pli / | |
| 15 N/mm at RT | 12 N/mm at RT | |
| Compression | Service Temp Range | |
| 7,400 psi / | -90 to 250°F / | |
| 51 MPa at RT | -68 to 120°C | |
| Lap Shear | 5,500 psi / | 5,200 psi / |
| 38 MPa at -90°F (-68°C) | 36 MPa at RT | 2,000 psi / |
| | | 14 MPa at 250°F (120°C) |

Applications

- Major airframe components
 - Ribs
 - Stingers
 - Spars
 - Flight control surfaces
- Insert potting for simple fixtures and brackets
- Space applications

Processing



Productivity meets versatility

EPIBOND® 300 A/B adhesive provides an up to 80% faster time to handling strength and 88% quicker cure than competitive adhesives.

Parts can be made in one working shift and production throughput can be improved by up to 80%.

With its high heat resistance and compressive strength, it is ideally suited for liquid shim and other structural adhesive applications.

Applications

- Liquid shim for primary structural applications in major airframe components
 - Bonding skin to structure
 - Flight control surfaces
- Engine nacelles and other high-temperature environments

Performance

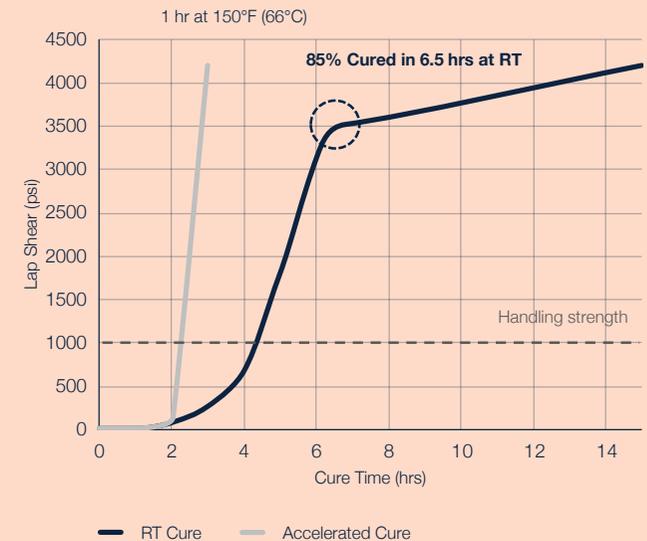
Compression

| | |
|---------------------|--------------------------------|
| 11,000 psi / | 9,000 psi / |
| 76 MPa at RT | 62 MPa at 250°F (120°C) |

Lap Shear Strength

| | | |
|---------------------|--------------------------------|---------------------------------|
| 4,200 psi / | 3,100 psi / | 1,100 psi / |
| 29 MPa at RT | 21 MPa at 250°F (120°C) | 7.6 MPa at 400°F (200°C) |

Processing



Minimize costs with zero compromise

EPIBOND® 200 A/B adhesive offers an easy 1:1 mix ratio and is non-sag for vertical and overhead application.

With a quicker handling and tack-free time, it increases throughput by up to 50% and allows parts to be completed in one working shift.

The adhesive is flexible yet tough over a wide temperature range, making it ideal for many demanding structural applications.

Performance

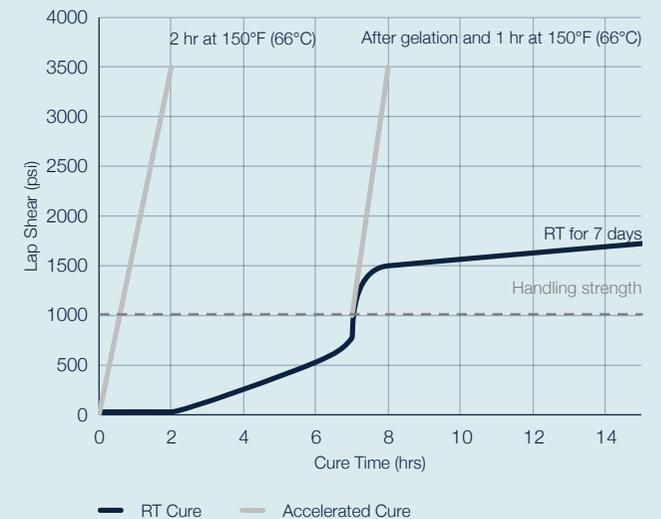
| | |
|-----------------------|---------------------|
| T-Peel | Compression |
| 27 pli / | 11,000 psi / |
| 7.7 N/mm at RT | 76 MPa at RT |

| | | |
|--------------------------------|---------------------|------------------------------|
| Lap Shear Strength | | |
| 3,160 psi / | 3,200 psi / | 1,020 psi / |
| 22 MPa at -67°F (-55°C) | 22 MPa at RT | 7 MPa at 200°F (93°C) |

Applications

- Edge sealing requiring high strength
- Insert potting
- Fixture mounting
- Flight control surfaces

Processing



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With an aviation legacy of over 70 years, our current aerospace brands include ARALDITE®, EPIBOND®, EPOCAST®, and URALANE®. Our products are used on almost every major flying platform today. We are committed to working with our aerospace customers to develop solutions enabling production process improvements, weight savings, and reduced maintenance costs.

Our team is here to talk about the challenges you're facing today in these uncertain times, or may be facing in the future when normal operations resume. To get in touch or for more information, please contact us at

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