

3M Science.
Applied to Life.™



3M Aerospace Surface Protection & Enhancement Overview

A man in a dark jacket is sitting on a rocky cliff, looking out over a vast sea of white clouds. The sun is setting in the distance, creating a warm, golden glow in the sky. The clouds are dense and stretch far into the distance, creating a sense of depth and vastness. The man is positioned on the left side of the frame, looking towards the right.

To be successful, you need to live in the future.

You need to think ahead, to fix things before they're broken, to prevent errors before they happen. You need built-in, proactive protection. You need to take control of future issues while you still can — now.

You need to be future proof.

In this business, people count on perfection. From manufacturing through maintenance and beyond, you need products that give you power over the things you can control — and mitigate the things you can't. That make the journey forward just a little smoother.

3M can help.

Today, let's talk Surface Protection & Enhancement.



**Erosion
Protection**



**Corrosion
Protection**



**Advanced
Composites
Protection**



**Specialty
Protection**



Why Surface Protection & Enhancement products?

Substrates can be expensive, prone to damage and have a long repair cycle time and high replacement cost.

The integrity of the aircraft's surface needs to be protected.



Future proof your fleet.

Bad weather. Dust and sand. Rising fuel costs. Bring it on. You're covered with the most revolutionary surface protection products out there. Because you can't control the future.

But you can be ready for it.

Polyurethane Protective Tapes

- Extremely tough
- Highly durable
- Puncture resistant
- Conformable to curves
- Solvent-free technology
- Customer focused options (matching colors, thicknesses, kits)
- Easy to apply

Now you can control the elements.

Welcome to the future. With 3M, you get superior exterior protection from erosion on leading edges and flight surfaces compared to paint, coatings and competitors' tapes. And that means less downtime and improved appearance.

Erosion Protection

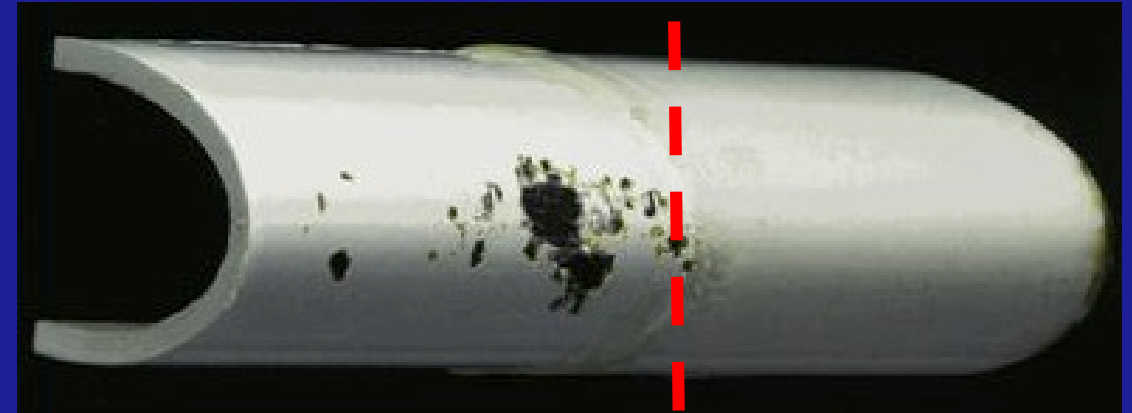
Leading Edge Protection / Rain Erosion Example

3M Aerospace Erosion Protection

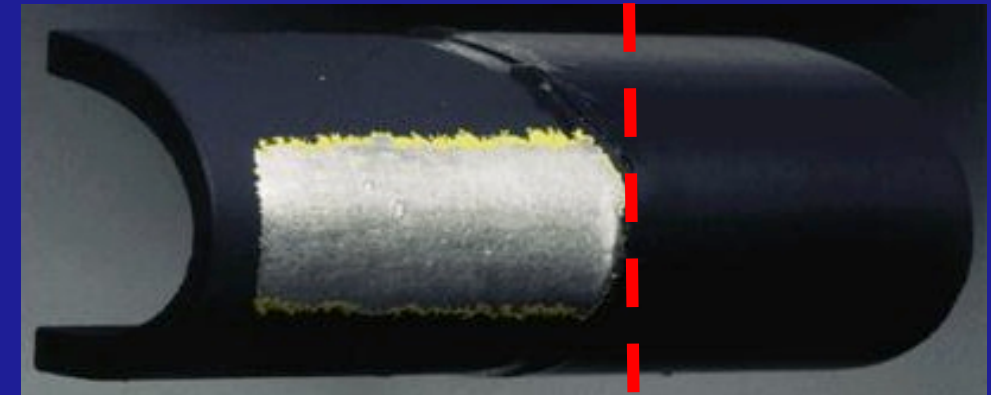
- Substrate: Epoxy with Mil-P-23377 Primer, Alumigrip G8003 Paint
- Rainfall: 500 MPH 1"/Hr.
- Drop Size: 2 mm
- Exposure time: 10 minutes

Take your chances

Future proof



- Substrate: Aluminum with Mil-P-23377 Primer, Mil-C-83286B Paint
- Rainfall: 500 MPH 1"/Hr.
- Drop Size: 2 mm
- Exposure time: 45 minutes



Erosion Protection

Rotor Blade Protection (Product #8545, 8542, 8663)

Extend blade life from 20 hours to over 200 hours

- Eliminates blade damage caused by sand and rain erosion
- Enhances survivability
- Extends service life
- Increase aircraft availability

Typical cost to repair a blade
\$30k

Impact Protection

"Belly Tape" (Product #8641)

Protects against impact damage from FOD (Foreign Object Debris) or large objects

- Applied to aircrafts that sit low to the ground and operate in austere environments (ie. military transport aircraft like C-130 and C-17)
- Also applied to 737 spoilers

Erosion Protection

Industrial Applications (Product #8674)

Protects high dollar parts of other vehicles, such as trucks, boats, and cars from impact damages.

- Typically applied to front ends, hoods, bumpers, fenders and mirrors
- Shields paint and chrome from rock chips, scratches, road debris damage, salt and stains

3M Aerospace Erosion Protection



Erosion Protection

Specifically Designed Boots & Kits

- 600+ unique shapes engineered to fit like a glove
- Highly UV resistant
- Providing protection on high-valued exterior aircraft parts
- Antennas, radomes, spinners, engine inlet protection and leading gear protection



Corrosion happens. But it doesn't have to.

Lavatories. Galleys. Doorways. Cargo areas. These are the spots where corrosion appears. Not anymore. With enhanced interior protection from 3M, corrosion is a thing of the past. And that means significantly reducing corrosion expenses and aircraft days out of service.

Grounded aircraft
\$35k
PER DAY
in lost revenue

Floor beam replacement
\$6,000
PER BEAM

Corrosion Protection

NEW! 3M™ Gel Tape

Gel Tape 8145GT is a lightweight corrosion reduction gel sealing tape for aircraft aluminum substrates.

- Designed by users for users
- Revolutionary resistance to acids
- Easy to install and remove
- Repositionable and conformable
- Lighter than alternative solutions

Watch the video, [here!](#)



Corrosion Protection

Polyurethane Protective Tapes (Product # 8658DL)

8658DL: Seam Sealing Tape

- Covers the seam between floorboard panels
- Apply over uncured sealant to speed up routine maintenance checks
- Transparent so you can visually inspect sealant and fasteners
- Won't damage floorboards during removal
- Stand-alone FR-rated

Corrosion Protection

Polyurethane Protective Tapes (Product # 8657DL)

8657DL: Wide Area Protection Tape

- Covers large areas of flooring, creating a bathtub effect
- Prevents fluids from reaching floorboards
- Protects around transitions, terminations and contoured areas
- Stand-alone FR-rated
- Highly durable, puncture resistant
- Conformable and easy to apply

First-class aircraft, year after year.

Keep your fleet looking flawless. Save money with increased uptime and fewer repairs. Our breakthrough solutions make protection part of the part — so leading edges, engine components and other composite parts can withstand the harshest environments.

Composite Protection

Paint Replacement Tapes (Product #3952 & 5004)

Designed to replace topcoat paint, our fluoropolymer tapes and films offer long-term UV stability, Skydrol resistance and low surface energy.

- Solvent and chemical resistant
- Solvent-free technology
- Moisture barrier

Composite Protection

3M™ Cocure (Product #8734 & 8730)

A whole new way to think about erosion protection.

[See it in action.](#)

- Unique flow characteristics (see next slide)
- Can be processed up to 350° F
- UV stable
- No intentionally added VOCs
- Easy application compatible with composite cure
- Repair system available



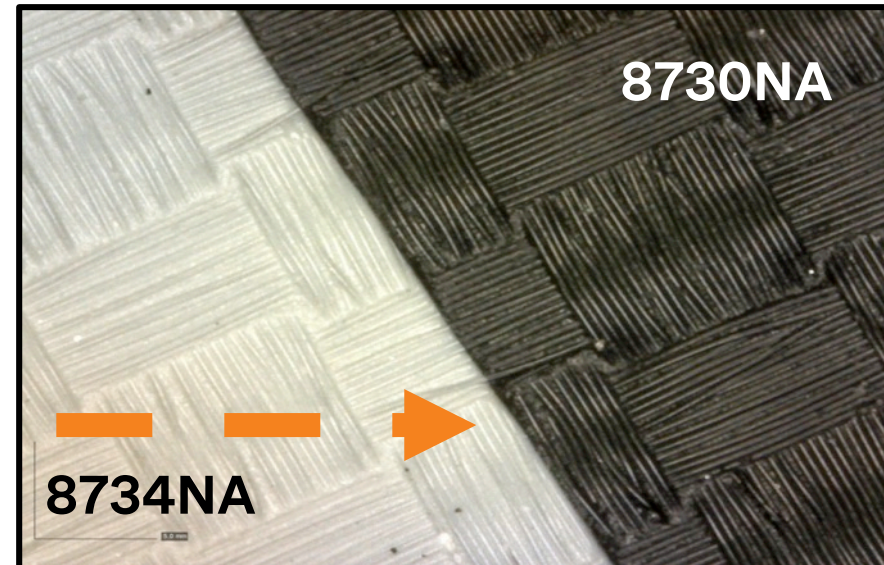
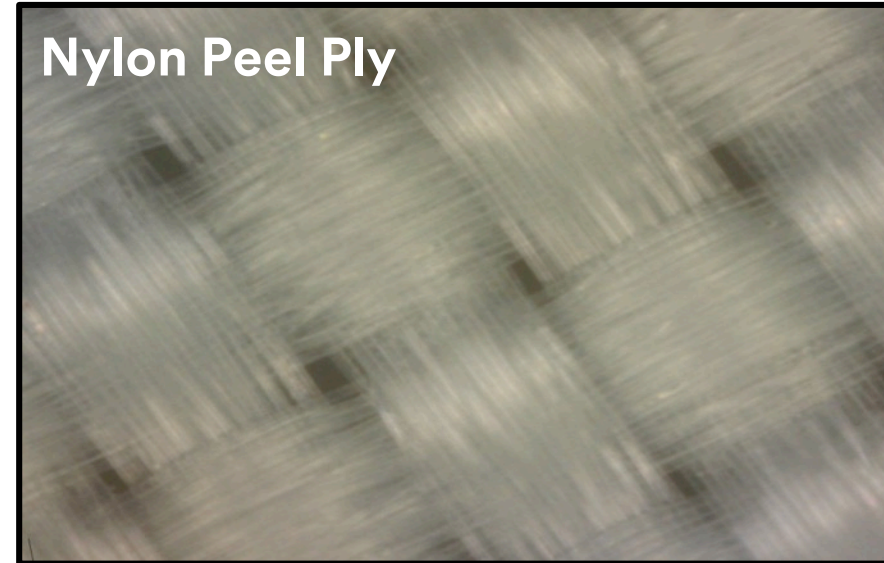
Composite Protection

3M™ Cocure (Product #8734 & 8730)

Sealed Seam Technology

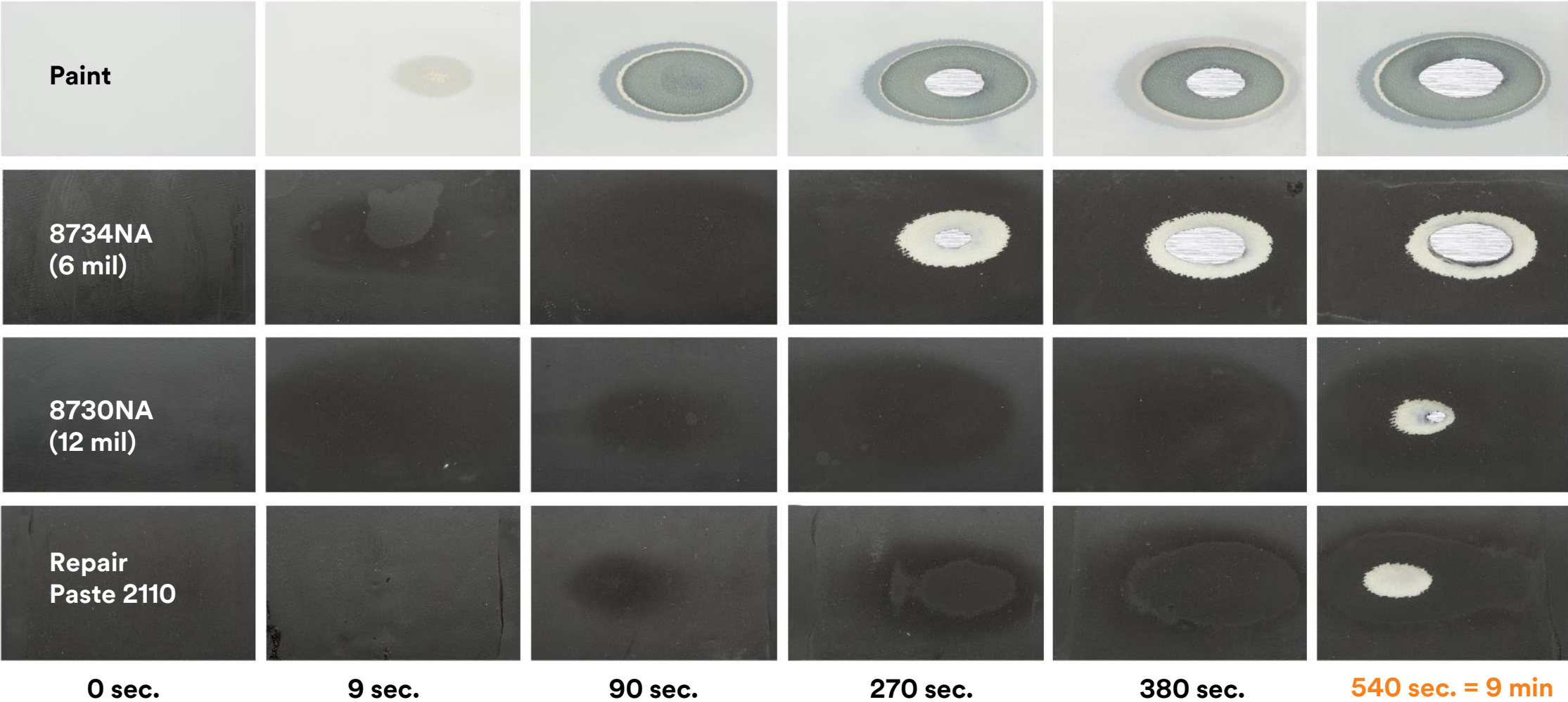
Unique flow characteristics allows the film to be stacked, butted together, and textured to allow customized surface finish. Customize the level of protection where it is needed instead of having to add material to the entire part. Also, thermoformable for complex shapes yet doesn't melt like a thermoplastic.

(RIGHT): 8734NA gray on top of 8730NA black cured onto composite panel with peel ply on surface – 250F vacuum bag cure



3M™ Cocure (Product #8734 & 8730)

60x Better: Paint erodes after just 9 seconds. Cocure, 9 minutes.



Cocure samples tested in a modified grit blaster at 70 psi, 3 inch distance, 30o incident angle, using 46 grit Al₂O₃. 1 kg of grit is delivered every 45 seconds.

3M™ Cocure (Product #8734 & 8730)

See it in action, [here!](#)



Cocure samples tested in a modified grit blaster at 70 psi, 3 inch distance, 30o incident angle, using 46 grit Al₂O₃. 1 kg of grit is delivered every 45 seconds.

The power of knowing what's ahead.

You haven't been able to predict the future of your business — until now. Let our extensive R&D solve your toughest scientific challenges, with state-of-the-art protection that resists abrasion, punctures and tears for buses, trailers, motorcycles, inflatables, and more.

Specialty Protection

Other Applications (Product #8616 & 8617)

This tough, matte transparent, abrasion-resistant, polyurethane elastomer resists puncture and tearing for long-term durability.

8616:

- Used to seal tears in vinyl fabric
- Has a unique adhesive that resists the oils in vinyl that cause other adhesives to fail
- Combined with an acrylic pressure sensitive adhesive specifically formulated for plasticized vinyl

8617:

- Can be applied to a variety of surfaces, such as canvas, nylon leather, rubber, fabrics, most plastics and paints
- Combined with a high bond strength adhesive



Specialty Protection

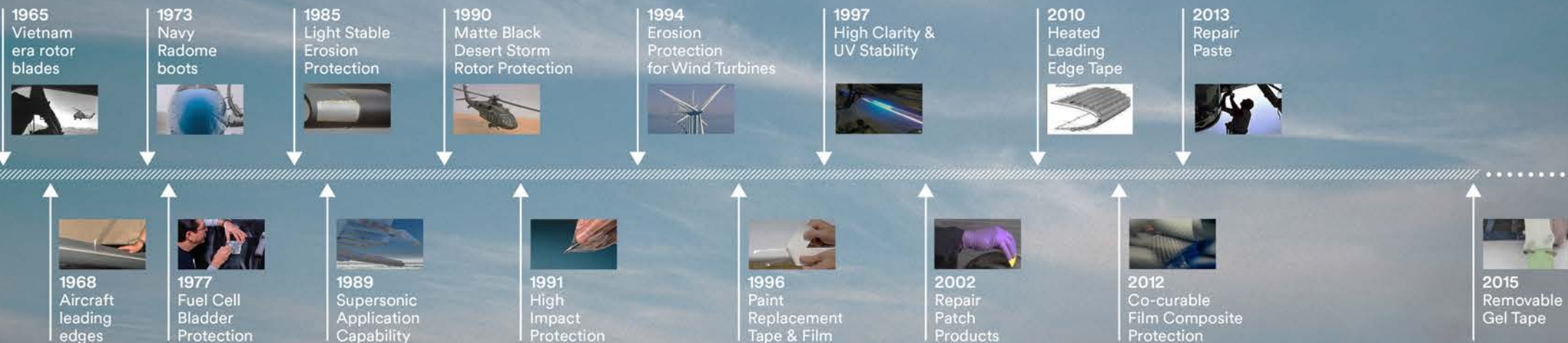
Other Applications (Product #8547)

Protect valuable equipment and parts throughout the production process. Our tough, transparent, abrasion resistant, temporary surface protection can be used during welding, transportation, or any other operation that may cause damage.

- Easy and clean removal
- Fire resistant
- Weld splatter protection



50 yrs. of Polyurethane Technologies



Why 3M?

We're more than just a product supplier.

We are involved with the complete lifecycle of the aircraft, from design phase to production to maintenance checks.

Control your future.

Recap, SP&E Technology:

- Protects against erosion, impact and corrosion
- Requires minimum tools, equipment, facilities and training
- Reduces exposure to hazardous materials
- Available for a variety of applications
- Provides superior protection of substrates
- Reduces operations and costs (improves component life, reduces maintenance)
- Decreases aircraft downtime



Thank you.