

THE CARRIER WAVE

PHANTOM FLYERS R/C CLUB



AMA #393 SAINT CHARLES, MO

July 2024

Newsletter of the Phantom Flyers R/C Club

<http://phantomflyersrc.com>

CLUB OFFICERS

Contact Number

President - Ed White	(636) 219-2255
Vice President - Don Grzina	(636) 233-0193
Secretary - William Reape	(314) 568-0555
Treasure - Jose' Espinosa	(636) 947-6067
Safety Officer - Larry Anderson	Email
Field Manager - Don Grzina	(636) 233-0193
Chief Flight Instructor - Ed White	(636) 219-2255
Event Coordinator - Dan Abel	(314) 707-0138

Send Membership Renewals to:

William Reape
234 Kildare Court
St Charles, MO 63366

Board of Directors:

Work

Home

Ed White	Retired	(636) 219-2255
Dan Sundman	(314) 749-4029	(314) 749-4029
Mitch Galatioto	Retired	(636) 734-6322
Dave Evans	Retired	(636) 448-4800

Phantom Flyers R/C Club Meeting Minutes – 17, June 2024

Attendees: 9 club members were in attendance. Meeting called to order at 7:00 pm. Members were, Ed White , Jose Espinosa , Don Grzina , Bill Reape, Don Jenkins, Kevin Cox, Jack Buydos, Larry Anderson, and Dan Sundman.

New Members: None

Technical Session:

Secretary's Report: The minutes were sent out for the May meeting. Correction needed, change the date of the Open House to August 10. There was a motion by Jose E. and seconded by Kevin. The minutes were approved.

Treasurer's report: Jose reported there was no changes with the account.

Safety Report. Larry Anderson reported no reports. Please be “Safe” as safety is each pilots responsibility.

Field Managers report: Don reported the runway repair sand is not available at the usual place. The Trimmer has been worked on. The mowers are going to post when the cutting is happening for field closing.

Activities Report: 2-meter contest was completed and the next one is July 7, 2024. Jan Jansen will be the CD. Meet Me in St. Louis is the last Friday and Saturday in July.

GSLMA Report: Ed reported the club is still in a holding pattern.

Old Business : None

New Business: None

Meeting adjourned at 7:08 pm.

Respectfully submitted,

Bill Reape

https://www.faa.gov/uas/recreational_fliers/knowledge_test_updates/

<https://dronetrust.com/faa-trust/>

Events

July 2024 Sailplane Contest (CD Jan Jansen)



All,

Great turnout for the Phantom Flyers 2M Glider Contest. Twelve pilots participated in the contest. We cut the contest short at four rounds mainly due to the crop duster which came too close for us to fly comfortably. He did however put on quite the show for us. It was a close contest with Robert edging out Kevin in the fourth round.

1. Robert, 1063
2. Kevin, 1048
3. Jan, 1037
4. Larry, 939
5. Brian, 927
6. Bill A, 895
7. Bill O, 885
8. Ed, 800
9. Mitch, 770
10. Rich, 708
11. Jim, 692
12. Bill R, 620

Thanks to all for participating.

Thanks,

Jan

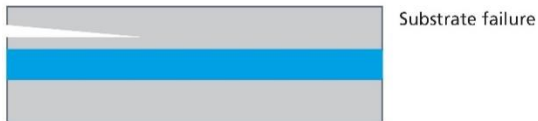
Additional pictures are here! <https://flic.kr/s/aHBqjByyvN>

Members Projects/Tech Session

Epoxy 101 - Why did my epoxy joint fail? - Ed White

Full disclosure, I am not an expert on bonded joints. Though I spent many years around people who are experts. Here is what I think I learned by osmosis. There are two major causes why epoxy joints fail. Conveniently there are two different types of bond failures that can identify which major cause was at fault. Note that this assumes that the materials being bonded have good strength. A bonded joint will never be stronger than the materials being bonded.

The very best aerospace grade epoxy cannot turn balsa into titanium. Failures in the base material are called substrate failures.



common reason for an adhesive failure is inadequate surface preparation (cleaning, degreasing, roughing-up smooth surfaces). This can be especially problematic with any surface that is formed in a mold such as a composite fuselage or flying surface. In order to get the cured part out of the mold, a mold release agent is used so the epoxy in the part does not stick to the mold. Do not assume this mold release agent has been cleaned off the part when you get it. That



Failure type 1, Adhesive Failure. Just what it sounds like. The epoxy comes unstuck from one or both of the materials being bonded. After adhesive failure on one surface there is little or no epoxy. The most common reason for an adhesive failure is inadequate surface preparation (cleaning, degreasing, roughing-up smooth surfaces). This can be especially problematic with any surface that is formed in a mold such as a composite fuselage or flying surface. In order to get the cured part out of the mold, a mold release agent is used so the epoxy in the part does not stick to the mold. Do not assume this mold release agent has been cleaned off the part when you get it. That

cleaning is extra steps and extra manufacturing cost. Keeping the cost to you down frequently means not thoroughly cleaning the mold release off before it is shipped, maybe not at all. It's cheaper to let you do that work and failure to do that cleaning leaves mold release on the part which then does its job preventing the epoxy you just applied from sticking.

What is proper surface preparation? Step 1. Roughen-up the surface with relatively coarse sandpaper. This does two things. First, it roughens a smooth surface giving the epoxy small to micro-scratches to grip to. Second, it loosens any surface dirt or oxidation filling thus exposing the raw clean parent material below. Step 2. Degrease. Sanding the surface likely just took the bad stuff on the surface and spread it around. Soap and water are usually best for this. Dry thoroughly. Step 3, use a solvent to get any remaining compounds the soap and water didn't get. Isopropyl Alcohol is often used for this. Get it from the drug store but spend a little more and get 91%. Wipe it on with a clean cloth but do not just let it air dry. Wipe it on, then immediately wipe it off with a clean, dry towel. Do it before the alcohol dries. If you just let the alcohol evaporate any contaminants in the alcohol will be left on the surface.

Failure type 2, Cohesive Failure. This is a failure of the epoxy itself. If there is epoxy on both surfaces after the failure, it is a cohesive failure of the epoxy. The near universal cause of cohesive failure is inadequate mixing of the epoxy. Two-part epoxies work by a chemical reaction between the resin and the hardener. To have a good chemical



reaction the resin and hardener molecules must be essentially in contact with each other. They don't attract to each other so if your mixing leaves tiny pockets of either resin or hardener, those micro-pockets will not cure and will have little or no strength. Worse they will be sites for increased stress to become starter cracks for the cured material.

So how much mixing do you need to do? Short answer is A LOT more than you think. If the parts are different colors and you mix to a uniform color - that isn't near good enough - you are just getting started. Plan to spend at least 1, preferably 2 minutes of really active mixing. Make sure you don't just push resin or hardener to the edge of the mixing area. Work to bring it all back into the mixed area. Concerned that if you spend 2 minutes mixing, your 5-minute epoxy will be 3 minute or less? You should be. But if you want a reliable joint, you need to allow for adequate mixing time.

Myths and what doesn't make much difference:

Within reason the age of the epoxy. Try to keep it in a cool dry place if you can. Throw it out only when it becomes much thicker and more viscous than it used to be or if it looks like crystals are forming in either part.

The epoxy is starting to take a set so I can't use it is mostly a myth. Even if the epoxy is starting to get very sticky and won't flow easily any more. Generally, if you can force it into the joint and clamp it there, it will be OK when it fully cures.

Longer cure epoxy is stronger than shorter cure epoxy is largely a myth. It probably comes from if you are using 30-minute epoxy you will not worry so much about time and are more likely to do a more thorough mixing. For 5-minute epoxy you may be more concerned about getting it in place and before it takes a set and spend too little time mixing.

I can just hold it in place until it sets. Sorry, you really need to apply clamping pressure and then walk away from it. The pressure causes the epoxy to slowly flow into the micro-scratches you made when you did the adequate surface prep.

When the manufacturer says 5-minute epoxy needs to cure for 24 hours to reach full strength, they didn't write that to annoy you by removing the whole reason to have 5-minute epoxy. You need to do a little estimation on how highly loaded the bond joint will be. Most epoxies will reach most of their strength after 12 hours at room temperature. Warming will speed this time up. And many of our applications simply don't require full strength to perform the desired function. 5-minute usually requires more than 5 minutes, but if lightly loaded 30 minutes will often be adequate.

So what does make a difference?

Often issues occur when bonding structures of very different stiffness. For example, bonding a servo tray or battery tray to a fiberglass fuselage. If the fuselage is relatively flexible and what you are bonding to it is relatively stiff, any large loading conditions that cause flexing of one structure will cause very high stresses in the bond joint that may lead to epoxy overload. Unfortunately, such conditions may weaken but not fully break a bond joint. After an unusual load condition, you need to inspect carefully for partially broken epoxy joints. This used to be a big deal when we flew fiberglass fuselages with large 2-stroke or 4-stroke engines, better known as vibration machines. Often the solution then was instead of epoxy use silicone sealant. This is an outstanding adhesive that remains flexible keeping internal adhesive stresses low. However, it really does need overnight to cure.

If you need epoxy for what you know will be a highly loaded bond joint, you can greatly strengthen the epoxy by adding reinforcing glass fibers. Take some fiberglass dry cloth and cut very small lengths of the fiberglass and mix them in with the epoxy. A little goes a long way to strengthening the epoxy.

At The Field!

Field epoxy repair on Jack's plane



Mitch flying. Check out his ground support team!



Dan Sundman enjoying a sortie after completing his field mowing duties! (photo via Mitch G)





It has been said,

**“Let a man catch a fish and he can eat for a day.
Teach a man to fly model airplanes
and he will be frustrated for an entire lifetime”**

PHANTOM FLYERS RC CLUB

OPEN HOUSE FLY-IN

AUGUST 10th 10 a.m. to 3 p.m.

AMA REQUIRED

Join the Phantom Flyers R/C Club (AMA 393) for a day of fun flying, with a relaxed atmosphere, and no competition.

***The field has a 400' X 40' paved runway, pit area and taxiway.**

***No landing fees or entry fee.**

***Generators will be available to charge batteries .**

***Food will be provided.**

***All A/C types: Helis, Gas, Turbines, Electric**

***2000 Ft AGL**

***The field is a FRIA site**

Club membership open to all AMA members. Join the club (AMA 393) at the Open House and **save \$50** on the first year dues. Membership will be paid up until Jan 1, 2026. (New first time members only).



Have an airplane or RC equipment to sell?
Bring it along.

Spectators are welcomed

Map to field: phantomflyersrc.com/field

Email questions to: activities@phantomflyersrc.com

Check-out the other schedules here:

<https://www.phantomflyersrc.com/wp-content/uploads/2024/05/2024-EVENT-TABLES-A.pdf>

Rev B

PHANTOM FLYERS 2024 EVENT SCHEDULE				
JANUARY	1	NEW YEAR FLY-IN	12:00	ED W
FEBRUARY		NONE		
MARCH		NONE		
APRIL	7	2 METER SAILPLANE	10:00	LARRY/JAN
	27	OPEN HOUSE	10:00	
MAY	5	2 METER SAILPLANE	10:00	LARRY/JAN
JUNE	2	2 METER SAILPLANE	10:00	LARRY/JAN
JULY	7	2 METER SAILPLANE	10:00	LARRY/JAN
	27&28	MEET ME IN STL PATTERN FLY	10:00	ED/JIM
AUGUST	4	2 METER SAILPLANE	10:00	LARRY/JAN
	10	OPEN HOUSE	10:00	JACK
SEPTEMBER	7	SCALE FLY-IN	10:00	DON G
	14	EDF FLY-IN	10:00	KEVIN
	28/29	PHANTOM FLYERS PATTERN CONTEST	9:00	ED W/JIM
OCTOBER	12	COMPETITION FUN FLY		
NOVEMBER		NONE		
DECEMBER	TBD	CHRISTMAS DINNER	TBD	ED W

Report any equipment or grounds problems to any club officer.

**IF YOU ARE UNABLE TO MOW THE SCHEDULED WEEK,
IT IS YOUR RESPONSIBILITY TO SWAP WITH A REPLACEMENT.**

April				
5 ^{*1}	12	19	26	
Mitch Galatioto	Bill Ahrens	Jose Espinosa	Dan Sundman	
Jack Buydos	Larry Anderson	Don Jenkins	Jim West	
	Don Grzina	Bill McMenamy	Ed White	
May				
3 ^{*1}	10	17	24	31
Brad Young	Jack Buydos	Jose Espinosa	Dan Sundman	Jim West
Bill Ahrens	Larry Anderson	Mitch Galatioto	Don Jenkins	Ed White
Jim Alberico	Kevin Cox	Don Grzina	Bill McMenamy	Brad Young
June				
7 ^{*1}	14	21	28 ^{*3}	
Bill Ahrens	Jack Buydos	Mitch Galatioto	Jim West	
Larry Anderson	Kevin Cox	Don Grzina	Don Jenkins	
Jim Alberico	Jose Espinosa	Jan Jansen	Bill McMenamy	
July				
5 ^{*1}	12	19	26 ^{*3}	
Dan Sundman	Bill Ahrens	Jack Buydos	Mitch Galatioto	
Ed White	Larry Anderson	Kevin Cox	Don Grzina	
Brad Young	Jim Alberico	Jose Espinosa	Jan Jansen	
August				
2 ^{*1}	9	16	23	30
Don Jenkins	Jim West	Bill Ahrens	Jack Buydos	Mitch Galatioto
Bill McMenamy	Ed White	Larry Anderson	Kevin Cox	Don Grzina
Dan Sundman	Brad Young	Jim Alberico	Jose Espinosa	Jan Jansen
September				
6 ^{*6}	13	20	27 ^{*2}	
Don Jenkins	Jim West	Bill Ahrens	Jack Buydos	
Bill McMenamy	Ed White	Larry Anderson	Kevin Cox	
Dan Sundman	Brad Young	Jim Alberico	Jose Espinosa	
October				
4	11 ^{*7}	18	25	31
Kevin Cox	Jim Westt			
Jan Jansen	Bill McMenamy			
Jim Alberico	Dan Sundman			

***Notes: Additional volunteers for field prep will be greatly appreciated.**

*1: Gliders Sunday. *2: Pattern Contest Friday – Sunday *3 Pre-NATS Flyin Friday -Saturday

*5: EDF Fly-in Saturday *6: Scale Fly-in Saturday *7 Comp Fun Fly Saturday

Don't forget to renew your membership!!

<https://www.phantomflyersrc.com/wp-content/uploads/2023/12/2024-membershipform2.pdf>



<http://phantomflyersrc.com/>

<https://www.facebook.com/Phantom-Flyers-RC-Club-139791882811519/>

Check there for the back issues of the Carrier Wave Newsletter, mowing schedule, event calendar and club roster/contact information (handy for mowing).

Articles, pictures and tech notes for publishing in the Carrier Wave are always appreciated. Let us know what you are building, repairing or flying!

Send them to:

kevcx@charter.net