Airspan, Litespan and Fibafilm for Dummies

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"Flightplug" the newsletter of the Southern California Ignition Flyers, Mike Meyers, Editor

One of the advantages of being editor of the Flightplug is that you get both an education and sympathy from your readers. Not always at the same time, and from the same person, but I get some each month. Mike Moskow out in Maryland sent me a letter after reading of my travails with Litespan. He said he'd used it when covering the Rearwin Speedster jumbo rubber job that won the concours at the Muncie SAM Champs. As he said, *"I learned more than I wanted to about Litespan when covering the Rearwin. I don't want to do another elliptical fuselage, ever. Flat-sided OT jobs are easy. Covering is strong if glued to every crosspiece. It is important to turn edges 90 degrees over longerons before final shrink ironing or Litespan will slip and never get taut. "*

So much for sympathy. About the same time I got a note from Dave Larkin up in Canada, who told me he was surprised that I hadn't learned how to do Litespan/Airspan et al properly. My education began with his offer to send an article he'd written on the use of Litespan, Airspan and Fibafilm, which I reproduce below. The article also includes a chart comparing the materials.

It's always worthwhile talking about new kinds of materials. The RC parkflyer revolution created a market for new lightweight covering films. Nelson, Goldberg, the Monokote people and others have a series of new films out. Some of the SCIFers are flirting with FAC style scale models. I love and use silk, tissue and dope like most OT modelers. But I'm a modeler first — and if new materials offer an opportunity to do things in a better way, [e.g. a good aluminum colored lightweight film] they should be tried.

Larkin on Litespan (From the mid 1990's')

The Solarfilm company produces three tissue replacements: Litespan, Fibafilm and Airspan. Litespan has been around for at least 5 years, it was joined a year or so later by Fibafilm and now there is Airspan. Airspan and Litespan look very like coloured tissue in appearance. Fibafilm is essentially similar to Micafilm and gives a somewhat more glossy appearance. I've been using Litespan since it came out and found it very satisfactory for 1/2A Texaco models and for my small sport vintage models. When it was introduced, it was somewhat oversold to the British SAM public, who were very upset at the aspersions cast on their beloved dope-and-tissue, however true, and rightly pointed out that Litespan did not provide the kind of torsional rigidity required for rubber model fuselages. It does have the advantage of being easy to use, light and not prone to introduce warps in flying surfaces, It does not become brittle with age, like tissue. Later the manufacturer, Derek Hardman of Solarfilm, introduced Fibafilm, which does provide torsional rigidity and is still pretty light. Now he has brought out Airspan, which is lighter than Litespan, has more rigidity, and requires just a couple of coats of thinned dope to finish the tautening and to seal the pores. All these materials are available in colours.

LITESPAN

Litespan shrinks, but not like Monokote or Solarfilm. Cut according to the grain and make sure that the material is fairly taut before attaching it. For wingtips you may have to use separate pieces — just like you used to do with tissue, but expect it to shrink less than watershrunk tissue finished with tautening dope. You do have to apply an adhesive to the structure, or to the material for overlapping joins. You can use either Balsarite or BalsaLoc, the latter having some advantage of no odour. Some of our local SAM chapter swear by UHU purple glue as an adhesive.

As with all films, and perhaps more so than most, accurate iron temperature is important (90-100°C [194-212F] for tacking, 125-130°C [257-270F] for shrinking). If you go too high, the material will lose its elasticity and you will be plagued with wrinkles over time. I've used a Coverite thermometer in the past, and now use one of their new fancy irons with accurate temperature control.

It is not necessary, or even useful to put clear dope on Litespan. It isn't doped on my 5 year old floatplane.

I have found the material to be relatively puncture proof though it will yield to a really determined thistle if your plane alights on it vertically. The silver Litespan is less puncture proof than the other colours, but is easily patched. Be careful though, one side is usually slightly darker than the other. I've had a few nasty crashes with 1/2A Texacos that lead me to respect Litespan' s ability to keep the structure hanging together on impact.

Basically it should be used as a tissue replacement for all those places where you would use tissue, except rubber model fuselages. If your model does look like a tennis ball then be prepared to cover it very carefully in sections. Your technique will improve with experience. You will be rewarded with a low maintenance, longer-lasting finish that looks good, looks like it should and doesn't bring down the torrent of conjugal wrath that the application of dope can provoke.

AIRSPAN

Airspan is the latest synthetic tissue replacement. It has a grain and there is a slight difference in texture and colour between the two sides. After heat shrinking, it should be doped with one or two coats of 50% thinned clear dope (shrinking) to fill the pores. It is available in a range of colours (see table), is very lightweight, and fairly easy to use. An instruction sheet is provided. But most of us don't read instructions, so here are some more of them, if I may be permitted an Irishism. To give new users the best chance of success may I emphasize a few points. The comments made about iron temperature for Litespan apply equally to Airspan. As with Litespan, if you use a conventional 'Monokote' iron, use a Coverite thermometer to check the temperature. Better still use one of the new Coverite microprocessor controlled irons that hold the temperature to within one degree.

Like Litespan, Airspan may be attached with Balsaloc, or Balsarite (or UHU purple glue). If you insist, you can

certainly use dope, if that is the method with which you are most comfortable. The four phases of tautening are:
1) Attach the Airspan over the framework putting it on as taut as possible. Hold it in place by sealing the edges with an iron. This iron should be set to the minimum temperature that will cause the material to bond in place (about 90°C, 194°F) and the material should be as taut as reasonably possible. Run the iron over the perimeter of the framework. The iron temperature should be the very minimum possible that still causes the material to bond in place.
2) At the same temperature, or very slightly higher, go around the perimeter again, with the iron, pulling on the excess material to tauten the covering as the iron releases the bond. If you've used dope to attach the material I guess you'll have to use some thinner to free the bond in this phase. Try to get rid of all wrinkles at this point.
3) After covering the whole assembly, then raise the iron temperature to about 130°C (270°F) and shrink the panels taut.
4) Dope the finished model with a coat or two of 50% thinned clear shrinking dope, fuel proof if appropriate. This should ensure that the surface is sealed as well as taut.

To date, I find that the structure remains warp free without any special precautions such as pinning down. I have just finished doping a small 1/2A 33" free flight model 'in the air' with no sign of any warps. It was supposed to weigh 6 ounces but, despite a heavier engine, came out at 5 1/2. Other Airspan users report similar weight savings over conventional materials when covering new models or re-covering old standbys.

As you have to apply extra adhesive after you have put on the first surface, while this dries it is a good idea to avoid delay by covering several components at the same session. After doing one panel you apply the fresh adhesive in the areas where the new panel will overlap and set it aside to dry while you work on something else. If you are adding adhesive around a wingtip after you have tacked on a second panel, I find it best to do this before cutting the radial cuts to permit smooth covering on the overlap at the wingtips. When you are applying the adhesive, remember that undoped Airspan is porous and some adhesive will go through, onto the surface below, which could be tiresome unless you are doing it over a plastic sheet.

As with tissue, letters and other decoration can be cut out from Airspan and attached to the covering. When doing this I found it best to tape the Airspan over the template so that it didn't move while I was cutting out the shapes. Of course you need to use your best fresh blade for this task. It might be best to apply the adhesive to the back of the material and let it dry before cutting the shape out.

Typically Airspan requires one coat of thinned dope on the wing and two on the fuselage, and three on any sheeted surfaces. Don't overdo the dope or the covering will start to become brittle. I've seen an Airspan-covered FAC Scale model that was given a subsequent coat of silver lacquer and it looks gorgeous.

How does Airspan compare with other lightweight covering materials? It has only been on the market since the late summer of 94 so it is early days yet. It appears to be most suitable for small and medium size free flight (power glider or rubber) and R/C models, it's not what you would want to use on your Goldberg Valkyrie. Use it where you would otherwise use lightweight silkspan or Jap tissue. In comparison with another newcomer, Polyspan, it is not quite as torsion or puncture resistant but it is much better than most traditional materials. It is available, unlike Polyspan, in a range of colours, including some fluorescent ones. As it requires less dope, the finished product is (20-30%) lighter than Polyspan. In comparison to Litespan it is also lighter, much more resistant to torsion and stays tauter. We don't know yet if it is going to be suitable for a Mulvihill ship or a pre 1952 Wakefield, but it's certainly fine for all parts of a Gollywock and any 1/2A power model.

It should be possible to get Airspan from your Solarfilm or Litespan stockist, and it should be the same price per sheet as Litespan. It comes in 22 by 36 inch sheets.

FIBAFILM

Where more torsional strength is needed the manufacturer offers Fibafilm, also very light, but fibre-reinforced. Unfortunately it doesn't really simulate clear-doped colour tissue, it has more the appearance of a light coat of coloured dope (the material is glossy and slightly translucent). Aluminum Fibafilm can be used to simulate metal areas. It is equivalent to MICAFILM, which is now made by the same manufacturer. No dope is required. Great care is required on compound surfaces, and it may be necessary to cover these in sections. It offers superior resistance to punctures. It is available in most colours, but not black. It comes in 72" by 29" rolls.

Parameter	Litespan	Airspan	Fibafilm
Weight, gms/sq	28 to 30	22 to 25	40 to 45
Dope required	No	2 Thinned coats	No
Seal Temp	90°C/194°F	90°C/194°F	90°C/194°F
Shrink Temp	130°C/270°F	130°C/270°F	130°C/270°F **
Resilience	High	Med	Med
Torsion Resistance	Med Low	Med High	High
Size	20 X 36, 20 X 72"	20 X 36,	29 X 72"
# of Colours	9	9	6
White	√	√	√
Black	√	√	
Yellow	√	√	√
Orange	√	√	√
Red	√	√	√
Blue	√	√	√
Dark Green	√		
Cream	√	√	
Fluorescent Yellow		√	
Fluorescent Pink		√	
Silver	√		
Aluminum			√

** Temperatures up to 160°C/320°F may be used to deal with stubborn wrinkles.