



# FLIGHTLINE GRAPHICS

**Paint Masks - Stencils - Dry Rub Decals - Waterslides**

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## Dry Rub Decals

Dry rub decals are made using photographic style negatives and "developing" individual layers of colour onto a carrier film backed with adhesive. This time consuming process provides the end user with a multi-coloured decal which is ready for use.

Because the decals are so thin you must consider surface preparation before applying the decals. The adhesive is pressure sensitive and by the very nature of the decal is also a very thin coating.

### Care for your decals

You will receive your decals in a plastic sleeve which is the best place to store the decals. Ensure they are stored flat and away from direct sunlight and temperature fluctuations as much as possible. A draw in the house is ideal with the plastic sleeve inside a stiff envelope. While many model makers will work in a garage or workshop outbuilding, these environments tend not to be that clean and endure greater temperature fluctuations. For these reasons please do not store your decals in an outbuilding, no matter how well built !

Under these conditions your decals should last up to 2 years. After that time the decals may work to some extent, but they will have passed their best even in the best storage conditions.

### Unsuitable surfaces and solutions:

#### Uncured Paint.

While we will all be eager to finish our models the paint surface of the model must be given long enough to dry thoroughly. Some paints like enamel can feel dry enough to touch after a few hours, but actually need several **days** to cure fully. Attempting to apply decals to surfaces that are not fully dry can result in a totally failed application due to minute levels of escaping solvent from the paint surface. If your paint still has an odour to it then something is evaporating from it

**Solution:** Wait until the paint has dried thoroughly.

#### Dirty surfaces.

It is easy to understand how dirty surfaces contaminated with dust and grease are unsuitable.

**Solution:** Make sure the application area is clean, dust free, and above all grease free. This includes finger prints from handling. Petroleum distillates, methanol, IPA etc. are all suitable for wiping down your model **provided they are not going to wash away or react with your paint.** Test cleaning materials on a test panel and **NOT** on your model!

#### Metallic Flake paints.

Metallic paints tend to have flakes of actual metal to give the metallic finish such as silver, gold, copper etc. The problem lies in the amount of resin used to suspend the flakes. Some paints by design use very low resin content and large flakes of metal to give a dull burnished finish, which can have a very uneven surface when viewed under a microscope. This will inhibit adhesion of the decals. You will have to test suitability with a spare decal on a test surface to see if your paint finish is compatible.



On the other hand you may have a metallic paint with a high resin content and smaller flakes of metal. These finishes tend to be more shiny like polished metal with a bright finish. You are much more likely to have excellent results with these finishes, however the metallic flakes can slow down drying times so be sure the paint has had time to dry thoroughly.

**Solution:** See solution for *Flat or Matt paint* below . . . .

## **Soft surfaces.**

While we are building and covering our models good practice means we are always thinking about weight and considering the correct combination of materials to use in construction. Areas where rubdown decals are expected to be applied should not be constructed from soft balsa with the thinnest of tissue and dope preparations as the very act of rubbing down the decal could result in the soft fibres of the underlying balsa giving way as the decal is rubbed off. While the force to transfer a decal on suitable surfaces is not very high, should you have a less perfect paint finish the soft structure below could be damaged as higher pressure will be required to transfer the decal.

## **Flat or Matt paint surfaces**

These are the least ideal surface to apply decals to, yet the most popular finish for war birds. It is essential to consider a way to make application of the decals possible. What most people do not realise is that flat paints are the same as gloss paints with the addition of a "flattening powder". Gloss paint with a little powder, you get satin, add more and the finish goes more flat and so on. When you mix paint before use, you will notice more "gloopy" material at the bottom of a tin of flat paint compared to an equivalent tin of gloss. That extra gloop is the powder that has come out of suspension and will need mixing in before use. Flat paint surfaces when viewed under a microscope will look like a mountain range with sharp peaks. As light hits the surface it is scattered in many directions diffusing the reflection giving the flat appearance. Because the decals are so thin and the surface of flat paint is so irregular there is not enough surface contact to transfer the decal. Satin is usually possible as the surface finish begins to improve.

## **Solution 1 for if you have not yet painted your model.**

Consider the automotive industry which traditionally uses base colours before applying the final top coat. Typically the base colours are flat and the car only begins to shine when the final finish coat (usually a clear) is applied. Basically if you are over painting a flat, satin, or gloss paint the surface finish of the new colour will be based on the finish of the new paint and nothing to do with the underlying colour.

If we apply this principle to our models and flip things around we can add gloss paints for all of the aircraft colours including the insignia. Apply the rubdown decals followed by a flat, or satin clear coat which will protect the rubdown decals and give the final finish your model needs. The finish will be just as good as if you had used flat colours! and you have been able to incorporate a fuel proofer top coat.

People with electric models may feel that a protective coat is not required, but it is amazing how much protection the clear finish gives the model, and how thin that coat can be to offer that protection.

## **Solution 2 for if you have painted your model with flat paint.**

In some cases I have heard stories of people having success transferring rubdown decals to their models with flat finishes. These cases are very rare and I would suggest they are composite models where a good deal of force can be deployed to encourage the decals to transfer. If you have resin cloth/tissue over balsa I strongly recommend you do not try!

There are a number of ways we can apply our decals to flat paint. The first is to use an abrasive polish on a cloth to smooth the areas where the decals are to be applied. The surface is polished, cleaned to remove any residual wax, before the decal is applied. When all of the decals are on a top coat protection/fuel proofer should be applied with the desired finish. You will notice the polished areas disappear under the clear coat.



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It is important to avoid silicone based polishes as it can be particularly stubborn to clean off!

It is **STRONGLY** recommended to practice this procedure on a test surface before you start on your model. You may find that the paint is too thin and polishing exposes the base colour, or clean off solvents effect the paint. Do the whole process on your test panel including the final clear coat! If there are problems then you will have to abandon this option and think again!

Another important factor is the application temperature. Your decals use an adhesive, and the cooler the adhesive the less tacky the adhesive is likely to be, so apply the decals in a room at ambient temperatures about 18°C to 25°C. In higher temperatures the adhesive will be particularly tacky so be extra careful in these conditions.

Having considered all of the above important messages, lets look at the application process.

Dry rub decals are supplied with the image fixed to the back of a carrier film, backed with a sheet of release paper to prevent the rubdowns from sticking to something they shouldn't !

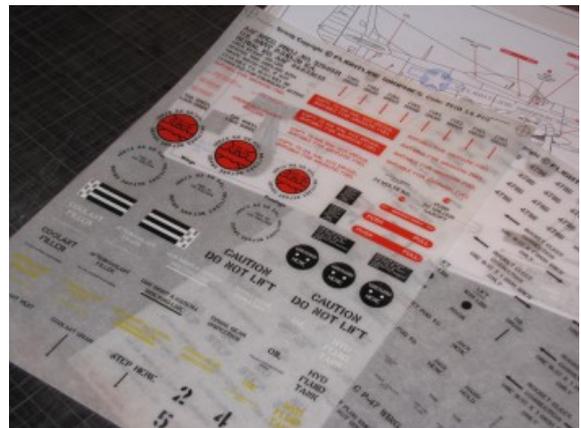
Light colour decals may be backed with white ink to improve opacity.

These transfers are delicate until applied and should be handled with great care!

Store them in the plastic sleeves until you are ready to use them!

Before you start clean the surface where the decal is to be applied (see notes at beginning of instruction sheet).

I have added a reference line with some low tack tape to assist in the positioning of the decal.



Our example will show the application of a large decal for a Lavochkin La-7 cowl. The decal is located on a decal sheet with other decals so the first job is to cut out the decal needed for application.

Put decals that are not required back in the protective sleeve to protect them from accidental damage.

When you are ready, cut out the individual decals being careful not to catch the surface of the dry rub decal.



When you are ready, cut out the individual decal being careful not to touch the rear of the actual decal. This is the last decal on the sheet as the other decals have been applied previously.

Also be careful not to cut into any decal on the sheet. If your decal sheet has many small markings start with the decals on the outer edges of the sheet working towards the centre. This may not be the ideal order of application, but it is the safer option. Attempting to cut decals from the centre of a decal sheet may be a little more difficult than it looks!



With the decal cut out apply a piece of clear tape over the centre of the decal and overlapping the ends to give you some "handles" to help position the decal in the next step.

You should do this for all decals large or small. Small decals in particular benefit from this practice.



Holding the clear tape it is possible to manoeuvre and position the decal without touching any of the adhesive backing. Hold the decal just off the surface of your model using your fingers as spacers.

You will also be able to stand back and look at the position of the decal at arms length to check orientation much easier this way.

Take your time before committing the decal to the surface!



To put the decal onto the surface slowly withdraw your fingers that are holding off the decal from the surface. As the decal comes ever close to the surface continue checking the positioning as you go.

Eventually the tape will make contact with the model and the decal will be held in position.

At this stage do not touch the decal, let the clear tape do all the holding.





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If you are happy with the position of the decal you can remove any tape or markings that have been used to position the decal.

If the decal is not correctly located you may be able to lift one of the clear tape "handles" and slightly reposition the decal. If you see any sign of the decal taking to the surface then you are advised to leave the decal where it is!

So everything slowly while studying all of the decal surface as you go.



Apply additional tape top and bottom to hold the decal down.

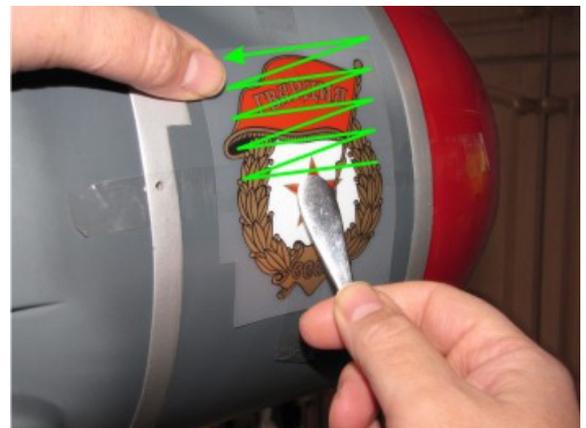
On smaller decals this may not be necessary but highly recommended for larger decals as here.



The decal is transferred to the surface by rubbing with a "burnishing tool". This is nothing more than a tool with a rounded tip with no sharp edges. Start rubbing from the centre working outwards towards the outer edges.

In the image opposite I am using a spoon handle. It has no sharp edges or corners and is ideal for the task in hand. You can use a rounded propeller tip, dowel wood / plastic rod with a rounded end etc.

Simply rub the entire surface of the decal with relatively medium pressure to release the decal from the carrier





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After you have rubbed over the whole area you should notice the transferred decal takes on a different "sheen" on the surface. This indicates the decal has transferred. It is best to take your time removing the carrier. In the example opposite the tape securing the top half of the carrier film has been removed and is being slowly peeling back. to the centre.

If you see any of the decal start to lift off with the carrier immediately lay the carrier film back down and give the area affected some additional rubbing before trying again.

Once the top half if the carrier film can be lifted to the centre, repeat the same exercise for the lower half.

On smaller decals it will be possible to peel from one side until the carrier is fully removed. Working on large decals it is best to peel areas in sections as indicated here.

Finally, for larger decals the tape that was used as handles should be lifted and you should start peeling the tape back taking all the necessary precautions should some of the decal start to lift with the carrier film.

And there you have it, your decal should be transferred.

Remove all tape and carrier film from the surface.

You may notice around the outer edges of the decal there may be some excess adhesive that has come off the carrier film with the decal. Simply wipe over with a tissue moistened with Petroleum Distillates (white spirits) or other similar solvent compatible with your model's paintwork.

**DO NOT USE ACETONE AS IT WILL WASH AWAY THE TOP LACQUER ON THE DECAL!**





Tip: Where you are applying smaller decals there is often not enough room around the side of the decal (the carrier film) to position the decal with ease.

A solution is to cut out the individual marking as normal, then apply some ordinary sticky tape over the top and overhanging the sides. This allows you to see the decal markings in full, and the area where it is intended for. With this better view it is possible to locate the marking far easier and more accurately. In addition the tape holds the decal in position while rubbing down to help prevent the decal slipping!



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Thank you.

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