Paint Defects – Why and How To Deal With it?

It took me a bit of time to come up with the idea for today's post. I have not received any materials from sponsors for a long time to make a review. Only recently I received something but it will take time to prepare everything and write some good stuff.

I decided that I need to write something useful for my readers, something that will help anyone – not only the ones working in **airbrushing** but also with **paints** in general. One of the important things while painting apart of having great tools, **prepare the surface**, **use the proper paint** and have some skills is to be aware of **external factors** that can cause problem even if you are sure you have done everything right.

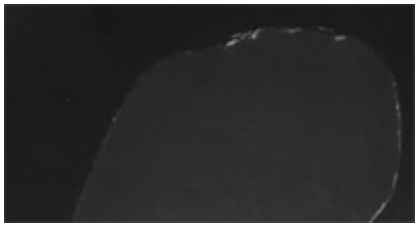
I'm sure that you have seen a paint to look like **orange peel** or **paint runs**. These are **paint defects** and you should watch at all time not to make any mistakes to avoid them. ***Your clients won't like it***.

There is many of them, so I'll try describe every one of them as best as I can and also how to prevent them.

1. Adhesion Loss

I think that you get the idea from the name. Usually it looks like there was a blown air bubble between top-coat and base-coat.

a. for clear-coat



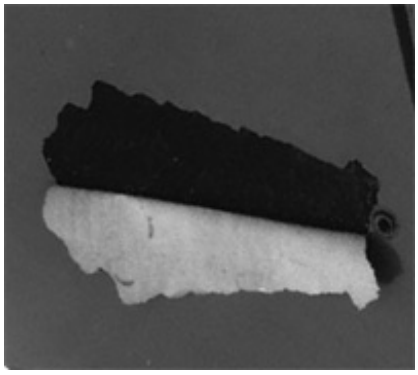
What can cause this? Most common situation is if you can't wait and apply the clear-coat and do it before you should. Another cause is bad mix ratio for clear-coat and activator. Also sometimes if your base-coat is too thick you'll get this defect.

To fight this defect always apply coats with proper thickness, mix clear-coat with the right ratio, give enough time for base-coat before you apply clear-coat and always read and follow documentation to any product you use.

Alright, but what if it happened already? If you lost adhesion between clear-coat and base-coat then sand it, isolate it and refinish again.

b. for plastic

When you loose adhesion with plastic there is more causes than in previous case. First of all it could be poorly cleaned surface, contamination and bad treated material. Also very common cause when you did not identify the plastic substrate properly (I mentioned this in post about preparing plastic surface). If you don't use proper primer or wrong coat.

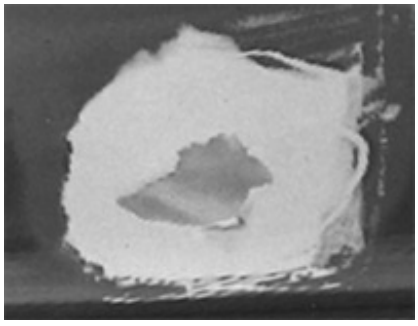


To prevent this effect identify, clean and degrease the plastic surface properly. Follow all recommendations from manufacturer. Use recommended primer and keep recommended mixing ratio. Use only proper and recommended coat system for particular plastic substrate.

If you've made a mistake then the only solution is to remove all the finish layers "to the bone" and do everything again using the right paints, primers for the plastic substrate.

c. for polyesters

What is polyester and why do I mention this here? Most of the fillers used to repair car body are polyester based and those have to be painted after filling. If substrate that has to be filled is poorly prepared it can cause adhesion loss. Also polyesters are not advised to be used with galvanized surfaces. Wrong amount of hardener can cause adhesion loss too or even too high temperature during forced drying.

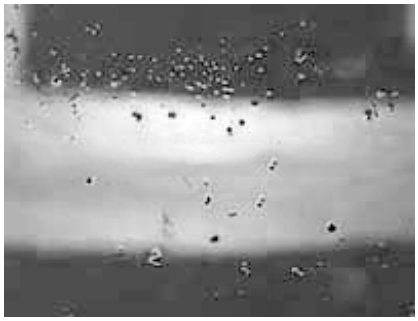


To prevent adhesion loss sand and clean surface very good, follow all instructions on how to prepare and use polyester filler and how to dry it.

Once the mistake is done, sand the area very good, refill and refinish.

2. Dust and Dirt

This one is probably the most common problem while painting, especially if you don't have a special painting booth. Do dust particles on the painted surface give you headache? This defect is created mostly during application of paint or coat or during drying process. I think that describing all the causes is useless as you may think of them and surely will find at least two.

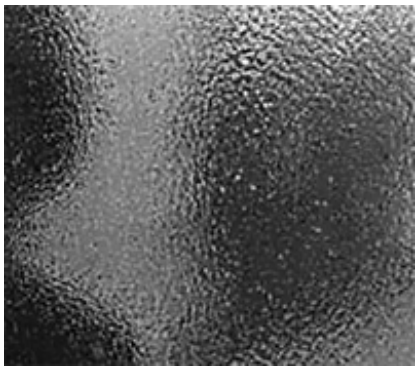


I think it is better to tell exactly what to do to avoid them. First and most important is to keep your working place as clean as possible. Also wear special spray suits. Sometimes if you're painting the car you should connect the body to electrical earth, as it helps to prevent any static charges on the surface to attract any dust. Clean the surface from any dirt and dust (use air to blow everything out outside the spray booth).

If the effect appears anyway, wait until it dries completely, then fine-sand (dry sand with P1000 – P2000, wet sand from P2000 and up) and polish. Sand and polish very lightly so you won't get rid of the top layer. If the effect is very extreme I recommend to sand it properly and paint it again.

3. Orange Peel

Every starting painter has seen this one. Sometimes even professionals have seen this defect.



There are more reasons for this. One is that paint or coat is too tick. Study the techniques for the paint you use and surface you paint. The second cause is the wrong nozzle size or too low air pressure (check recommendations).

Also too high or too low environment temperature, forced drying or short time between coats or even wrong thinner.

To fix it do the same as before, fine sanding and polishing.

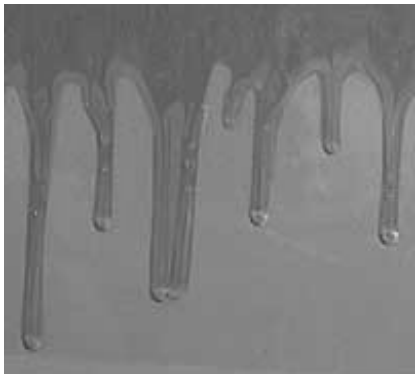
4. Bleeding or Stains

As bad polyester filler reaction (see above) or reaction between the original finish and the new finish applied on top (usually paint on different base). Also just as cause of contamination.

Here I will advice to watch for reaction of old (original) coat and new coat. If you can then test on some small piece how it reacts. If you notice any reaction you should apply a sealer. As I mentioned before the effect can occur because of the filler, so do make sure to use the filler properly following the instructions.

If the defect appears only after you have done all the work then if you used filler, refill. If it's a reaction with old coat then sand the top coat to the bottom one apply the sealer and then reapply the top coat again.

5. Runs



I'm sure you were asking yourself – why didn't he mention this defect right at the start? My apologies for that. Yes, the runs are probably one of the most common defects while painting and I don't believe that there is a person that hasn't seen them. Everyone trying to paint gets into troubles with runs, even professionals will get them sometimes.

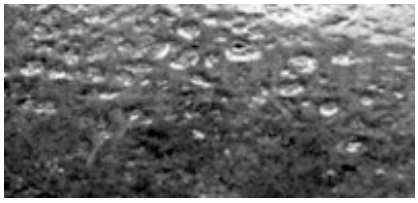
There is so many things that can cause this. Too thick paint, to short time between coats, atomizing too close to the surface, large temperature difference of surface and paint itself, incorrect spraying gun, too much thinner, contaminated surface, too low air pressure…

To be able to prevent all of that try to keep the painted object in your spray booth for some time so that temperature of object, room and paint will be even. Check your gun if it's not defective. Select proper thinner (and follow data sheet instructions). Inappropriate lighting can cause that you don't exactly see what you are doing, so to avoid any of the defect described above and not only for this one, install proper lightning in your painting room.

6. Fish Eyes

Another unwanted effect that looks like fish eye and it is actually a crater right on the first coat of paint and you can actually see through that crater the filler or the old coat. The reasons for this are

obvious, bad degrease of surface (so it still has some oil stains, even your fingerprint left after degrease is enough to create this defect).



If you didn't use anti silicone or you don't have filter (moisture trapp) on your compressor to catch all the oil or water from compressor. Usually if the eyes are small you can cover them up with next coat, especially if you use Candys.

To get rid of big eyes you will have to repaint the whole thing.

7. Chipping

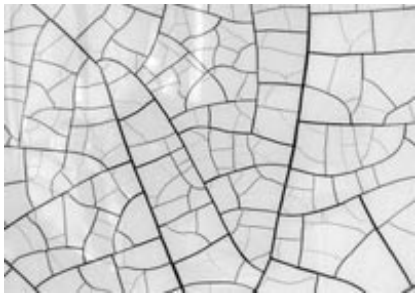
I don't know if I should mention this problem here as the painter does not have any influence on it but I'm going to include it anyway as there are some steps that you can do to minimize this defect.

Chipping is caused by any hard objects like stones for example hitting the painted surface during movement. So as understood this is common defect in automotive industry. Usually front of hood, around wheel openings and edges of roof…

I don't have much experience with it but there are recommendations. You may use **flexibilized primer surfacer** with your refinishing system. Also activated base-coat is good in prevention for chipping.

8. Cracking

Counting all the causes I mentioned before any of them can cause this defect. Bad mixed materials, short time between coats, wrong mixing ratio of thinner, extreme temperature difference, reactions between incompatible coats and so on.

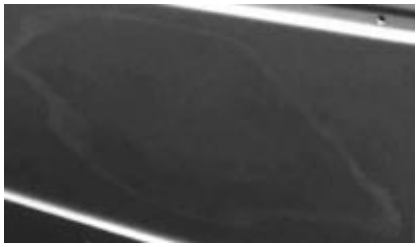


As I mentioned before, try to follow instructions, allow enough time between coats, mix properly, adjust temperatures and use the right additives.

If you have to deal with the paint cracking then sanding and refinishing should be enough but if the case is extreme the only solution is to remove everything and start from zero again.

9. Solvent penetration

As the name says this defect is created by inappropriate use of solvents (under reduced or wrong or slow dry thinner, color on not dried primer or even thinner reacting bad to environment of painting room).



Use proper sanding materials, appropriate solvents, prepare the surface the proper way and use compatible paints.

To deal with this you should first let the surface dry well and then lightly sand, seal and refinish.

10. Matting

This is defect I call SURPRISE. Imagine that you finish painting and everything has perfect gloss, you are happy going home or for a brake. When you come back all the happiness is gone as all the gloss is gone and paint got mat effect – Surprise!!!

There is a few factors to be aware of here. First one is high humidity. Even high pressure during paint application can result in cooling the paint and condensation of moisture on the surface. Another factor is fast thinner. This can cool the surface and also result into condensation of moisture.

If you cannot get rid of this defect by deep polishing then the only solution is sand everything and refinish again.

11. Yellowing

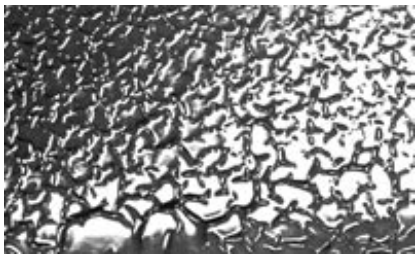
This one is easy and short, if you see defect like this it means that either you have used wrong or contaminated activator or hardener, or either you used incorrect clear coat thickness.

First check if the lids on your activator or hardener are tightly closed. Ensure that you followed all the recommendations from manufacturer and use only recommended activator.

To deal with defect let it dry properly then sand and refinish.

12. Lifting

Again many causes. Incompatible materials, short time between coats, improper dry, reaction of old and new finish, bad surface preparation, cleaning, wrong thinner or too thick coat.



What can I recommend here? Try to avoid everything mentioned in previous paragraph.

How to deal with mistake already made? Remove all the finish from affected area and then refinish. In extreme case remove everything to bare surface and then refinish.

13. Slow Drying

You can see it but you can feel it. If paint takes a long time to dry and data sheet says that it should take shorter time then it could be as a result of wrong activator, bad mix ratio, too thick coat, wrong thinner, bad ventilation or wrong time between coats.

Again try to avoid all of the above. To fix it, place painted object in warm and good ventilated place. I hope that with prolonged time it will dry otherwise you will have to deal with a big mess.

14. Water Spotting

I don’t think you can see it on the picture but it looks like evaporated droplets of water. The finish in this case is actually insufficiently cured because of too thick coat and short drying time. Moisture contamination or wrong thinner can cause the same

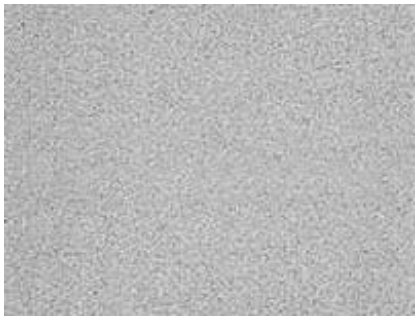
defect.

Try to follow technical sheets. Don’t wash object (car) after painting and keep it out of rain for some time. If you going to wash it then wipe it dry. Also if you used hardeners check lids to be tight to avoid contamination.

To fix it remove any masks by polishing. In extreme cases sand and refinish.

15. Dry Spray

This defect is very common when onto almost dry surface is sprayed new portion of paint that dries and become mat and granular, usually without any gloss. This defect can be caused by very fast movement of spraying gun, spraying too far from surface, too high air pressure or not enough of thinner.



Can be fixed only by sanding and polishing.

16. Corrosion

Well you know what is corrosion and how it can be caused. But what if you find something like that on a newly painted car? Coincidence? No, the surface was contaminated before applying of paint (water, fingerprints) or rust just was not removed before painting. Also very common are third party causes like chipping or scratches.

To avoid this you have to treat metal parts the proper way. Remove anything that can cause corrosion before applying refinish system. If any of chips or scratches occur remove them before it starts to rust.

To remove corrosion the paint has to be removed to bare metal. Also use etch-primer. Only then refinish.

Conclusion

I tried to describe most of the defects that you can ran into while painting. Of course I didn’t mention all of them but as you can see they have many things in common. As following technical instruction from manufacturer, use together only compatible materials, optimize your working place for the right humidity and temperature and so on. If have anything to add I’ll be happy to see any comments. Also I’ll be thankful if you share it in your social network.

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