

Three ways that silicone is killing your quality

(And what you can do about it)

Section 1

Contamination defects cost money

If you're managing a paint department, or you're a production manager responsible for the painting process, you know that silicone contamination, which manifests itself through the formation of craters, can be a real quality-killer.

It affects your first-time through rate, and can harm the overall plant production schedule.

At the very least, craters mean costly additional labour for time-consuming sanding, repair and re-work.

Where the source of contamination is not obvious, more time gets taken up in root cause investigations.

And in extreme cases, when contamination is really bad, panels may have to be scrapped. That can mean worst-case scenario costs of up to £1,900 for disposing of a complete auto body.¹

Not to mention the financial impact of stopping the line.

Of course, you do your best to ensure that solutions provided by your suppliers don't introduce silicone to the paint process. Rigorous, costly and lengthy lab tests and line trials should minimise the risk.

Despite this, silicone contamination still happens. This guide will help you understand why – and how you can minimise the risk to your 'first time through' rate.

£6,300

The hidden cost of silicone contamination
Disrupting the assembly line – can be as high as £6,300/minute.¹

¹ "Supplier Contamination Prevention Guidelines and Awareness Training", PPG, 2013.

What causes craters?

Craters form when a contaminant is present and the difference between the surface tensions of the paint and the contaminant are sufficient to cause 'de-wetting'.

The most aggressive low surface tension contaminants are:

- Silicones, including Polydimethylsiloxane (PDMS) – transfers from surface to surface with very little contact, even the smallest amount can trigger significant contamination and costly knock-on effects.
- Others include Fluoro compounds such as Teflon sealants and Sulfonates found in detergents and surfactants.

Section 2 Getting silicones out of your system

Extremely small quantities of crater-causing substances can be devastating to an automotive paint line.

Even low parts-per-million concentration of contaminants such as silicone can result in craters because it transfers via touch extremely easily.

Before you can eliminate the problems of silicone contamination, you have to understand how it's getting into the painting environment.

What are the typical sources?

1 Supplies and consumables

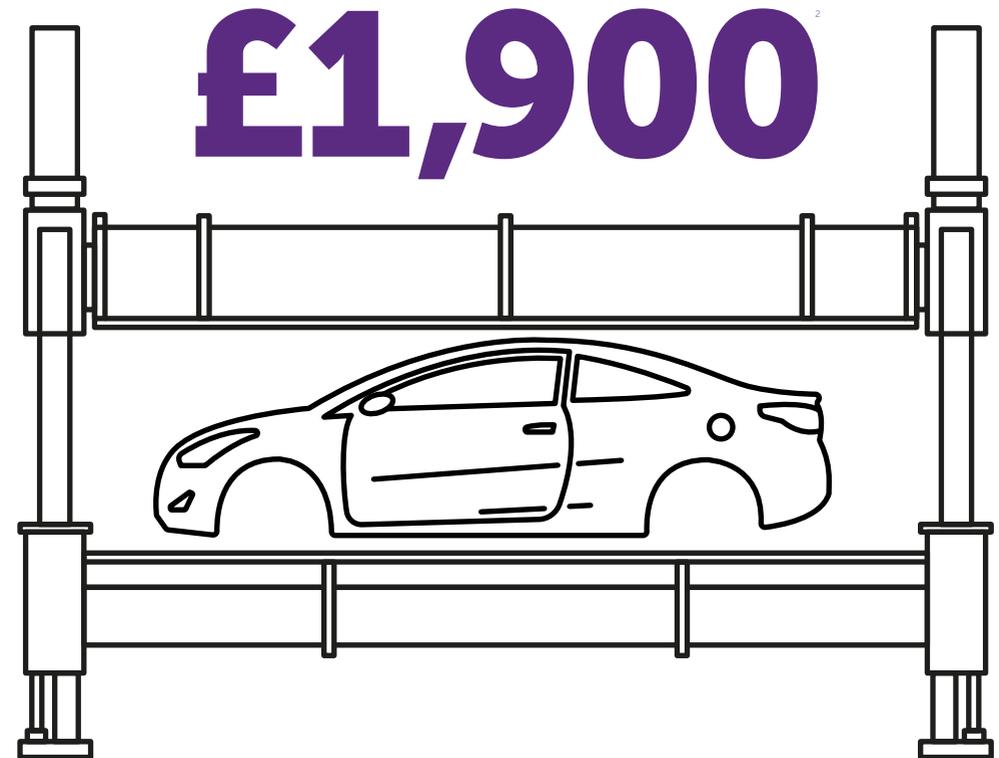
Wipers, gloves and other PPE commonly used in the painting process may appear harmless. But unless they are silicone-free, they represent a risk.

And remember, although the materials used might not include any silicone, the manufacturing process may introduce it, possibly through the packaging.

That can throw out all the results from extensive lab tests and line trialling. You need to be absolutely sure that your suppliers can consistently deliver what they have promised.

So ask for silicone-free certificates. Insist that any product you specify is silicone-free. And only work with those suppliers who can guarantee you products that guarantee your quality.

Scrapping a complete auto body



² "Supplier Contamination Prevention Guidelines and Awareness Training", PPG, 2013.

2 Up close and personal

Many times, the sources of silicone contamination are hidden because they are brought in by paint shop operatives themselves.

One large Automotive OEM discovered defects creeping in from staff wearing bracelets that contained silicone as part of a root cause analysis. Other jewellery items can have traces as well.

So can hand creams, lotions, cosmetics, shampoo, deodorants – even detergents residue on clothing.

And in cold or wet weather, when vehicles experience starting problems, silicone-based moisture displacement sprays are often used to aid ignition.

In every single instance, the problem can be easily fixed through better employee awareness of silicone-contamination causes – and smarter personal hygiene to eliminate risk.



SILICONE
=
#1 PROBLEM

Due to their many benefits, silicone-based compounds have increased in popularity. But what's good outside the paint shop can wreak havoc within. Lubricants, plastics, creams and lotions are all a threat to quality.



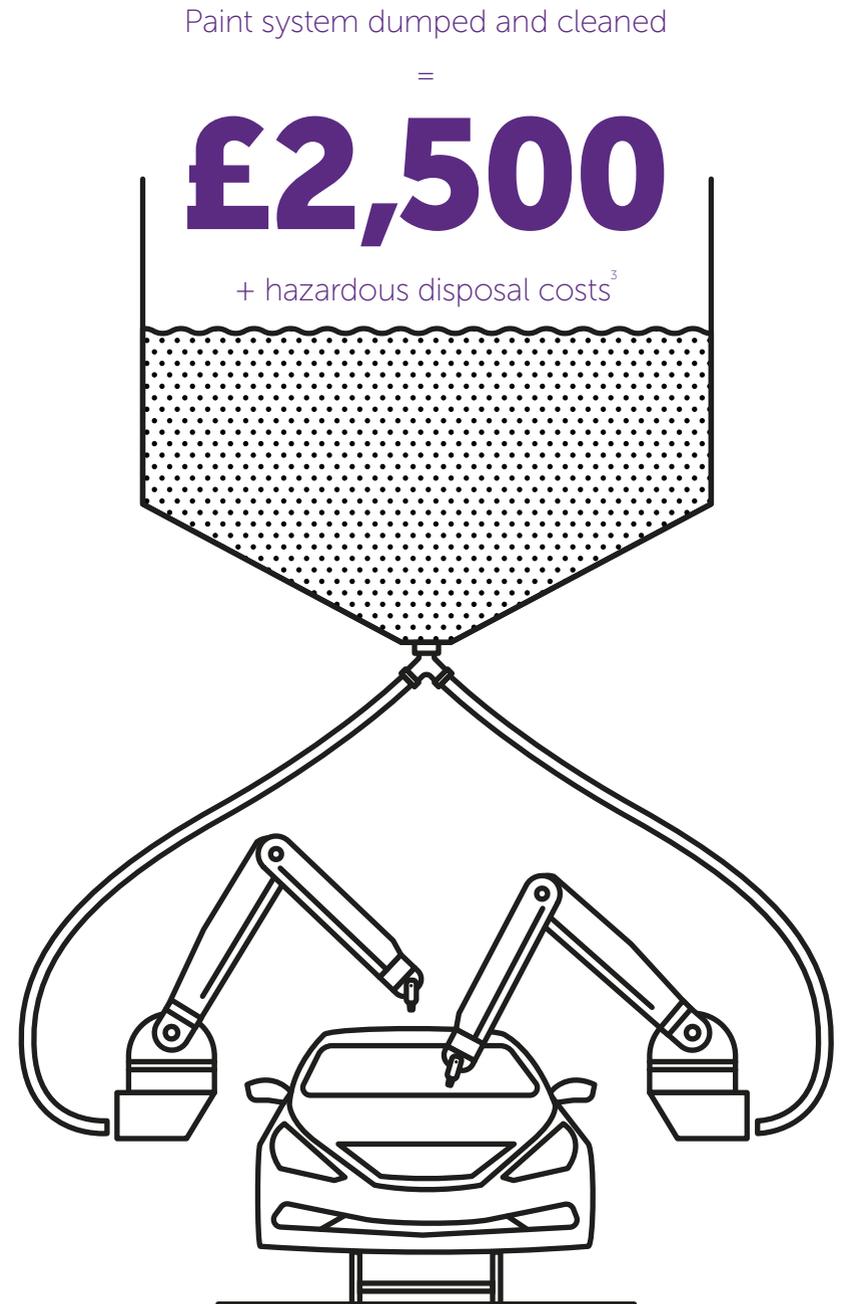
3 The right tools for the job?

Regular reviews of maintenance materials, cleanliness of processing and cleaning equipment and containers that could potentially contaminate – all of these are critical to maintain high quality output.

- Pre-lubricated valves have been the source of significant crater events.
By purchasing only 'dry' valves you can prevent this kind of issue
- Plastic or polypropylene drum faucets have been known to cause severe craters.
Mould release agents are frequently the source of contamination; ensure pre-cleaning before use, or specify brass faucets
- Gaskets used in hoses/totes have failed crater testing.
Suppliers sometimes use a silicone-based release agent

These are just a few examples. The only way to maintain quality is to ensure that all tools and spare parts are silicone-free.

It's clear that reducing contamination calls for vigilance – and a multi-pronged approach.



³ "Supplier Contamination Prevention Guidelines and Awareness Training", PPG, 2013.

Section 3

The good news? You're not alone

One of the most effective ways to minimise silicone contamination, boost quality and enhance your 'first time through' rate is to work closely with your suppliers.

The right consumables, PPE and maintenance equipment can save a lot of time, money and effort.

Kimberly-Clark Professional* understands the paint process and the potential sources of silicone that can lead to expensive paint defects and re-work.

That's reassuring, but it's really only the tip of the iceberg where our manufacturing expertise is concerned.

We've had a lot of experience providing process protection in all sorts of manufacturing environments.

Through assessments and certified silicone-free product solutions, we can help you increase your quality, and your profitability using proven Lean-based tools such as:

- Site evaluation and Waste & Hazard Walk
- 4-step problem solving to identify root causes
- Recommending the best product and service solutions for your existing process
- Easy-to-implement counter-measures



KIMBERLY-CLARK PROFESSIONAL* provides essential solutions for a safer, healthier and more productive workplace.

As part of the Efficient Workplace Programme, we offer a free Waste & Hazard Walk.

By visiting your facility, we can gain a deeper understanding of your operations. Once we identify areas of waste and avoidable risk like silicone, we propose countermeasures to reduce or eliminate them.

A fresh pair of eyes

When you walk the same plant every day, it's easy to miss things. We've conducted hundreds of Waste and Hazard walks in the automotive industry, helping reduce contamination and increase profitability.

[Sign-up for the Waste & Hazard Walk now](#)