

# Exploring a new solution to the problems caused by conventional cleaning and metal pretreatment systems in product finishing.

Enviro Tech Surface Technologies looks at some of the traditional problems associated with solvent and aqueous degreasing prior to painting and powder coating and explains how the DriPHOS® option can offer a viable alternative to conventional processes. The DriPHOS® surface treatment process has evolved to produce a revolution in metal finishing.

## DriPHOS® the start of a great finish

Traditionally jobbing painters and/or manufacturers of parts who have to subsequently degrease and then paint or powder coat have had the same problems that they have learnt to live with. These include: reject rates of between 3 - 8% after painting; residues of particulate that require further manual wiping after degreasing and prior to painting; paint schemes lifting or blistering; corrosion forming under painted areas; parts slowing down the production because the drying oven takes an excessively long time to dry sufficiently; or parts simply going rusty during the dwell time between cleaning and subsequent painting. Finally, when using conventional solvents, long dwell times whilst the components cool down to a temperature that can take the paint prior to curing in the oven. More recently, classification of Trichloroethylene has also caused concern. These and others must sound familiar to you.

## What causes this to happen?

Obviously a lot of factors come to mind but generally they fall into four main areas as follows:

- Inadequate degreasing
- Residual contamination
- Retained moisture or solvent under the surface of crimped areas, spot welds and seams etc
- No protection from rusting whilst awaiting painting

Why does this happen?

To try to simplify this we have broken it down into aqueous cleaning and solvent cleaning with some of the reasons under each of the four headings above as follows:

MAIN CAUSES	AQUEOUS METHOD	SOLVENT METHOD
INADEQUATE DEGREASING	<ul style="list-style-type: none"> <li>• Solution out of spec or contaminated</li> <li>• Temperature too low</li> <li>• Filters blocked</li> <li>• Rinses contaminated</li> </ul>	<ul style="list-style-type: none"> <li>• Only vapour used</li> <li>• Wrong solvent used</li> <li>• Poor loading</li> <li>• Solvent turned acidic</li> </ul>
RESIDUAL CONTAMINATION	<ul style="list-style-type: none"> <li>• Wrong product used</li> <li>• Contaminated rinse water</li> <li>• Poor loading</li> </ul>	<ul style="list-style-type: none"> <li>• Particulate left by vapour</li> <li>• Solvent turned acidic</li> <li>• Poor loading</li> </ul>
RETAINED MOISTURE	<ul style="list-style-type: none"> <li>• Insufficient time to dry</li> <li>• Parts not designed to drain properly</li> <li>• Poor loading</li> </ul>	<ul style="list-style-type: none"> <li>• Solvent trapped in parts</li> <li>• Parts not designed to drain properly</li> </ul>
NO INTERIM PROTECTION	<ul style="list-style-type: none"> <li>• No corrosion inhibitor</li> <li>• Solution out of specification</li> <li>• Residual contamination</li> </ul>	<ul style="list-style-type: none"> <li>• High temperature draws moisture from atmosphere</li> </ul>

All of the above are avoidable but may mean tighter controls and different process methods are required. The way the components are loaded is vitally important as overlapping can prevent access for both the aqueous and solvent processes. Unfortunately most paint shop managers will not feel they can afford the time to load more carefully even when they realise the advantages.

## What can be used as an alternative?

The answer is DriPHOS® the new single tank surface treatment process.



## What is DriPHOS®?

It is a solvent-based degreasing and pretreatment process. Based on a well-trying and tested blend of solvents and sophisticated additives and surface activators, DriPHOS® really is the quickest, most economical answer to degreasing and surface treatment problems. Operating at only 42°C the parts come out of the process totally clean, dry and with a crystalline primed surface to enhance painting and cool enough to handle or to go straight into the paint area. One tank is all that is needed.

## How does it work?

It works by a combination of vapour and immersion stages in one tank. After initial degreasing in the vapour, parts are then

immersed into the DriPHOS® boiling sump where the residual oils and particulate is removed and the phosphate coating is chemically bonded to the surface of all of the parts. After a mini rinse/ final vapour stage the parts are left in the freeboard area for a short time before coming out of the tank totally clean, dry and with a protective surface coating. This gives an excellent bond for subsequent painting operations, with minimal reject rates due to delamination or undercoat staining. The crystalline coating gives inter-stage protection until painting is needed. Another bonus is the colour change of the metal surface gives a visual indication of quality. The process can be used on steel or aluminium components or mixed metal components or fabrications. For steel parts a total process time can be as little as 3 – 5 minutes. Aluminium parts will be 1 – 2 minutes. Bath life averages 2 years. One tank needs little space and uses only small amounts of energy. A very fast, economical and simple to run process.

## Why doesn't everyone use it?

The truth is that, like all processes, it will not work for every application but a quick visit by one of our DriPHOS specialists will confirm if it would be a practical solution to improve the finish on your products. We back this up with full technical support, solvent monitoring, equipment advice, operator training, and a lot more.

For more information or to arrange a visit to our DriPHOS demonstration facility visit our website at [www.metal-treatment.com](http://www.metal-treatment.com) or phone us on +44(O) 20 82816730.