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# Protecting Critical Electronics from Tin Whiskers

[www.cwst.com](http://www.cwst.com) | [www.parylene.co.uk](http://www.parylene.co.uk)

## COMPANY PROFILE

Parylene Coating Services has been operating for over 25 years and joined Curtiss-Wright in 2008, a \$3b company providing niche highly engineered products and services worldwide.

With over 25 years of experience and expertise in the coating of complex geometries and challenging substrates, we are continually developing applications, adhesion promotion and production methods to meet our customers ever changing needs.



Our proprietary Dimer is over 99.7% pure which is the highest yielding and most uniform coating in the industry and our coatings are tested to the relevant ISO10993 and USP Class VI tests for long term implantable use. Our US FDA MAF#1176 is available to support client company 510k submissions. Parylene also meets the requirements of IPC-CC-830 and Mil-I-46058C.

You will receive a competitive, high quality and prompt professional service that is flexible and responsive. We will collaborate with you through any evaluation and development work to provide a cost effective commercial solution.

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## Mitigating against Tin-Whiskers with Parylene Coating

**Tin-whiskers are often a hidden risk of failure in electronic components. The growth of these hair like crystalline structures is a phenomenon that until recently was less of a concern.**

Before the RoHS Directive, the growth of tin whiskers was controlled very much by accident using lead solders; quite an effective suppressant. However the use of lead-free solders has seen the risk of tin whiskers become more prevalent.

It is uncertain exactly what causes the growth of these metal structures, which can grow several millimetres to between 1-10µm in diameter from the base of the finished surface.

Found in other metals such as Zinc, Cadmium, Indium, Aluminium and Silver the metal whisker can break off forming a bridge between two or more adjacent circuit elements causing them to short circuit.

### Protecting with conformal coatings

The application of a conformal coating can slow metal whisker growth but there are significant variations depending on the coating thickness and environmental conditions. For its ultra-thin coating thickness and truly uniform layer, Parylene surpasses other coatings in suppressing growth and insulating the rest of the assembly where a metal whisker has penetrated.

Parylene is the coating of choice for mission critical electronics being applied in the medical market for pace makers, active implants and diagnostics equipment and for ground electronics and avionics systems used in the aerospace and defence markets.

### Parylene improves the life in Lead free solder joints

In tests carried out by Curtiss-Wright Controls involving a range of conformal coatings, they found that under thermal shock testing involving continuous cycling between -40 and 125C, Parylene improved the joint life of lead free solder joints by an average of 200% that of any other coating tested.

Parylene ruggedizes electronic assemblies, providing the reliability needed in critical applications; protecting from gases, chemicals, liquids and the risk of bridging posed by tin whiskers.

**Please contact us to find out more about our full range of services +353 91 780 300 or view [www.parylene.co.uk](http://www.parylene.co.uk)**