

Surface Finishing Technology



Surface Coatings Introduction

Surface coatings have been in use by man for hundreds of years and electroplating began in 1803. In the last 50 years, development has substantially increased the type and performance of coatings.

The component material may be chosen for its machinability, forging, forming and strength properties etc. Subsequent surface coating of the component material provides protection for an extended working life. This enables, for instance, zinc die-castings or plastic to be used for door handles, with protection from corrosion, UV light, erosion, abrasion and decoration provided by the coating.

The usual properties required from coatings are shown in main table, with the properties of the possible coatings highlighted. A coating often imparts more than one property and mixtures of coatings, i.e. one layer upon another, can be used to give different performance characteristics at the same time.

Anochrome Group is developing coatings and application methods continually to address specific concerns, problems or corrosion needs.

Coatings Mechanisms

The protection provided by a coating to the base material relies upon the integrity of the coating and its freedom from faults, cracks, scratches and pores.

The attraction of a sacrificial coating is that it gives protection in spite of coating faults (some caused by assembly) but without these faults (flaws) the performance would be considerably improved. This is why racked (jigged) parts invariably give better performance when compared with the same finishes applied to parts in bulk.

Anochrome Group endeavours to use 'robust' coatings to withstand the rigours of modern requirements; but, it should be recognised that extra operations, such as sorting, patching, packing, transporting, vibratory feeding or other rough handling can reduce the performance, especially with larger components.

It has been found that lubricated coatings give more damage resistance.

The expectations of customers and manufacturers for defect free suppliers are constantly increasing due to the widespread adoption of automatic assembly. The only way that suppliers can live up to these expectations is to have them automatically sorted to remove all contaminants (see sorting.) Automatic sorting is available from Anochrome Group at extra cost. Analysis of the results from the work that we optically sort shows that mixtures from normally processed work typically varies between 20 and 300 p.p.m. Often, these non-conforming parts can come from any processes in the manufacturing supply chain.

Recessed Components & Fasteners

Anochrome Group has specialist equipment and can offer coatings for fasteners with Torx® and Hexagon socket drive features as well as other small components which have complex shapes. Low levels of infill can be achieved dependent upon the part geometry and basket loadings etc. The equipment covers the diameter range M5 to M20 up to 80mm in length. Please note that production validation must be conducted for every part.

- Delta Protekt®/ Delta Seal®
- Geomet®
- Magni 565 / 560
- Zintek®300B
- Seal top coats
- Techseal®- silver and black
- Xylan®- all colours

Electroplated coatings do not usually give problems when barrel plated, although larger recessed parts rack plated can give problems due to the recess acting as a cup, or an air trap. It should be remembered that with barrel electroplating, the recess - especially if it is deep - will only receive a less than average coating thickness, which can give early corrosion failure.

When recess fill does occur, its effect can be variable according to the type of recess and the material. Pozidrive recesses are affected more by infill than other forms of recess, as a small amount of excess material reduces the driver penetration and causes drive failure at low torques. Other types of recess (torx, hexagon or slotted) are not so sensitive and some parts that visibly show recess fill can be driven satisfactorily.

The Anochrome Group operates two Sidasa plants, these specialist pieces of equipment are of unique design to minimise recess infill by the use of planetary motion baskets. The full systems installed in WEP in the UK and Anocote in the Czech Republic provided a positive solution to this age old problem.



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