SURFACE COATING VICTREX™ PEEK

VICTREX™ PEEK polymer is a high performance engineering thermoplastic which finds uses across a broad range of industries including aerospace. Combined with fibres, such as carbon, the material becomes stronger and stiffer and can be used in semi-structural and structural components in the form of injection moulded compounds and composite materials.

Surface treatments can be an important consideration for aesthetics, or adding protection against galvanic corrosion. PEEK compounds and composites can be coated using coatings and techniques to provide the required colour, finish, and protection.

COATING GUIDELINES

1. Cleaning of surface
Impurities must be removed from the surface by solvent cleaning, such as isopropyl alcohol (IPA).

2. Surface preparation for adhesion
Keying the surface using 400 grit abrasive paper enables good adhesion as does abrasive grit-blasting to provide surface texture. Alternatively it may be more preferred to treat the surface with plasma for smaller and intricate parts.

3. Primers
Use an appropriate primer. Primers such as AERODUR* Barrier Primer, AEROWAVE* 2001 Epoxy primer and AERODUR HS 2118 by Akzo Nobel Coatings International BV have been demonstrated to possess excellent adhesion to carbon fibre filled VICTREX™ PEEK, although other products may also be available. Please refer to product datasheets found on www.anac.com for details on specific primers.

COATING SOLUTIONS

The presented coating guidelines may be applied to the following surfaces:

▲ Injection moulded VICTREX™ PEEK 150CA30, VICTREX™ PEEK 450CA30, VICTREX™ PEEK 650CA30 and VICTREX™ PEEK 90HMF40.

▲ VICTREX PEEK and PAEK composites comprising unidirectional and woven carbon fibres.

Adhesion test

The adhesion of coatings has been tested with the so called Gitterschnitt adhesion test (ISO2409) in which the specimen is scratched in a regular pattern with a specific inter-distance. These scratches must be in the coating not in the substrate. A 3M adhesion tape (Scotch™) is applied on the scratch pattern and subsequently removed by peeling. Well adhered coatings will not be removed with the tape. Poor adhesion will result in separation of the coating from the substrate. The degree of separation is visually quantified.
Test criteria:

- Scratch distance – 1 mm inter-distance.
- Scratch depth – only coating not the substrate.
- Adhesion test with 3M adhesion tape (Scotch™)

Result:

- Gitterschnitt Adhesion Test. BS/ISO/DIN class 0
- Including – 24-hr water test.

3. Metal deposition

3.1 Physical Vapour Deposition (PVD) - Victrex materials may be used as substrates in PVD metallisation processes such as vacuum metallising or sputtering. Additional care should be taken for any post metallisation processing such as injection moulding or machining to ensure a good surface finish, as any imperfections will be replicated in the thin metallic coating.

3.2 Plating - Plating is a logical choice when converting from metal to plastic parts. Victrex materials can be electrolytic and electroless plated with a variety of metals such as nickel, gold, silver, copper, and other metals and alloys.

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For more than three decades, Victrex has collaborated with customers to help turn their toughest challenges into tangible benefits. Our proactive approach in monitoring the trends of the Aerospace industry and engaging in open dialogue with industry leaders enables us to deliver what is required to maximise performance today and tomorrow. This philosophy has led to Victrex solutions flying on more than 15,000 aircraft today.

A company with cutting-edge polymeric solutions, streamlined production facilities, application development expertise, unmatched technical support and a presence across the globe – that’s a future performance partner.

* Use of any particular primer, topcoat or metal deposition method named in this publication or used in these laboratory tests does not constitute a recommendation nor an endorsement of the corresponding product or method. Other primers, topcoats and metallisation methods may be available.

The performance of a surface treatment is a function of many variables including sample and surface cleaning, preparation, and application and may not be representative of material or coating performance in real applications. AERODUR, AEROWAVE, and ECLIPSE are registered trademarks of Akzo Nobel Coatings International B.V. Coating instructions regarding specific handling, mixing of components, surface preparation, spray instructions, drying and safety instructions are provided by the AKZO TDS (Technical Data Sheets) and can be found on AkzoNobel Aerospace and Defense coatings website: www.anac.com together with the Material Safety Data Sheets. This document does not replace or override such Technical Data Sheets or Material Safety Data Sheets.
ABOUT VICTREX

Victrex is an innovative world leader in high-performance polymer solutions with products sold under the brand names of VICTREX™ PEEK, VICOTE™ Coatings, APTIV™ film and VICTREX Pipes™. With production facilities in the UK and USA backed by sales and distribution centers serving more than 40 countries worldwide, our global sales and technical support services work hand-in-hand with OEMs, designers, and processors offering assistance in the areas of processing, design and application development to help them achieve new levels of cost savings, quality, and performance.