

Developments In Substrates For MTS and FIM Applications

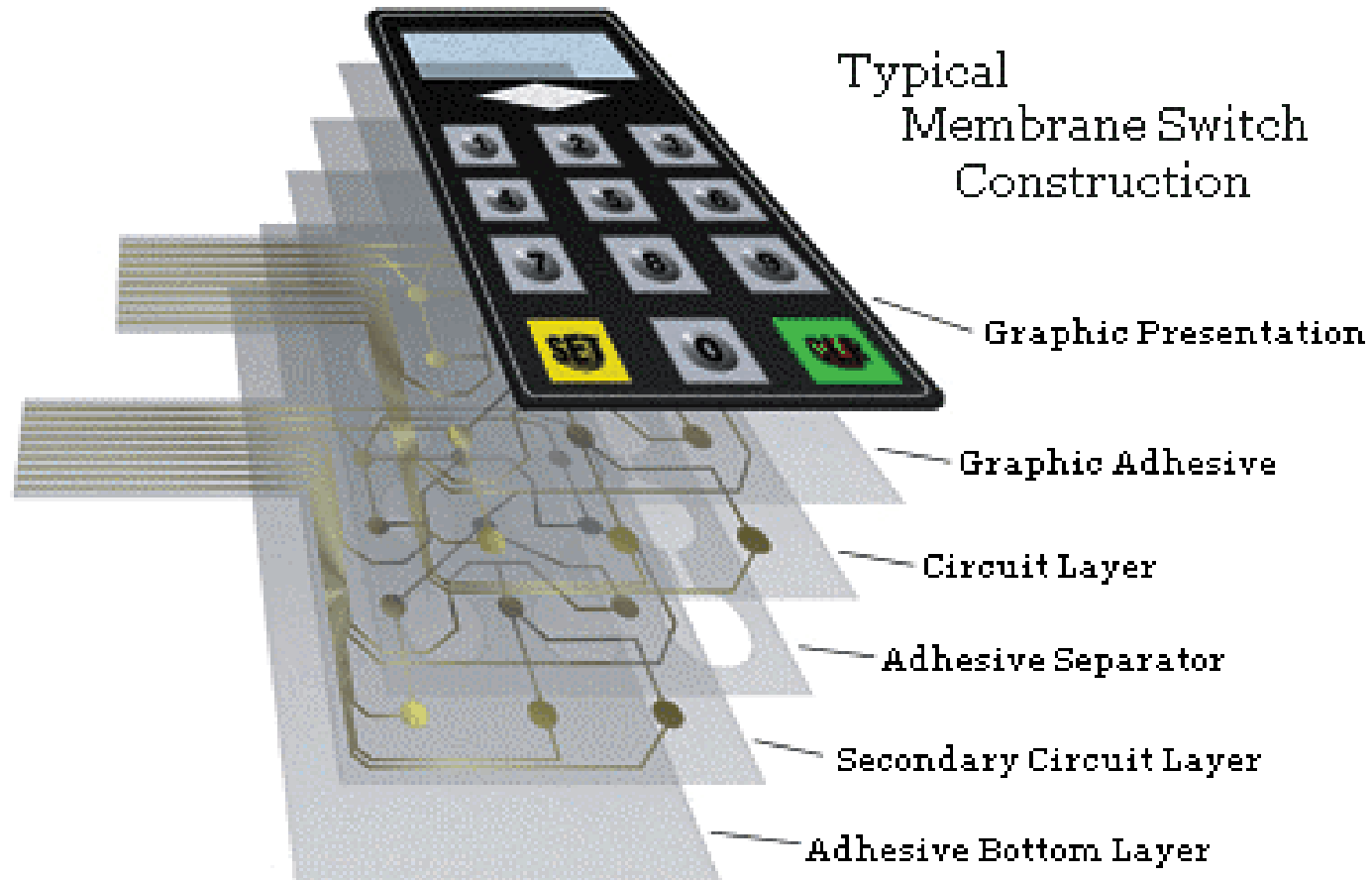
Mark Peapell



Overview

- Membrane Touch Switch, MTS and Film Insert Moulding, FIM. Introduction and Clarification
- Substrate Role in MTS and FIM Product Construction
- Today's Substrate Materials
- FIM Products Using Speciality Substrates
- Recent and Future Substrate Developments

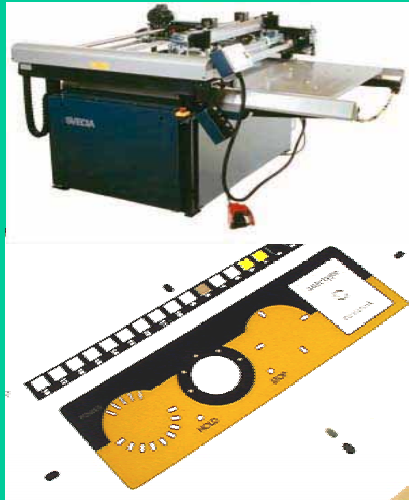
Membrane Touch Switches



What do we mean by Film Insert Moulding (FIM)?

- Also Called Insert Mould Labelling (IML) & In-Mould Decoration (IMD)

Print



Form



Mould



Substrates for MTS and FIM

- PET film is the Industry standard for MTS substrates
- PC film is commonly used for FIM – Article geometry and design dependant
- Graphic Images are Screen Printed on second surface
- Graphic Image provides information such as switch location/function, logos, product names etc
- The cosmetic look and feel of the graphic image is central to the perception and value of the FIM or MTS part. The Screen Print process, Ink selection, Substrate choice and Design are key elements as to the success of the finished part.

Substrates for MTS and FIM

- Substrates can be first surface printed to provide further design opportunities
- Keypad/Switch areas of the substrate are embossed to provide tactile feedback
- In addition to being the Graphic carrier the substrate can also provide value add functions; Scratch resistance, Chemical resistance etc

Substrate and Surface Finish

Today a wide range of surface finishes are available to the designer or manufacturer of MTS and FIM parts.

- Uncoated PC, PET, PMMA
- Hardcoated PET films with Matt Surface
- High Gloss and Antiglare Hardcoated PET and PC films
- Formable Hardcoated PC films
- Hardcoated PET and PC films for Outdoor environments
- First surface UV curable Window and Texture varnishes
- Formable First Surface Printed Texture Varnishes

FIM Product Development

2002 Polar



2003 Motorola



2005 Mercedes S Class



2007 Nokia N Series



2008 Philips Shaver



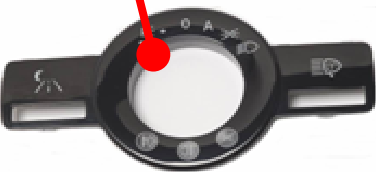
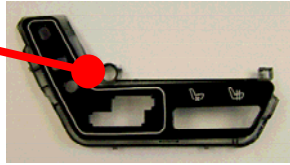
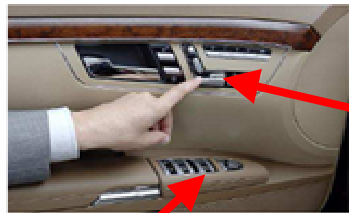
2009 Fiat Punto



2010 Ford C Max, Fiesta, Focus



Mercedes S Class



FIM Component Integration

- **ITEM 17**
- **MATERIAL:** Formable Hardcoated PC film
- **PART DESCRIPTION:** BUSHNELL Onix 400 GPS Navigation System
- **KEY ASPECTS:**

Selective texture around lens gives illusion of two part construction.

Integrated Lens offering Scratch resistance.

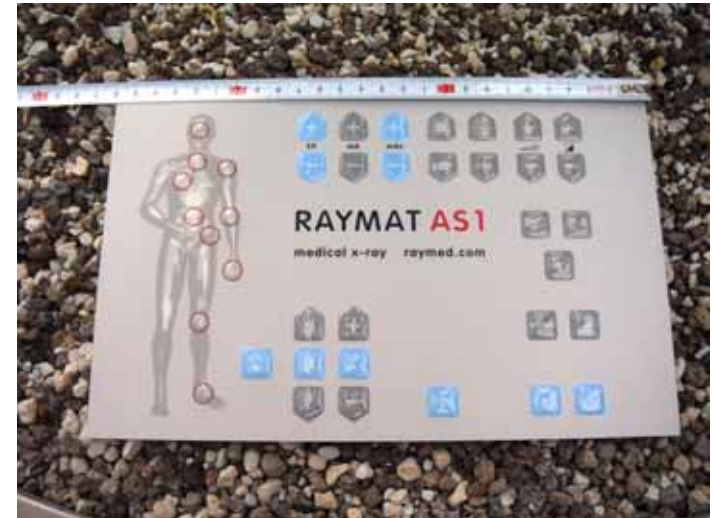


Substrates – Technological Developments

Hardcoated PET film with Antimicrobial protection.

- Everyday surfaces can support and spread harmful bacteria. Hand contact with contaminated surfaces can transfer bacteria and potentially lead to infection.
- Antimicrobial technology to improve hygiene and reduce risk of spreading infection. Inhibits the growth of harmful bacteria, mould and mildew.
- Suitable for Hygiene critical applications; Membrane Switches, Fascia Panels, Door Finger Plates.
- Where Cleanliness matters; Hospitals, Medical Centres, Convalescence Homes, Cruise Liners, Schools etc.

Antimicrobial Keypads



Antimicrobial Surface Protection



Antimicrobial Surface Protection



Substrates – Technological Developments

Hardcoated PET film with Stainless Steel Finish.

- Graphic inks printed on second surface. When printed with mirror inks an exact replication of Stainless Steel is achieved
- Wide range of effects achieved with different Metallic inks
- Anti-fingerprinting
- First surface receptive to Window lacquers offering further design opportunity
- Weight saving over conventional metal panels

Steel Effect Parts



Flexible Steel



Steel Finish Keypad



Substrates – Technological Developments

Hardcoated PET film with Soft Touch Surface

- Unique substrate combining balance of Hardcoating and a Soft Touch tactile surface
- Second surface printed graphics
- Fine Matt textured coating – First surface printed lacquers provide excellent window clarity
- Hardcoated film offering high Chemical and Abrasion resistance

Thank You

Thank you for your attention and I would be happy to answer questions.

Mark Peapell