Product Specification Sheet

BST Eco V2.0 DetectaPen® | E2*

The DetectaPen® Range

BST DetectaPens® are industry renowned as the highest quality choice of stationery for use in hygiene critical food processing environments. Every feature of the pen is designed with the food industry in mind, resulting in a truly unique set of properties designed to minimise contamination risks and improve food safety.

The BST DetectaPen® range is manufactured using our flagship XDETECT® plastic compound - optimised for metal and x-ray detection in the food and pharmaceutical industries. Our DetectaPen® range also incorporates silver ion antibacterial technology, which is effective against E-Coli, MRSA & Salmonella. All materials used in the construction of our pens feature extensive food contact approvals including FDA and EU compliance, with full documentation including migration test data. The BST DetectaPens® are also Kosher certified.

All BST DetectaPens® are available with or without a dual detectable clip. The clip is moulded in to the pen making it near impossible to snap off without the use of tools. They feature high quality ink cartridges, further adding to the detectability of the pen. The DetectaPen® range is manufactured at the BST HQ in Doncaster, UK, where we hand assemble over 1.8 million units per year, destined for food manufacturers across the globe.

Product Description

Our Eco V2.0 style DetectaPen® boasts all the same properties as the original Eco but with an all new sleek matt design for ultimate writing comfort. All our DetectaPen® designs feature minimal germs traps and are ergonomically designed making them easy to hold, so less likely to be dropped.

The Eco V2.0 DetectaPen® is the best value for money detectable pen available from BST. The beautifully simple design comprises of only two components, the ink cartridge and the pen body. The solid brass ink cartridge is permanently encased within the detectable pen body. They are available with a nickel plated or brass nib, with a 1mm stainless steel writing ball that offers a smooth and smudge free writing experience.

The Eco V2.0 pen is available with a pocket clip or a lanyard loop. Please note that the clip does not constitute an additional pen component, as clipped pens are moulded from one piece material, meaning the clip will not fall off and become a potential contaminant. The clip is also designed to bend – not snap off.

DetectaPen® Range Advantages

✓ Detectable by in-line metal detection systems & x-ray inspection systems

✓ Incorporates antibacterial technology to protect against pathogenic germs and moulds

✓ Available with pocket clip or lanyard loop* (*Looped versions available in blue and red bodies only)

✓ Strong, durable, shatter resistant & chemically resistant material

✓ Compliant with EU & FDA food contact legislation, including mandatory EU migration test standards

✓ Available in a variety of ink colours to suit specific requirements

✓ Can be used as part of HACCP and BRC procedures

✓ Displays due diligence in the prevention of foreign body contamination

Product and Packaging Information

Brass with Clip	E210**	Housing Material	BST XDETECT®
Brass with Loop	E220**	Cartridge	Brass
Nickel with Clip	E2100**	Cartridge End Plug	Detectable POM
Nickel with Loop	E2200**	Write Out Length	2800m +/- 20%
Pack Size	50	AntiBacterial	Yes
Pack Weight	0.35kg	Detectability	Metal & X-Ray Visible
Body Colours	B,R,G,Y,K	Country Of Origin	Britain
Ink Colours	B,K,R*,G* (*brass only)	Commodity Code	96081010

Ink Specification

✓ Unpressurised ink	✓ ISO 12757 -1	✓ ISO 12757 -2
✓ MITI Listed (Japan)	✓ ISO 12575 - 2 DOC H	✓ ISO 12575 - 2 G2 M
✓ ISO 12575 - 2 DOC G2	✓ ISO 12575 - 1 A M	✓ TSCA Listed (USA)
✓ ISO 12575 - 2 DOC A2		

Safety Certificates / Approvals

FDA Approved	Kosher Certified	Made In Britain
EU Compliant	BRCGS Compliant	ISO 9001:2015

Food Contact Status (EU)

Hereby we declare that the material XDETECT® in various colours is manufactured in line with the relevant requirements of 2023/2006/EC as amended by Commission Regulation (EC) 282/2008, on good manufacturing practice (GMP) for materials and articles intended to come into contact with food.

The raw materials used in the manufacturing process of the above mentioned materials (XDETECT® in various colours) can be considered suitable for food contact applications in terms of compliance with European regulations. The raw materials used meet the relevant requirements of EU Framework Regulation 1935/2004 on materials and articles intended to come into contact with food.

All monomers, starting substances and additives used to manufacture these grades are listed in Commission Regulation (EU) No. 10/2011 as amended by (EU) 321/2011, (EU) 1282/2011, (EU) 1183/2012, (EU) 202/2014, (EU) 2015/174, (EU) 2016/1416, (EU) 2017/752, (EU) 2018/79, (EU) 2018/213, (EU) 2018/831, (EU) 2019/37, (EU)2019/1338, and (EU) 2020/1245 respectively, related to Plastic Materials and Articles intended to come into contact with foodstuffs.

Colourants used are compliant with European Council Resolution AP(89) 1 on the use of colourants in plastic materials coming into contact with food, and also with German BfR Recommendations (IX).

BST Detectable Products hereby declare that articles manufactured from BST XDETECT® are, according to EU regulations, authorised to come into direct contact with all types of foodstuffs at a maximum temperature of 40°C for a maximum time period of one hour.

Food Contact Status (FDA)

The polypropylene base resin used in XDETECT® meets the FDA (Food and Drug Administration) requirements contained in the Code of Federal Regulations in 21 CFR 177.1520 (a) (3) (i) , (b) and (c) (3.1a). At the same time this base resin grade meets the FDA criteria in 21 CFR 177.1520 for food contact applications, excluding cooking, listed under conditions of use C through H in 21 CFR 176.170 (c), Table 2., and can be used in contact with all food types as listed in 21 CFR 176.170 (c), Table 1. Also the mineral additives and the pigments used are GRAS (Generally Recognized As Safe) or are FDA cleared under specific FDA citations.

Food Contact Status (Japan)

The base resin (PP copolymer) used in the manufacturing process of the above mentioned compounds is listed in the Positive List of Base Polymers (Table 1). The additives used in the manufacturing process of the PP-C resin are listed in the Positive List of Additives (Table 2) authorised for use in this base resin.

Animal Derivatives

To the best of our knowledge there are no ingredients in the formulation of this material that is of animal origin. As such, this material should not pass on any animal derived disease like BSE (Bovine Spongiform Encephalopathy) or other TSE (Transmissible Spongiform Encephalopathy).

Migration Testing

The following overall migration results for XDETECT® were obtained using a UKAS accredited laboratory, with overall migration simulants and conditions as detailed in EU Regulation No 10/2011 as amended, on plastic materials and articles intended to come into contact with food.

Sample: PP-C-2013/393
Test conditions: Simulants A, B and 95%v/v ethanol: 10 days at 40°C. Iso-octane: 2 days at 20°C

Method	EN-1186-3 Migration into 10% v/v Ethanol (Simulant A)	EN-1186-3 Migration into 3% w/v Acetic Acid (Simulant B)	EN-1186-14§ Migration into Iso-octane (Substitute test)	EN-1186-14§ Migration into 95% Ethanol (Substitute test)
Replicate #1	0.2 mg/dm2	0.5 mg/dm2	19.4 mg/dm2	0.8 mg/dm2
Replicate #2	0.3 mg/dm2	0.5 mg/dm2	21.0 mg/dm2	0.9 mg/dm2
Replicate #3	0.0 mg/dm2	0.3 mg/dm2	20.8 mg/dm2	0.6 mg/dm2
Mean Result	0.2 mg/dm2	0.4 mg/dm2	20.4 mg/dm2	0.8 mg/dm2
EU Limit	10.0 mg/dm2	10.0 mg/dm2	#20.0 mg/dm2	10.0 mg/dm2
Tolerance			#6.0 mg/dm2	

#Limit and tolerance are quoted after the application of a fatty food reduction factor of 2 as quoted in EU Regulation 10/2011. To summarise the overall migration test results, the PP-C-2013/393 complies with the overall migration requirements given in EU Regulation 10/2011, as amended, with regards to use with all non-fatty foods, aqueous foods and fatty foods that require a reduction factor of 2 (or greater), as given in EU regulation 10/2011, as amended.

Metal Detectability Testing & Results

BST DetectaPens® are made using XDETECT®, an electromagnetically detectable and x-ray visible plastic compound. Within the pen housing is a stainless steel ink cartridge. The metal detectability of this product will vary based on, but not limited to:

- Calibration Levels
- Product Type (E.g. Wet, Dry, Frozen, Liquid)
- Aperture Dimensions
- Orientation

Orientation is a highly influential factor for the metal detectability of a contaminant that is non spherical, i.e. it will be easier to detect the contaminant when passing in one orientation compared to another - this is known as the orientation effect. During testing

Image 01   (Product H)

of the BST DetectaPen® we used a worst case scenario which is through the geometric centre of the aperture and in the worst case orientation. We used a piece of form and set it up in the machine as the main product (H), in order to pass the contaminant on top. The product (H) has been set up in the IQ4H 100mm aperture height metal detector (image 01 indicates the version of the software used) at 25 m/min belt speed. Please note, the following results are applicable only to the product (H) or similar and that detection performances vary with the main product and packaging type.
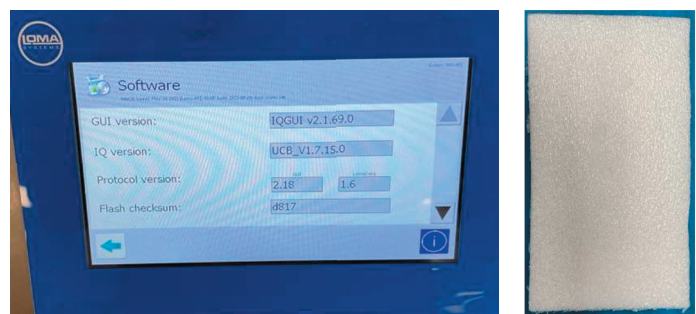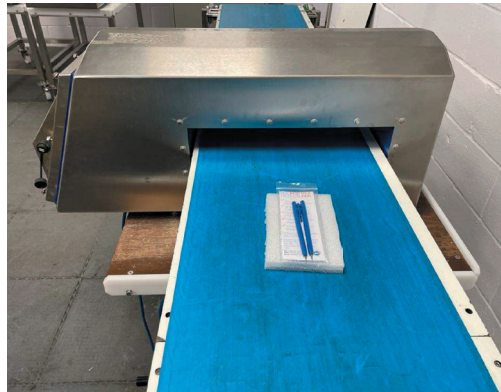
Metal Detectability Testing & Results Cont.

Machine Settings:

Belt Speed	Head Gain Settings	Frequency	Threshold	Phase Angle
25 m/min	I Gain = Low Q Gain = Max RF Gain = Med Head Drive - Max	625kHz	100	121.7

Product passes through the centre of the aperture:

(Length 140mm Width 30mm Height 15mm)   (Product B)

Please refer to the below table for results of the full product sample and the smallest peice detected an signals:

Complete Product	Reject Signals	Samllest Piece Detected	Reject Signals
Eco V2.0 DetectaPen (Product B)	I / Q Saturated (Very Good Reject Signals)	5mm in length and width	1100-1300

X-Ray Visibility Testing & Results

In contrast to metal detection, x-ray visibility is determined by material density. For this reason, XDETECT® contains an additional, evenly dispersed, food safe, high density additive.

Based on our experience and testing, positive readings should be consistent both for whole pens and XDETECT® fragments as small as 3mm. X-ray detection performance will be reduced when small fragments are buried in deeper, denser products - detection will depend on product type and density. We highly recommend that all our products be thoroughly tested on your x-ray inspection systems by a trained and certified professional. It may be the case that your equipment needs to be recalibrated in order to reliably detect this product. Such a professional should be available by contacting the manufacturer of your x-ray inspection system.

We calibrated and set up the product (G) as the main product, in order to pass the contaminant on the top, to see whether we were able to detect it. The product (G) has been set up in the X5 Mark IV Space Saver machine with the standard lightweight curtians and equiped with a 4.0mm diode detector set to FINE AAT at 25 m/min belt speed. Please see the following page for the machine settings and results.
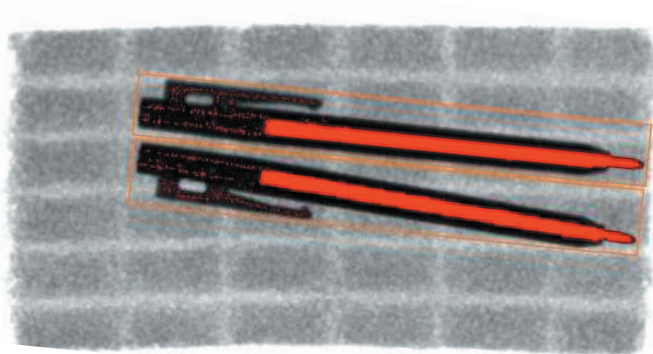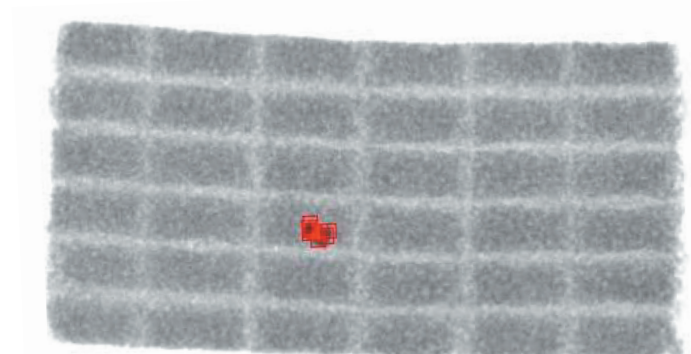
(Product G)

Machine Settings:

Scan Settings	Image Processing	Basic	Explorer
CalKV = 4.0 CalMA = 2.0 RunKV = 40 RunMA = 2.0 Gain = High Sensitivity = High Belt Speed = 25 m/min	Gamma = 80 Lower Range = 10 Upper Range = 90	Auto Learn	Auto Learn

Please refer to the below images for results of the full product sample and the smallest peice detected:

Complete Eco V2.0 DetectaPen (Product B)
Length 140mm Width 30mm Height 15mm

The smallest piece detected from Product B is 3mm

Please note that the pen clip cannot be detached from the pen without extreme force or the use of tools. Generally speaking, the only circumstances where by such a small pen component could be introduced to food product would be through deliberate action or the pen going through an extreme process such as crushing, blending, mincing etc.

All of the above results are based on our own testing, and is supplied purely for customer convenience. Different detector systems will feature different sensitivity settings, as well as settings for different product types (E.g. Wet, Dry, Frozen, Liquid).

For this reason BST recommend that all our products be thoroughly tested on your metal detection systems by a trained and certified professional. It may be the case that your equipment needs to be re-calibrated in order to reliably detect this product. Such a professional should be available by contacting the manufacturer of your metal detection system.