Over the last decade, the inks and coatings environment has experienced major technological advances. Some of the most sophisticated developments have been made in printing consumables for the food and beverage (F&B) packaging printing industry. **By Nikita Geldenhuys**

Across the globe, legislation is being put in place to regulate the environmental impacts of inks as well as the safety profiles of these products. Inevitably, ink systems for the food packaging sector are developing innovative solutions within these new limitations.

‘Regulations for food packaging are becoming increasingly applied around the world and are being used positively,’ explains Mike Lourens, owner of Imvusa Inks in Port Elizabeth. ‘Tests are regularly being done, not just on inks and coatings, but also on packaging substrates, boards, films and outer corrugated packaging.’

According to Lourens the EU provides the best examples of workable legislation in the area of food packaging. He explains the union’s primary regulation, EC 1935/2004, lays down that, under normal conditions of use, packaging and by implication the print on it should not transfer to the food product components in quantities that might endanger human health; bring about an unacceptable change in the composition of the food or a deterioration of the organoleptic characteristics thereof.

He says a large amount of materials have been tested and the amount to which they are permitted in food is listed in documents such as Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food. All this is further reinforced by the good manufacturing practice regulation (EC) 2023/2006, which adds requirements such as the full traceability of materials and the conditions that printers should meet for hygiene.

**Low migration on the menu**

Lourens notes that regulatory authorities have been focusing on the potential of packaging components to migrate into food contents. As a result, the importance of using printing consumables with low migration properties has become a major topic in the F&B packaging sector.

Yet despite the widespread use of the term ‘low migration’, Jonathan Sexton, European product manager of energy curing at Sun Chemical says there still doesn’t appear to be one definitive industry description of the phrase. ‘According to a definition presented by the European Printing Ink Association, low migration means “below the applicable Specific Migration Limit”, which in the case of untested materials, generally refers to a level of 10 parts per billion,’ he comments. ‘Other suppliers, however, may refer to the overall migration limit of 60mg per kilogram of food, as defined in the Plastics Regulation (EU) No 10/2011.’

It is his opinion that this lack of a clearly defined standard has resulted in confusion in the market, causing ink suppliers to respond in different ways depending on their interpretation of the terminology. The term also doesn’t just refer to ink properties, as other factors also come in to play in potential substance migration. It also includes pack and print design; how the ink is applied and dried; ink coverage; the substrates used and storage conditions of both the ink and the final printed products.

Sun Chemical, one of the world’s largest producers of printing inks and pigments, has a proactive approach to low migration products and takes full responsibility to ensure its consumables contain genuinely low migration properties. At PACK EXPO 2014, held in the US in November, the company introduced visitors to its SunPak family of inks and coatings in this category.

The collection of consumables offers a comprehensive solution to brand owners...
and converters who are required to address chemical migration concerns in food, pharmaceutical, personal care, and tobacco applications. The SunPak range exhibits very low levels of migration of chemicals which could affect the odour, flavour, taste, irritation, and safety of sensitive consumer products.

Imvusa Inks is involved in the distribution of a similar offering for the F&B market through its relationship with the France-based inks manufacturer Branchet. Its portfolio of printing consumables includes the Photon range of low odour, low migration inks which was well received in South Africa following its launch in 2011. Industrial trials have shown the line has excellent stability and colouring power as well as remarkable drying performance when tested on various types of cardboard.

Branchet is also marketing Natura V, an oil-based equivalent series to the Photon range for lithographic printing.

**A selection of the best**

Another printing equipment and consumables supplier offering low migration products to the South African market is Heidelberg Graphic Systems (Heidelberg Southern Africa). The company presents the Saphira Low Migration range which consists of carefully selected consumables for both dried and greasy food product packaging. It includes inks, coatings, fountain solutions, washes, folding carton glues and lubricants where a few are sourced from third party Heidelberg approved and tested suppliers.

'We supply our customers with certificates to show Saphira products have been independently tested and certified as being suitable for use in food,' explains Jose Botas, product manager of prepress and consumables at Heidelberg Southern Africa. 'Our customers use our ranges because the products deliver high-quality results with every use.'

Heidelberg’s coatings offer added-value to packaging print service providers, by allowing them to safely seal printed substrates. These consumables also enable the user to deliver a better and safer printed product.

Commenting on trends within the industry, Botas says he anticipates the packaging industry will eventually move towards water-based inks despite many suppliers manufacturing low migration products. 'The colour gamut of water-based inks is constantly improving and some of the results we have seen are excellent. There are a number of companies in South Africa and globally that make use of water-based inks. I believe that the demand for these consumables is expected to increase, seeing that they have low volatile organic compounds, a safer chemical composition than other conventional inks,' he explains.

In the past year we have also noticed an increase in requests for ISEGA-certified products, a sign that the food industry is taking the issue of low migration products very seriously,' adds Botas.

**Anti-bacterial capability**

The new range of Safe to Touch Print coatings from Ultrachem was introduced at Ipex 2014, held in March in London, UK. Distributed locally by Van Son Inks and Graphics, this brand of products is said to be capable of reducing harmful infection on printed surfaces by up to 99.999 per cent, making the coatings ideal for items such as food and pharmaceutical packaging and banknotes.

The collection was created by the research and development company Chemical Intelligence as a commercially viable, safe and highly effective solution that kills organisms such as E. coli, Listeria monocytogenes, Salmonella and Streptococcus, among other common pathogens.

'Safe to Touch Print has shown amazing results during both laboratory and press-room testing and we’re certain that offering this technology in a finished, ready-to-use product line will inspire printing in a diverse range of applications, ensuring higher levels of protection for people exposed to harmful infections,' says Chemical Intelligence CEO Rob Gros.

**Moving away from solvent inks**

These developments in low migration and anti-bacterial printing consumables are all being made in the interest of consumer and environmental safety. Lourens points out that the recent FlexoTech International Print Awards held in October 2014 in London clearly illustrated the growth of UV and water-based inks at the expense of solvent products.

‘This is partly driven by environmental costs, partly by food legislation and by the drive towards shelf-ready packaging,’ he says. ‘Around the world digital technologies are also eroding the share of other inks, particularly commercial sheetfed short run work and some labels.’

With the multitude of advances being made in the area of inks and coatings, Sun Chemical’s Sexton believes it is the responsibility of the packaging food chain supplier to monitor these developments and use these technologies with careful consideration for existing legislation and guidelines.

‘Where health and safety is concerned, especially for inks used to print the packaging of products intended for human consumption, taking a proactive approach, anticipating changes and keeping one step ahead is the way forward to minimise or eliminate potential risks through migration,’ he concludes.