

XAAR

**GS1 Sunrise 2027
is getting closer.**
Are your label
presses ready?



GS1 Sunrise 2027

What label producers need to know

As Tesco becomes the first UK supermarket to transition an entire product range to QR codes, the interest in, and momentum behind, GS1 Sunrise 2027 grows.

With this momentum comes a series of practical questions. Below, we answer some of the most frequently asked questions around GS1 Sunrise 2027 and explore how Xaar's inkjet technologies can help packaging manufacturers prepare for the next generation of coding and marking.



Sunrise 2027

A global initiative to enable 2D barcodes at retail point-of-sale by the end of 2027.

Key facts



Retail target

By the end of 2027, retail point of sale systems should be able to read and process GS1 2D barcodes.



2D & 1D coexist

1D barcodes are not disappearing. 1D and 2D codes will coexist over a transition period.



DPP ready

Supports Digital Product Passports and evolving regulatory requirements.



Enhanced value

Better data enables traceability, efficiency, recalls Anti-counterfeiting and consumer engagement.

What is GS1?

GS1 is a global standards organisation that develops and maintains standards for product identification and data sharing, including barcodes, 2D codes, EDI, RFID tags and global identifiers such as GTINs, GLNs and SSCCs. Its standards are designed to help product data be identified and shared consistently worldwide across retailers, wholesalers, manufacturers and logistics providers.

In packaging, GS1 standards are generally associated with product and logistics codes. These include EAN and UPC barcodes for retail, GS1-128 for logistics and distribution and GS1 Data Matrix or GS1 QR codes for richer, more flexible product data.

What is GS1 Sunrise 2027?

GS1 Sunrise 2027 is a global initiative to enable 2D barcodes at retail point of sale by the end of 2027. GS1 states that, by the end of 2027, all retail point-of-sale systems should be capable of reading and processing a defined set of GS1 2D barcodes, alongside existing linear barcodes.

In simple terms, the ambition is to move beyond barcodes that primarily identify a product for price lookup and towards 2D codes that can carry or connect to richer product information.

However, GS1 Sunrise 2027 is not a government regulation and it does not mean that every 1D barcode will instantly disappear. Rather than a legal imperative, it is an industry-led target, and 1D and 2D codes are expected to coexist over an indeterminate transition period.

Why is the industry moving from 1D to 2D codes?

The main driver is data. A traditional 1D barcode can identify a product, but it can only hold a limited amount of information. As more data is required, a 1D barcode becomes longer and takes up more packaging space. This creates a challenge for FMCG brands and packaging designers, where there is constant pressure to balance regulatory, retail and brand communication considerations.

For manufacturers selling within the EU, Digital Product Passports (DPPs) represent another data obligation. Designed to support traceability and to provide greater information to stakeholders, DPPs are required to include a broad raft of information and must be accessible via machine-scannable code on-product. The amount of data which legally must be included makes a traditional 1D barcode impractical, furthering the need for an alternative solution.

The benefits go beyond the pack itself. Better data can support faster receiving, improved inventory management, stronger traceability, more efficient recalls, anti-counterfeit measures and product authentication. GS1 Digital Link can also connect a physical product to online content, allowing consumers to access product information, promotions, provenance content or recycling guidance through a single scan.

Benefits of GS1 2D codes

Moving from 1D barcodes to 2D codes unlocks more data, improves efficiency and connects physical products to the digital world.

1D Barcode



Limited data capacity



Larger footprint
on packaging



Product identification
and price lookup

2D Code (GS1 QR)



High data capacity



Smaller footprint,
saves space



Traceability &
supply chain visibility



Digital Product
Passport ready



Connects to digital
content for consumers

A 2D code must be readable quickly and consistently, whether it is scanned at point of sale, in a warehouse, on a production line or by a consumer using a smart phone



What does GS1 Sunrise mean for packaging manufacturers?

GS1 Sunrise 2027 makes code quality, data handling and print performance more important than ever. A 2D code must be readable quickly and consistently, whether it is scanned at point of sale, in a warehouse, on a production line or by a consumer using a smart phone. If a code does not scan reliably, the result can be manual intervention, retailer friction, rejected products or wider supply chain disruption.

Packaging manufacturers will therefore need to look closely at whether their current printing processes are suitable for GS1 2D codes. The move from 1D to 2D raises questions around cell size, data content, package real estate, product shape, printhead positioning and verification. Consequently, packaging specialists need to consider repercussions beyond artwork – how the codes will be generated and verified, how variable data will be managed, and substrate suitability to name a few.

What are the main printing challenges with GS1 2D codes?

Printing GS1 2D codes is more demanding than printing simple human-readable best-before dates or batch codes. A human can often interpret a dotted or imperfect alphanumeric code, but a scanner needs clean, consistent contrast and precise code structure.

Where continuous inkjet has historically been used for best-before dates and lot numbers, the quality needed for QR codes and Data Matrix codes creates different requirements. Manufacturers need technology that can deliver quality without compromising throughput, balancing speed and throw distance to achieve the performance necessary for contemporary and future coding and marking applications.

This is where drop on demand inkjet presents a more appropriate option, as better resolution and print quality are achieved versus continuous inkjet, making it more suitable for printing high-quality 2D scannable codes.

This is particularly important where packaging is moving at speed, where throw distance varies or where substrates are not perfectly positioned. Xaar's drop on demand printheads offer larger drop size, allowing for high speed and high throw distance, improving drop placement and supporting better code quality.

How Xaar's Versatex printbar can help

Xaar's Versatex printbar is designed to support high-quality coding and marking, including variable data, 1D and 2D barcodes, batch codes, serialised information and traceability codes on both analogue and digital label presses.



Xaar Versatex Printbar

The ideal solution for veritable data printing on label applications.



Up to 75m/min
line speed



Prints 1D & 2D barcodes
and human-readable codes



Enables serialisation,
personalisation and
authentication



Suitable for analogue label
presses and finishing lines



'Plug and play' printbar for
easy integration

What should packaging manufacturers do now?

For packaging manufacturers, now is the perfect time to assess coding and marking capabilities and to make appropriate upgrades, before 2D codes transition from a nice-to-have to a retailer non-negotiable.

By considering whether current print technology can deliver the required print quality at production speed, manufacturers can begin the transition now, utilising a 'crawl, walk, run' approach rather than a last-minute dash for compliance down the line.

It's also worth consulting with brand owners, retailers and OEMs sooner rather than later to understand trading partner timelines, code requirements, verification expectations and data workflows. The move to GS1 2D codes involves much more than changing a printed symbol – data structure, code generation, print quality, substrate performance, line speed and verification all need to work together.

Preparing for the future of packaging traceability

For packaging manufacturers, GS1 creates both responsibility and opportunity. Those that can deliver reliable, high quality, GS1-ready 2D codes at production speed will be well placed to support customers as the retail landscape evolves.

In order to effectively achieve this, manufacturers need to consider drop on demand inkjet as more than a premium alternative to traditional coding technologies, but as a leading technology for high speed, high accuracy applications such as 2D code printing.

With the Xaar Versatex Printbar, Xaar is helping label press owners meet the demands of GS1 Sunrise 2027 while building more flexible, data-rich and future-ready print capability.



Discover how Xaar's Versatex printbar can help prepare your label presses for GS1 sunrise 2027

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