Barcode Scanner Environments

	Scanners	Point-of-Sale (POS)	General Distribution and Logistics	Healthcare Items	Direct Part Marking
EAN/UPC	laser or camera	X	X	X	
GS1-128	laser or camera		X	X	
ITF-14	laser or camera		X	X	
GS1 DataBar	laser or camera	X	X	X	
GS1 DataMatrix	camera only		X	X	X
GS1 QR Code	camera only		X		X

- Point-of-sale is a scanning environment that requires barcodes suitable for omnidirectional scanners.
- Logistics scanning environments may apply automated scanning (conveyor mounted) and scanning from longer distances using handheld scanning devices.
- GS1 DataMatrix is the preferred barcode in healthcare. However, healthcare items must use EAN/UPC symbols if they also cross general retail POS.
- GS1 DataMatrix and GS1 QR Code are suitable for direct part marking.
- GS1 QR Code is technically equivalent to GS1 DataMatrix, but not allowed for use on healthcare items. GS1 QR Code is approved as additional symbol on consumer trade items for use in mobile applications (B2C).

Barcode Printing Methods

	Flexography	Offset	Thermal	Laser	Direct Marking
EAN/UPC	X	X	X	X	
GS1-128	X	X	X	X	
ITF-14	X				X
GS1 DataBar	X	X	X	X	
GS1 DataMatrix	X	X	X	X	X
GS1 QR Code	X	X	X	X	X

- Traditional printing press methods (e.g., offset, flexographic) are suitable for:
  - printing barcodes with fixed data content in large quantities;
  - in situations where the barcode needs to be printed together with other complex graphics (e.g., multi-colour or process printing);
  - when the barcode is printed on difficult packaging substrates (e.g., aluminum or translucent plastic).
- Digital printing methods (e.g., thermal, laser) are suitable for printing small batches of barcodes and barcodes that frequently vary in data content (variable data content).
- For printing a barcode on a corrugated box three methods exist:
  - printing directly on the box using a flexographic printing process;
  - printing directly on the box using an industrial ink-jet printing device;
  - printing on a label and then applying the label to the box.
- GS1 DataMatrix and GS1 QR Code are "matrix symbols". They are easy to print on demand and can even be etched into metal.