

# BARCODE GUIDE














Barcode technologies provide fast reliable data collection to ensure part or product traceability, error-proof supply chain processes, and enhance customer service.

Barcodes are machine readable symbols that store identifying data about the part or product with which they are associated. These symbols, when read by a barcode scanner, are decoded, recorded, and processed to extract the data for a variety of uses (e.g., pricing, order fulfillment, traceability through production, sortation, shipping, etc.) Over the years, different forms of barcodes have been developed to help businesses around the world. These include:

## 1-D Linear Barcodes

A 1-D (one-dimensional) barcode is the typical style with which we are most familiar. All the information in the code is organised horizontally in bar and space widths and read left to right by a scanner. Several versions of 1-D codes store only numerical data while others can encode additional characters. The height of the code varies based on the space available on a product and the ability of a barcode reader to read a small or large sized barcode.



<p><b>Code 128</b></p>  <p>CODE128</p> <p>Typical Usage: Logistics</p>	<p><b>UPC-A*</b></p>  <p>0 12345 67890 1</p> <p>Typical Usage: Retail &amp; Supermarkets in United States</p>	<p><b>EAN-13*</b></p>  <p>0 123456 789012</p> <p>Typical Usage: Retail &amp; Supermarkets in Europe</p>	<p><b>UPC-E*</b></p>  <p>0 123456 7</p> <p>Typical Usage: Small Retail Packages in United States</p>	<p><b>EAN-8*</b></p>  <p>1234 4567</p> <p>Typical Usage: Small Retail Packages in Europe</p>
<p><b>Code 39</b></p>  <p>CODE39</p> <p>Typical Usage: Defence &amp; Automotive</p>	<p><b>Extended Code 39</b></p>  <p>C39Ext</p> <p>Typical Usage: Defence &amp; Automotive</p>	<p><b>Code 93</b></p>  <p>CODE93</p> <p>Typical Usage: Defence, Automotive &amp; Healthcare</p>	<p><b>Codabar</b></p>  <p>A123456789B</p> <p>Typical Usage: U.S. Blood Banks, Photo Labs, FedEx® Airbills and Libraries</p>	
<p><b>Interleaved 2 of 5</b></p>  <p>0123456789</p> <p>Typical Usage: Distribution &amp; Warehousing</p>	<p><b>MSI/Plessey</b></p>  <p>0123456789</p> <p>Typical Usage: Supermarkets</p>	<p><b>GS1 DataBar Omnidirectional</b></p>  <p>(01)00075678164125</p> <p>Typical Usage: Retail &amp; Supermarket Coupons</p>	<p><b>GS1 DataBar Expanded</b></p>  <p>(01)000141100001543022000000</p> <p>Typical Usage: Retail &amp; Supermarket Coupons</p>	

\*Each of these requires registration to an association to assign unique serial data.

## 2-D Matrix Codes

2-D symbologies are a more recent addition to the world of barcodes. In the 2-D (two-dimensional) matrix code type, the data is encoded as black and white 'cells' (small squares) arranged in either a square or rectangular pattern. As well as being able to encode large amounts of data, the matrix code improves readability and resistance to poor printing. By storing data both horizontally and vertically, significantly more can be encoded than is possible with a 1-D barcode. They also include redundant data so even if one or more cells are damaged, the code is still readable.



<p><b>Data Matrix</b></p>  <p>Typical Usage: Aerospace, Components, U.S. Mail, HIBC, Defense, &amp; Printed Media</p>	<p><b>MaxiCode</b></p>  <p>Typical Usage: Logistics</p>	<p><b>QR</b></p>  <p>Typical Usage: Automotive Parts &amp; Commercial Marketing</p>	<p><b>Aztec</b></p>  <p>Typical Usage: Travel Tickets &amp; Car Registration Documents</p>
--	--	--	---

## Postal Codes

This type of barcode lies somewhere in between a 2-D and a 1-D linear barcode. Instead of encoding data in the black bar and white space widths, these primarily use the height of the bars. The majority of postal codes only use numbers, but a few are now starting to include letters as well.



### POSTNET



Typical Usage:  
Used by the U.S. Postal Service to automatically sort mail.

### Intelligent Mail Barcode



Typical Usage:  
a U.S. Postal Service barcode used to sort and track letters and flats.

## Stacked Linear Barcodes

A stacked linear barcode is one of two types of 2-D barcodes. These simply consist of multiple linear barcodes that are layered on top of one another, allowing a greater amount of information to be encoded. However, to fully decode the data, a barcode reader must be able to simultaneously read the code both horizontally and vertically.



### GS1 DataBar Stacked



Typical Usage:  
Supermarkets

### PDF417



Typical Usage:  
U.S. Driver's Licenses & Logistics

# CODING INTEGRITY

*Minimizes rework and scrap from coding errors*

### Your challenges:

- Ensuring coding accuracy and compliance
- Avoid reputational damage and rejected export shipments
- Reducing costs by identifying coding problems before too many items are incorrectly marked, or worse, sent to market

### Our solutions:

Advanced Markem-Image printing/coding hardware managed with CoLOS software and Cognex Vision Systems.

- Identifies coding errors in real time instead of at the end of a production run
- Confirms each print is present, readable and contains the right code delivering:
  - Less rework and scrap
  - Fewer recalls thanks to 100% compliant codes



### MITECH TECHNOLOGY GROUP

- 📍 60 Cawley Street, Auckland 1051
- ☎ +64 9 915 5555
- ✉ sales@mitech.co.nz
- 🌐 www.mitech.nz
- 🌐 linkedin.com/company/mitech-technology-group

