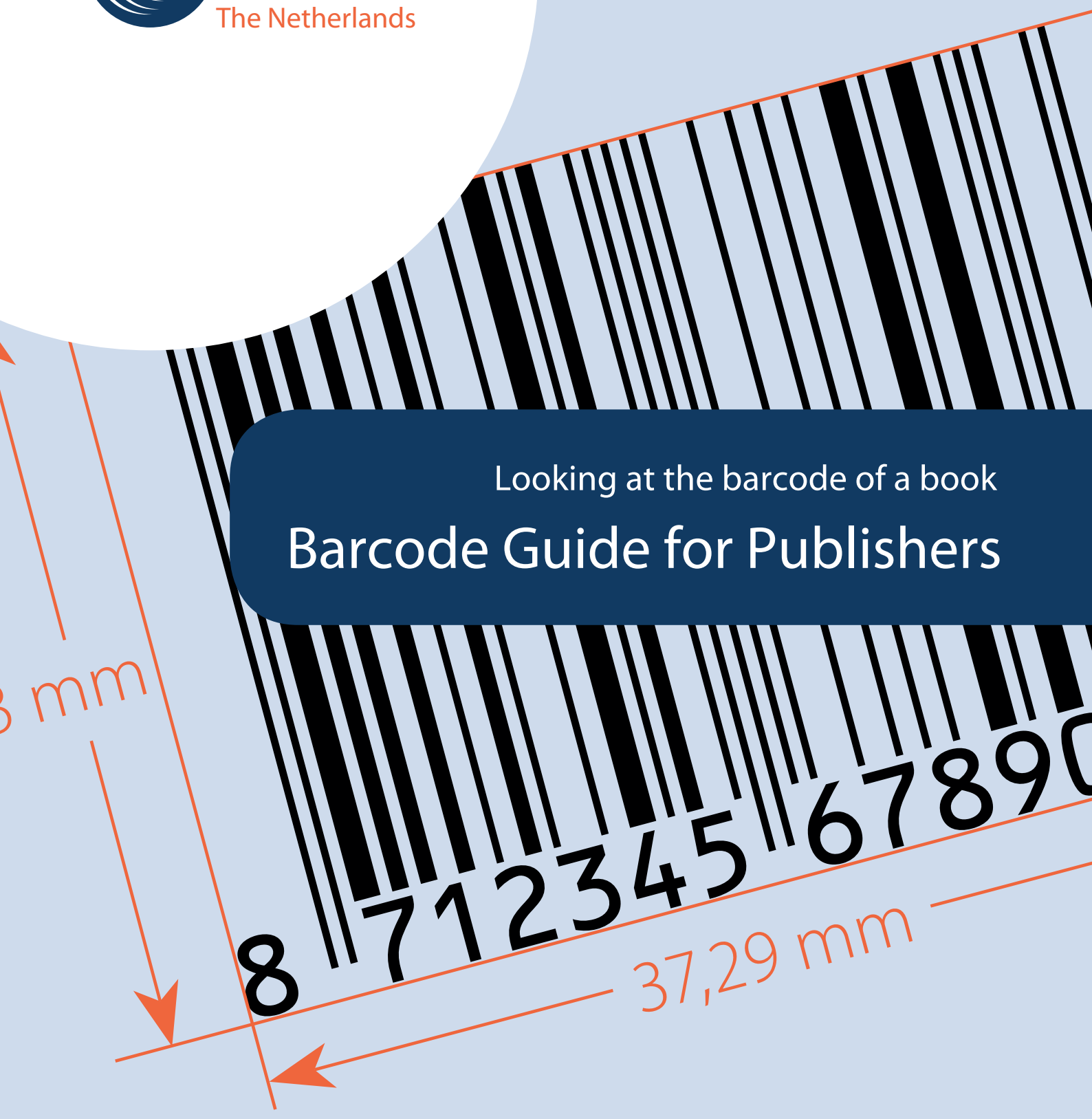
GS1 The Netherlands



Looking at the barcode of a book

Barcode Guide for Publishers

Barcodes – also called EAN symbols – are more than just an aid to settle purchases with customers at the till of the bookstore. Increasingly, they also serve as the key to sales information and to trigger new orders. A successful barcode scan is extremely important to all parties on the book market, so generating a good barcode requires some attention.

Primarily, a good barcode possesses adequate contrast and white space. This Barcode Guide describes the main aspects to which you must pay attention when creating a barcode.

Creative solutions

Are barcodes boring? To the contrary! Below you can see examples of how book designers (and designers for other sectors) respect the guidelines for barcodes while at the same time incorporating the barcode in their design in a creative manner.

Barcode of a Dutch winegrower in France

Mandatory dimensions

Theoretically, you are allowed to reduce the size of the nominal symbol to 80% and increase it to 200%.

These are sometimes called the minimum and maximum enlargement factors. They apply to all dimensions of the barcode. If the enlargement factor is 110%, for instance, you must therefore multiply the width, the height of the bars, the dimensions of the white areas, and the legible digits by 1.1.

The nominal dimensions of the barcode (100%)

A few examples of the enlargement factor in millimetres

Enlargement factor	EAN-13 symbol	
	Width	Height
80%	29,83	20,74
90%	33,56	23,34
100%	**37,29**	**25,93**
110%	41,02	28,52
120%	44,75	31,12
130%	48,48	33,71
140%	52,21	36,30
150%	55,94	38,90
200%	74,58	51,86

This does not mean that any size between 80 and 200% automatically results in good quality of the symbol. The minimum allowed size is determined by the accuracy of the printing method to be used. The table below shows the barcode dimensions for a number of enlargement factors.

Do not reduce the height

The ratio between the width and height of the symbol is always the same, regardless of the enlargement factor. You are not allowed to reduce the height without adjusting the width. Reducing the height of the symbol affects its so-called omni-directional legibility. This means that the symbol can no longer be scanned in all positions and directions.
And it leads to delays at the till for some scanner types, for instance in the supermarket.

You are not allowed to reduce the height

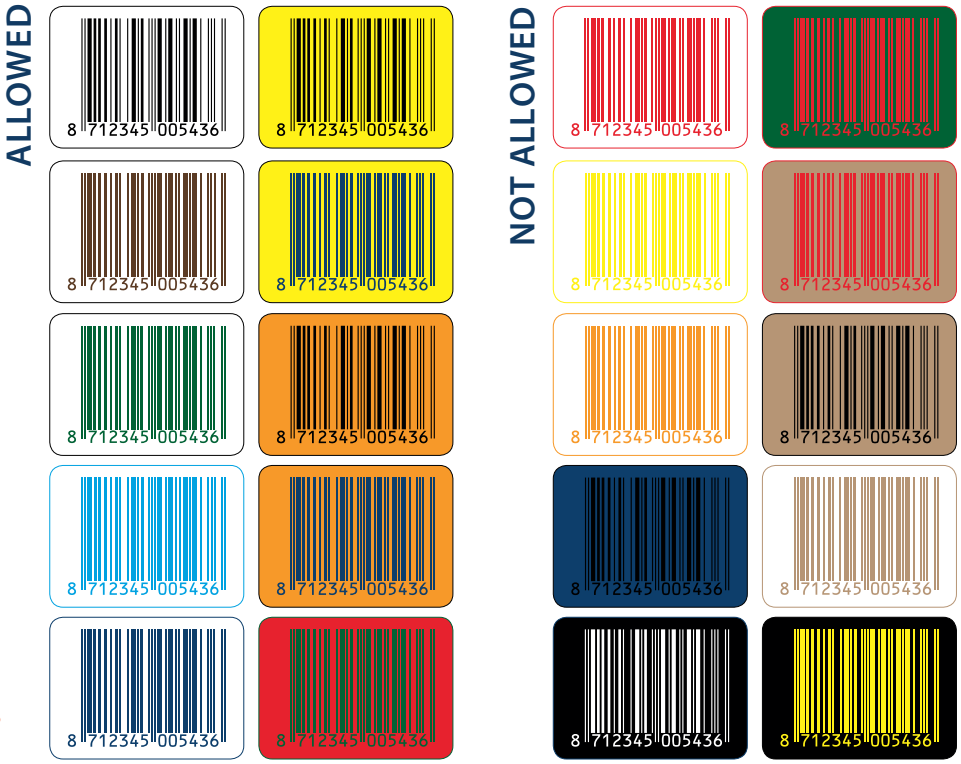
The dimensions of the quiet zones in the nominal EAN13 symbol

Quiet zones

There must always be a so-called 'quiet zone' to the left and right of the symbol. The scanner uses it to adapt to the background colour, so you must make sure that the quiet zone does not contain any frames or text. In a barcode, the first digit of the product code is placed at the bottom of the left quiet zone.
Practical tip: Print a 'greater than' symbol (>) to the right of the right-hand bar to safeguard the width of the right quiet

Colour combinations are possible

You are allowed to generate barcodes in colour and colour combinations. The only requirement is that there must be sufficient contrast between the dark bars and the light background of the symbol to enable scanning. The contrast results from the fact that the bars absorb the light of the scanner and the background reflects the light.
It is impossible to determine with the naked eye whether the contrast is adequate. The reason is that a scanner uses red light, which means that colours are perceived differently than with the human eye.

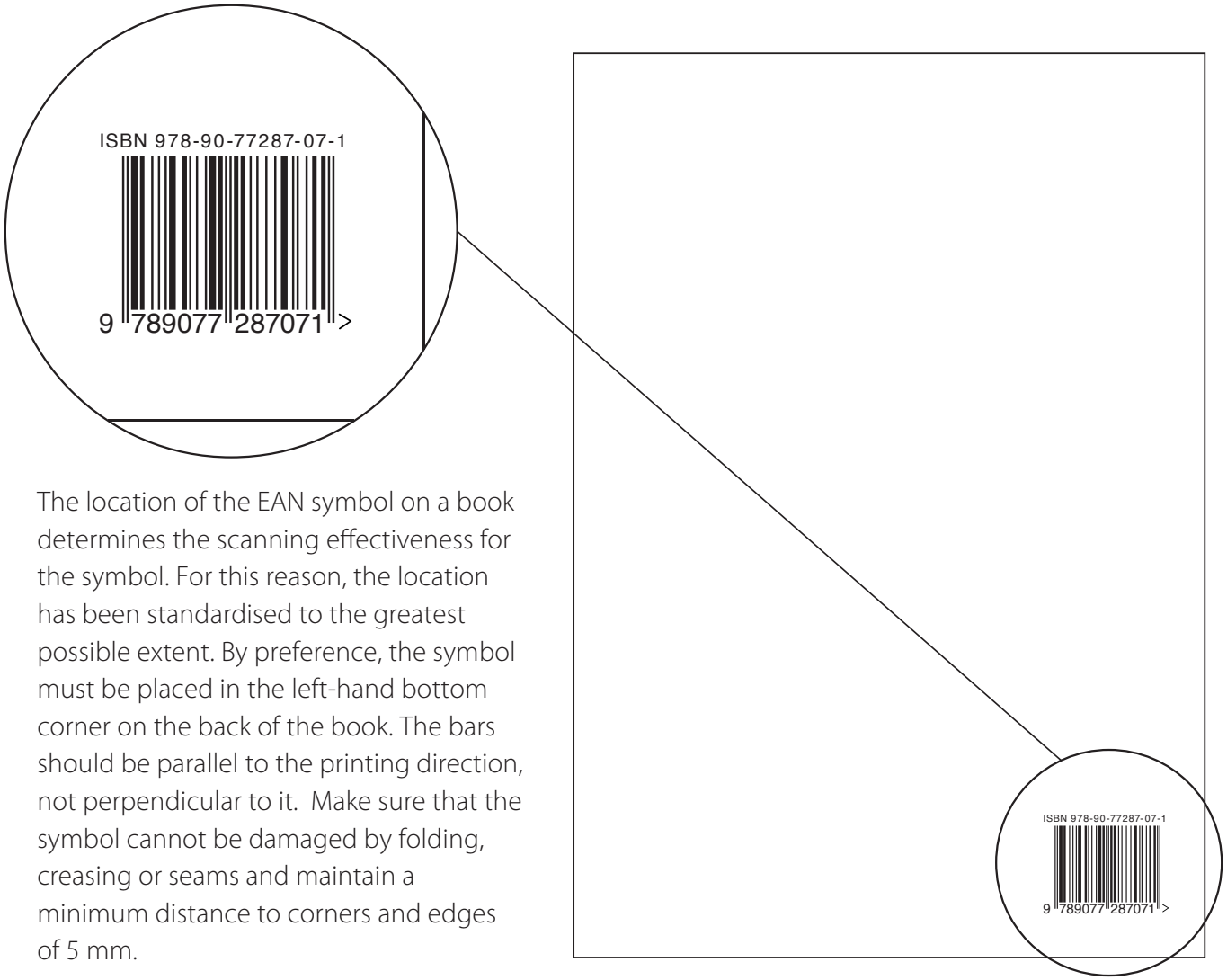


In doubt about a colour combination? Don't hesitate to contact GS1.

The background

The background on which the barcode is printed also has an impact on legibility. For instance, gold and silver surfaces and certain mirroring film types are not suitable backgrounds because they reflect diffused light that barely reaches the eye of the scanner.

Barcode location on the book



The location of the EAN symbol on a book determines the scanning effectiveness for the symbol. For this reason, the location has been standardised to the greatest possible extent. By preference, the symbol must be placed in the left-hand bottom corner on the back of the book. The bars should be parallel to the printing direction, not perpendicular to it. Make sure that the symbol cannot be damaged by folding, creasing or seams and maintain a minimum distance to corners and edges of 5 mm.

Digital storage of barcode files

Always save barcodes as an EPS vector file. This will be prevent a good barcode from being distorted or faded by inadvertent editing in the design stage or during the production process.

Printing

When printing a barcode, remember to take into account the enlargement factor and the press gain .

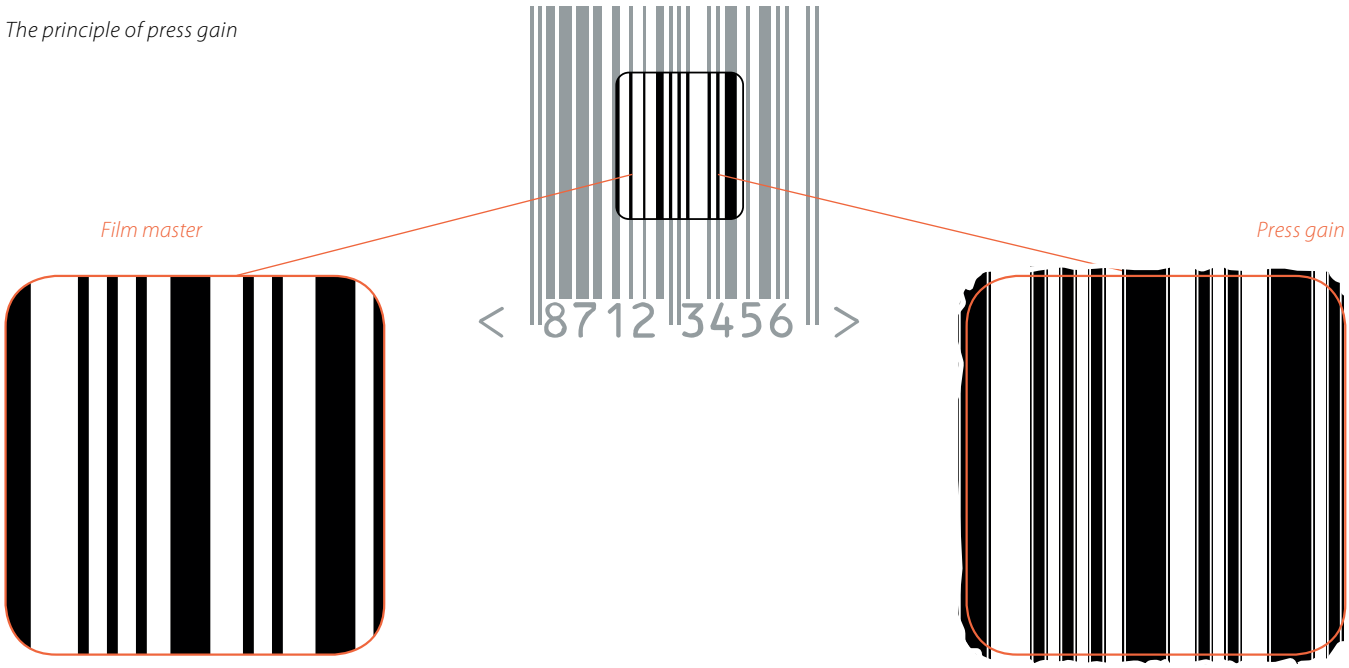
Which enlargement factor?

By preference, the enlargement factor is determined in consultation with the printing house. The reason is that it is impossible to guarantee that the quality will remain the same for smaller enlargement factors (e.g. 80%) with some printing methods. In other words, the properties of the printing process must be known.

Press gain and bar width reduction

A film master of the barcode is required for printing. A film master contains a very precise image of the symbol on a transparent material. It is included in the film with the design. Today, film masters are often supplied in digital format (e.g. an EPS file). When preparing the film master or digital file, you must take account of the accuracy of the printing method. If a film master is created without any modification in accordance with the barcode specification, the bars in the printed symbol are likely to be wider than on the original film master. This may mean that it is difficult to scan the printed symbol. Ink viscosity and paper quality are among the causes of this phenomenon, which is called press gain. Press gain can be compensated by rendering the bars a little smaller on the film master. This is called bar width reduction. To determine the correct bar width reduction, it is important for the average press gain of the printing technique used to be known. This is part of the printer's expertise.

The principle of press gain



Packaging and sealing

What if the seam of the book sealing material crosses the barcode? There is then a risk that the barcode cannot be scanned properly. Air underneath the seal can also make the barcode illegible. Keep this in mind when packaging your books, or print/stick a barcode on the packaging or seal.

Inspecting scannability

There is special verification equipment to test barcodes. It assesses the barcode quality using the CEN/ANSI method. CEN/ANSI equipment sees with the 'eye' of the scanner as it were, assessing the scannability of the symbol. The score ranges from F (bad) to A (good). This makes the CEN/ANSI method an objective 'language' for barcode quality.

More information?

If you have any questions about the production and quality of barcodes, please contact the EAN Symbol Quality Service of GS1 Netherlands: telephone number 020-511 38 88 (Customer Support).

Test service

You can also ask the EAN Symbol Quality Service of GS1 Netherlands to test the scannability of your barcodes.

Quality Manual

You can find the Quality Manual at www.gs1.nl. It describes in detail how you can determine the quality (scannability) of a barcode before, during and after the printing process. The manual is intended primarily for packaging manufacturers, designers and printing houses.

About GS1 Netherlands

GS1 Netherlands (previously EAN Netherlands) plays an active and leading part in encouraging the implementation of global open standards for automatic identification and electronic communication for companies, consumers and the government. GS1 Netherlands is a neutral non-profit organisation with over 6,200 participating companies in 30 branches. GS1 Netherlands is a member of GS1.

Tourniairestraat 3
1065 KK Amsterdam
P.O. Box 90445
1006 BK Amsterdam
Telephone – 020 511 38 20

Customer Service - 020 511 38 88
Fax - 020 511 38 30
www.gs1.nl