Barcode Verification Guide: 1D Codes

Quick Reference

What is Verification or Grading?

Verification is the measurement of the quality of a linear (1D) barcode according to an agreed methodology. The purpose of verification is to ensure that barcodes can be subsequently read with the intended reading equipment. Verification is sometimes referred to as grading.

Why Verify?

1D barcode verification is used to ensure that automatic identification equipment such as barcode scanners and imagers will be able to read barcodes quickly and efficiently throughout the life cycle of a product or its packaging. Ideally this is achieved by monitoring the quality of the barcode close to the point of marking so as to detect problems as soon as possible.

Quality Standards for 1D Codes

ISO 15416 (formally ANSI X3.182-1990) is a standard that applies to 1D barcodes such as Code 128, ITF, and UPC. ISO 15416 is the standard referenced in the GS1 General Specification. In some circumstances, such as where a barcode is used within a manufacturing process, "custom grading" which departs from the ISO standard may be appropriate.

ISO/ANSI Grade Scales

A = 4.0 – 3.5
B = <3.5 - >= 2.5
C = <2.5 - >= 1.5
D = <1.5 - >= 0.5
F = <0.5 - 0.00

GRADE A SYMBOL EXAMPLE

Note: ISO reports numeric grades but many specifications use letters.

Design Inputs for Barcode Verification

Surface Shape: Flat or Curved
Surface Material: Matte (like paper, cardboard or anodized metal) or Glossy/Shiny (like coated paper or polished metal)
Code Size: > 2.0 inches or < 2.0 inches

The chart below will guide your choice of Microscan Verification Kit for online or offline 1D barcode grading. These kits include a smart camera, software, lighting, and mounting components. Contact Microscan for calibration and cabling options.

1D BARCODE VERIFICATION: ISO 15416 OR CUSTOM

Surface Shape	**FLAT**		**CURVED**
Small Bar Size	**> 0.005" (0.127 mm)**		**< 0.005" (0.127 mm)**
Marking Method	**INK (PRINTED)**	**LASER**	**OTHER**
Surface Type	**MATTE**	**GLOSSY/SHINY**	**MACHINED OR CAST METAL**
Overall Code Size (Length)	**> 2.0" (50.8 mm)**	**< 2.0" (50.8 mm)**	
KIT:	**LARGE LINEAR Verification Kit**	**1D/2D LABEL Verification Kit**	Contact Microscan for a solution specific to your application.

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Product Information: info@microscan.com
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Barcode Verification Guide: 2D Codes

Quick Reference

What is Verification or Grading?

Verification is the measurement of the quality of a 2D symbol, such as Data Matrix, according to an agreed methodology. The purpose of verification is to ensure that barcodes and symbols can be subsequently read with the intended reading equipment. Verification is sometimes referred to as grading.

Why Verify?

2D symbol verification is used to ensure that automatic identification equipment such as barcode imagers will be able to read symbols quickly and efficiently throughout the life cycle of a product or its packaging. Ideally this is achieved by monitoring the quality of the symbol close to the point of marking so as to detect problems as soon as possible.

Quality Standards for 2D Symbols

There are two principal standards for 2D Data Matrix symbols. ISO 15415 is most applicable to high contrast printed symbols, while the AIM DPM 2006 Guidelines are designed for direct part marked (DPM) symbols. In some circumstances, such as where a barcode is used within a manufacturing process, "custom grading" which departs from the ISO standard may be appropriate.

ISO/ANSI Grade Scales

A = 4.0 – 3.5
B = <3.5 - >= 2.5
C = <2.5 - >= 1.5
D = <1.5 - >= 0.5
F = <0.5 - 0.00

GRADE A SYMBOL EXAMPLE

Note: ISO reports numeric grades but many specifications use letters.

Design Inputs for 2D Symbol Verification

Surface Shape: Flat or Curved
Surface Material: Matte (like paper, cardboard or anodized metal) or Glossy/Shiny (like coated paper or polished metal)
Cell Size: > 0.005 inches or < 0.005 inches
Marking Method: Ink, Laser Etch or Dot Peen

The chart below will guide your choice of Microscan Verification Kit for online or offline 2D symbol grading. These kits include a smart camera, software, lighting, and mounting components. Contact Microscan for calibration and cabling options.

2D SYMBOL VERIFICATION: ISO 15415, AIM DPM / ISO 29158

Surface Shape	**FLAT**		**CURVED**
Cell Size	**> 0.005" (0.127 mm)**		**< 0.005" (0.127 mm)**
Overall Symbol Size	**< 1.0" (25.4 mm)**		**> 1.0" (25.4 mm)**
Surface Type	**MATTE**	**GLOSSY/SHINY**	**MACHINED OR CAST METAL**
Marking Method	**INK (PRINTED)**	**LASER ETCH**	**DOT PEEN**
KIT:	**1D/2D LABEL Verification Kit**	**DOT PEEN Verification Kit**	Contact Microscan for a solution specific to your application.

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