

Guide to Digimarc Watermarking Plug-in

for Adobe Illustrator

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Introduction

Digimarc Watermarking Plug-in enables production designers and premedia professionals to create connected packaging by applying a watermark to packaging artwork with Digimarc digital watermark.

The Watermarking Plug-in lets you easily add binary watermarks to special substrates such as white ink. You can also use the Watermarking Plug-in to add multi-channel watermarks to CMYK artwork.

When applying watermarks, the Watermarking Plug-in uses a different set of technologies than our other tools do, like the Digimarc for Packaging Adobe Illustrator Extension and the Digimarc Barcode Plug-in for Photoshop. Don't try to use the Watermarking Plug-in to apply watermarks to artwork that has already been watermarked using another plug-in. To apply the watermark to additional elements in an artwork file, use the same tool used originally.

Essential Concepts

Digimarc Watermarking Plug-in enables you to apply a Digimarc digital watermark to artwork elements in an Adobe Illustrator file. Vector and raster artwork files are supported for watermarking without embedding the original artwork elements. The Watermarking Plug-in doesn't support linked or embedded objects.

The basic workflow is:

- 1 Create a digital twin using the [Digimarc Illuminate Platform](#).
- 2 Add a digital watermark to the twin in Illuminate.
- 3 Reference the digital twin using the Digimarc Watermarking Plug-in to apply the watermark to the package artwork. See [Apply a Watermark](#).

When you watermark an artwork element, the selected digital watermark is applied as an *effect*, enabling you to experiment with different parameters to achieve optimal readability with minimal watermark visibility. For more information on effects, see the [Adobe Illustrator documentation](#).

Before you print the package, use Digimarc Verify to confirm the watermark has been properly applied to the packaging artwork. See the *Guide to Digimarc Verify for macOS* for instructions.

Best Practice

As a general rule, we recommend you supply press-ready files to Digimarc Verify. Verify checks for a watermark in all separations and how they interact with one another. Not including colors or not setting proper transparencies could impact the results. Accurate color correction, trapping, overprints, and so on produce the most accurate coverage maps and Verify data (watermarked channels, application ratings, fidelity points, and so on).

System Requirements

The Watermarking Plug-in requires:

- Multicore Intel processor with 64-bit support or ARM-based Apple silicon processor
- macOS 12 (Monterey), macOS 13 (Ventura), or macOS 14 (Sonoma)
- Adobe Illustrator 2022, 2023, or 2024
- 16 GB RAM
- 100 MB hard disk space available for installation
- Internet connection and a Digimarc Illuminate account with at least one subscription that supports digital watermarks

Document Conventions

Following are the standards and conventions used in this documentation. See the Glossary for terms related to digital watermarking.

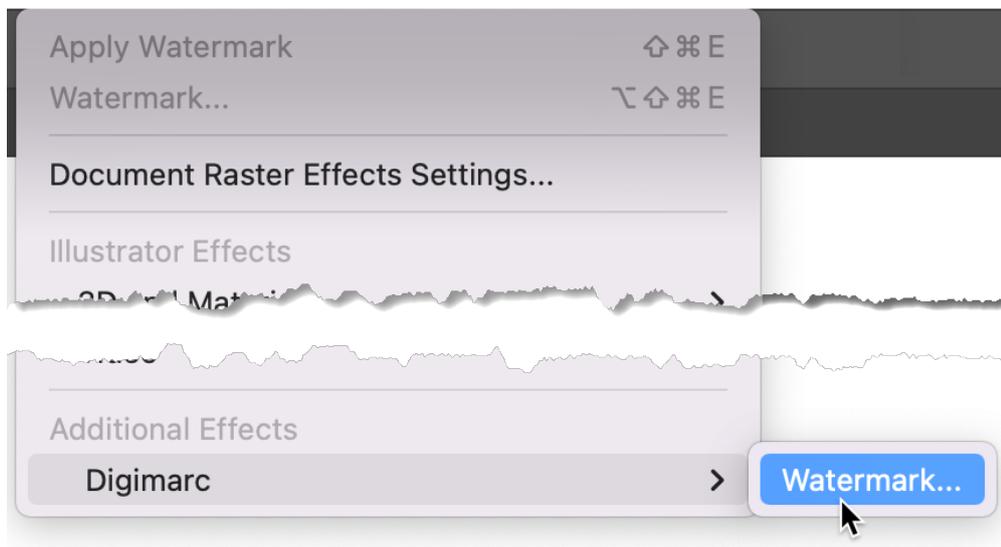
Convention	Description
Numeric format	The fractional part of a numeric value is represented by the period character, such as pi ≈ 3.14
Elements in the user interface	Formatting: Text in bold
Titles of panels and dialogs	Formatting: Text in italics
User input (text that a user types)	Formatting: Text in a monospace font
File and directory paths	Formatting: Text in a monospace font
Variables or variable data	Formatting: Text in italics, often within angle brackets (< >)

Install the Extension

Follow the Adobe Illustrator instructions for installing extensions.

- 1 Close Adobe Illustrator before installing the extension.
- 2 Double-click the downloaded .pkg file.
- 3 To install the Digimarc Watermarking Plug-in, you must accept the terms of the software license agreement. Click **Agree** to complete the installation.

To use the extension, navigate to **Effect > Digimarc > Watermark**. See [Apply a Watermark](#).



Product Help

To see this guide within Illustrator, click the Help icon (?) on any Watermarking Plug-in panel.

Digimarc Support

For help using the Watermarking Plug-in, contact support.

- [Digimarc Support Website](#)
- [Send email to Digimarc Support](#)

Sign In to Digimarc Illuminate

The first time you launch the Digimarc Watermarking Plug-in, you're prompted to sign in to the plug-in and to Digimarc Illuminate.

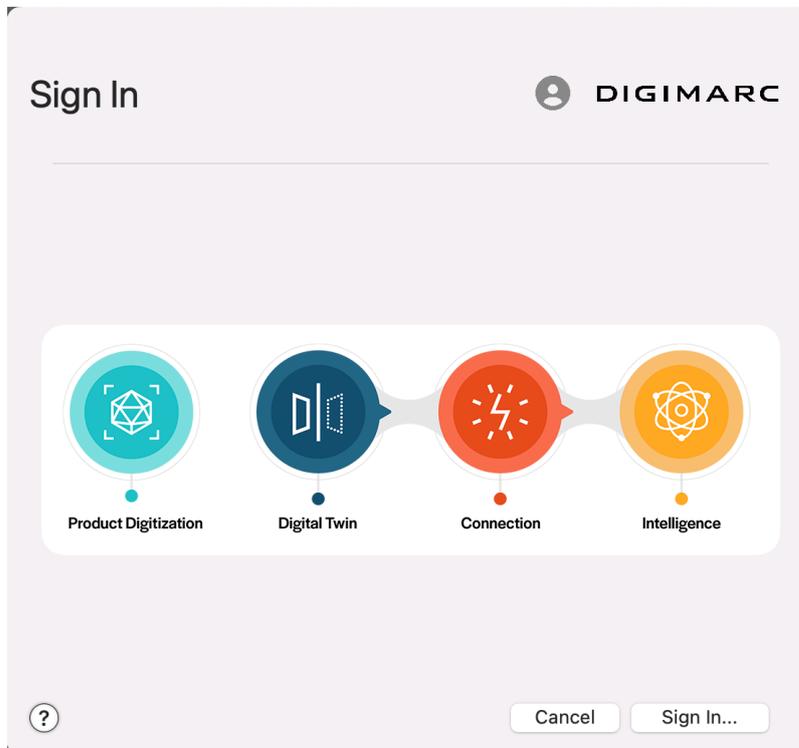
After you sign in, your credentials are stored. If you close Adobe Illustrator without [signing out](#), the next time you open Illustrator and choose **Effect > Digimarc > Watermark**, the extension automatically signs into the Watermarking Plug-in and Illuminate using your stored credentials. To see the current user, right-click the green user icon () on any Watermarking Plug-in dialog or panel.

Note

Your Illuminate account must have at least one subscription that supports digital watermarks, such as Illuminate, Validate Packaging, or Recycle.

To sign in:

- 1 When you choose **Effect > Digimarc > Watermark**, the Watermarking Plug-in *Sign In* dialog opens.



- 2 Click **Sign In**. The Digimarc Illuminate Platform sign-in dialog opens.

- 3 Enter the **Email address** and **Password** associated with your Illuminate account.

DIGIMARC

Digimarc Illuminate Platform

See everything, achieve anything

Email address

Password

Forgot password?

Continue

Cancel

- 4 Click **Continue**.
- 5 The first time you sign in to Illuminate, you're asked to authorize the application to access your Illuminate account. To continue, click **Accept**.

If you have problems signing in, contact your Illuminate account administrator for help.

Next Step

After you've signed in, you can [Apply a Watermark](#).

Sign Out of Illuminate

After completing your work, you can sign out of Illuminate or stay signed in. If you sign out, your stored credentials are removed and you must sign in again to continue working with digital watermarks.

To sign out:

- 1 Right-click the green user icon () on any Watermarking Plug-in dialog or panel.
- 2 Click **Sign Out**. Your stored credentials are removed.

Apply a Watermark

The Digimarc Watermarking Plug-in enables you to apply a Digimarc digital watermark to one or more artwork elements.

Before You Begin

[Sign In to Digimarc Illuminate](#) with an account that has at least one subscription that supports digital watermarks, such as Illuminate, Validate Packaging, or Recycle.

If you're watermarking rasterized elements, be sure they meet the following minimum requirements:

- 300–900 DPI
- At least one side of an artwork element must meet or exceed **128px** or **1.77in @300dpi**
- use all four process color channels

Note

The Watermarking Plug-in removes the watermark from raster elements that are resized smaller than the minimum dimensions.

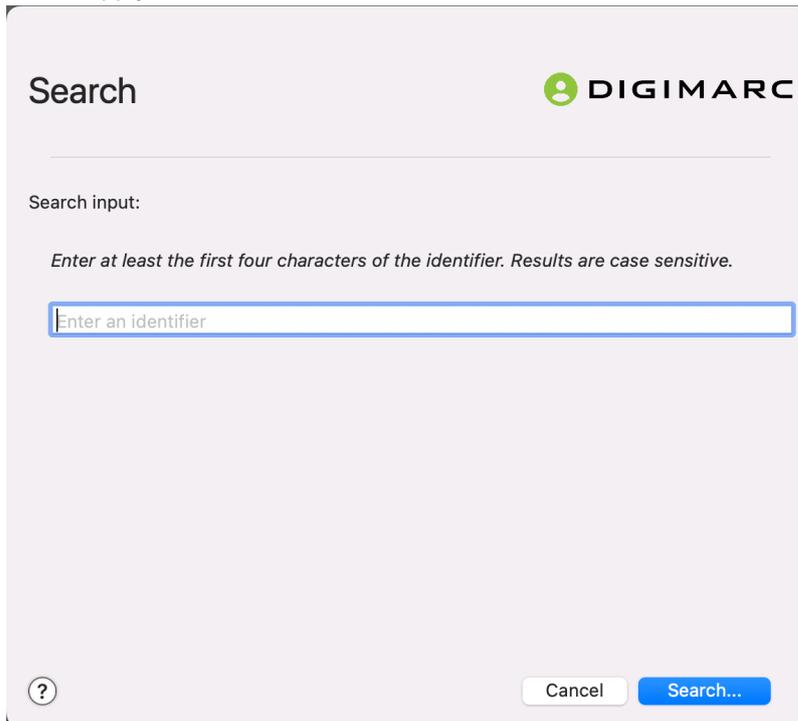
To apply a watermark:

- 1 Open the Adobe Illustrator file (.ai) that contains the unmarked artwork to be watermarked.
- 2 Select the artwork element(s) to be watermarked. Each element is watermarked with the same digital twin.

Note

You can apply the watermark to multiple artwork elements at a time, but they must be of the same type. If you select a mix of raster and vector elements, the Watermarking Plug-in displays an error (see [Troubleshooting](#)). Select the vector and raster elements separately to perform the steps below.

- 3 Navigate to **Effect > Digimarc > Watermark**. The *Search* dialog opens, enabling you specify the digital twin to apply.

The image shows a 'Search' dialog box with the Digimarc logo in the top right. Below the title is a 'Search input:' label and a text input field containing the placeholder text 'Enter an identifier'. A note below the input field reads 'Enter at least the first four characters of the identifier. Results are case sensitive.' At the bottom left is a help icon (question mark in a circle), and at the bottom right are 'Cancel' and 'Search...' buttons.

- 4 Type the GTIN or other identifier into the **Search input** field.
 - Searches don't need to match entirely, but the search text must be an exact substring beginning with the first four characters of the identifier.

Tip

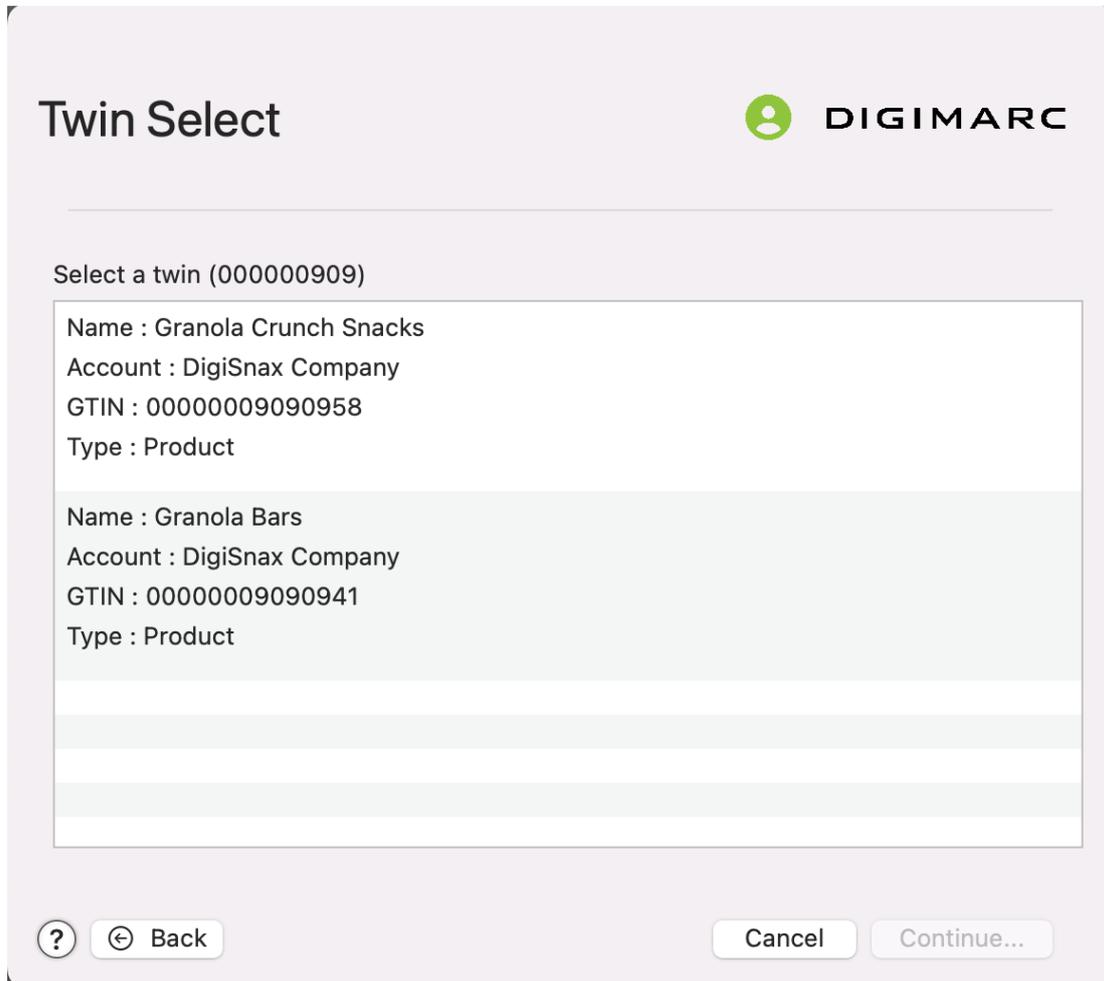
If you're using a GTIN shorter than 14 digits, Illuminate pads the identifier with leading zeros, but you don't need to enter them in the search field. For example, if your UPC-E or EAN-8 is 99991234 and the digital twin's GTIN is 0000099991234, searching for 9999 returns the correct twin. Searching for 1234 does not.

- The search is case sensitive. Searching for ABCD produces different results than searching for abcd.
 - You can search for a product's primary identifier, variant ID, or promotional asset ID.
- 5 Click **Search**.
 - If one matching twin is found, the [Details](#) panel opens.
 - If more than one matching twin is found, the [Twin Select](#) panel opens. Up to 25 twins are displayed. To narrow the results, click ⏪ **Back** and refine the search. Results could span any of the accounts to which you have access.

Twin Select

Digital twins are listed in order by their creation date, with the most recently created twin at the top. The digital twin you select will be applied to all watermarked elements in the file.

- 1 Select a digital twin from the list.



If you don't see the desired twin, or if any of the details are incorrect:

- 1.1 Update the digital watermark information on the Illuminate Platform.
For instructions on creating and updating twins, refer to the user's guide for your Platform subscription.
- 1.2 Return to the plug-in and click  **Back** to search again.

- 2 Click **Continue**. The [Details](#) panel opens.

Details

The Details panel displays the details for the selected digital twin. You choose the watermark resolution before setting the remaining watermarking options.

To set the resolution:

- 1 Click the option for the desired **Watermark resolution**. The watermark resolution is measured in watermarking elements (waxels) per inch (WPI) and can be set to 150 WPI (the default) or 75 WPI. The chosen resolution is preselected the next time you watermark an element in this file.

The image shows a 'Details' dialog box from the Digimarc software. The title bar includes the word 'Details' and the Digimarc logo. The main area contains a list of fields: 'Name' with the value 'Granola Bars', 'Account' with 'DigiSnax Company', 'GTIN' with '00000009090941', and 'Type' with 'Product'. Below these is the 'Watermark resolution' section, which has two radio button options: '75' and '150'. The '150' option is selected. At the bottom left, there is a question mark icon and a 'Back' button. At the bottom right, there are 'Cancel' and 'Confirm...' buttons.

- 2 Review the details and click **Confirm**.

Note

After you confirm, the resolution can't be changed, even if you remove the effect and reapply it.

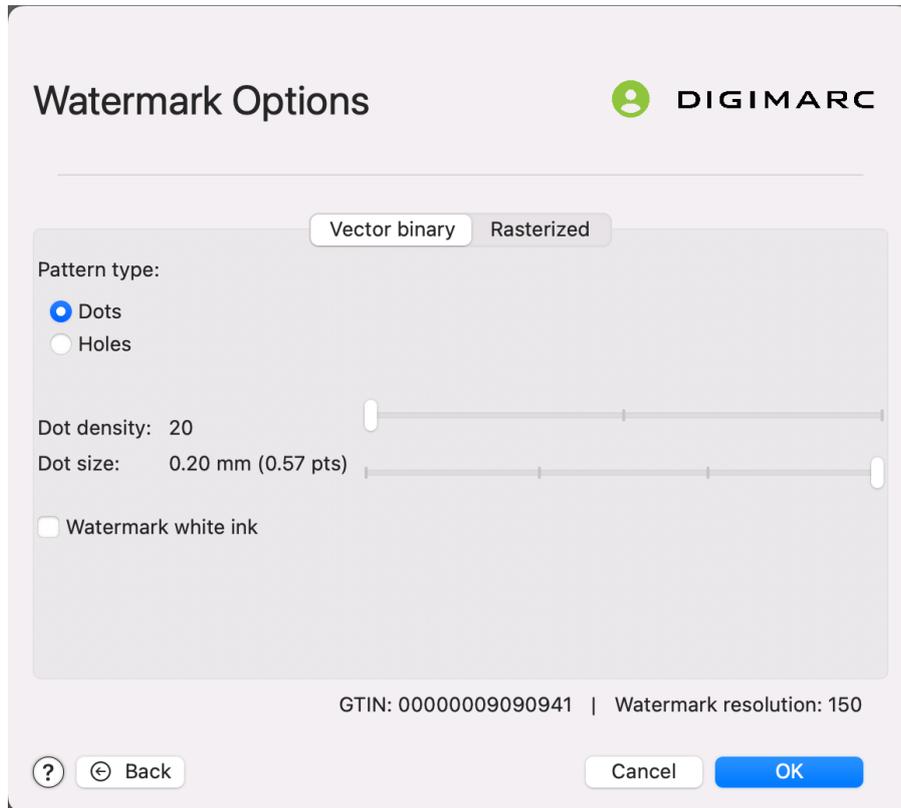
The *Watermark Options* panel opens. See [Apply Watermark Options](#).

Apply Watermark Options

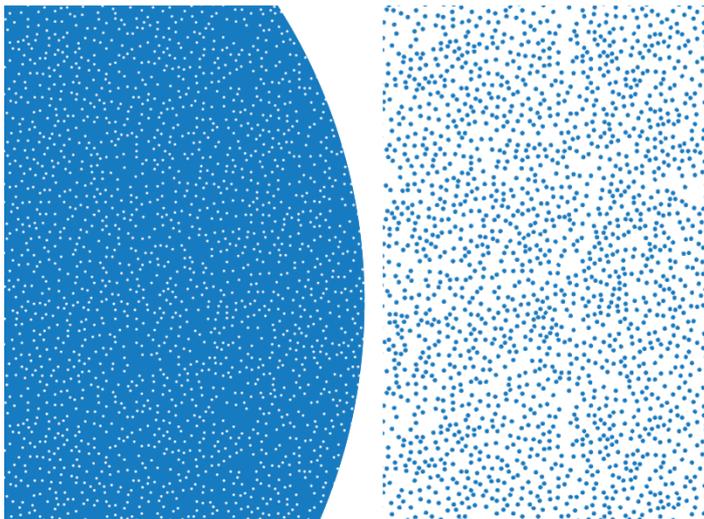
The *Watermark Options* dialog is where you set the pattern type or watermark strength and the corresponding options. The options vary, depending on whether the artwork element is vector or raster. Artwork for a package can contain both vector and raster elements, but the watermarks are applied differently.

Vector Binary Options

These options are specific to the binary pattern watermark and a vector element. If you want a multi-channel watermark, use the [Rasterized Options](#) with a rasterized element.



- 1 Select the desired **Pattern type**. For more information about the pattern types, visit our [Center of Digimarc Education](#).



The left image was created using holes. The right image was created using dots.

Dots

Applies the watermark as dots of ink created by removing background from the artwork element(s).

Holes

Applies the watermark by removing dots (making holes) in the artwork element(s).

- 2 Select the desired **Dot density** or **Hole density**. Density determines how close the dots or holes are together. Choices vary, depending on the WPI setting.

Waxels per inch	Valid values	Default
75 WPI	35, 40, 45	40
150 WPI	20, 25, 30	20

- 3 Select the desired **Dot size** or **Hole size**. The dot or hole size determines the size of the individual dots or holes. Choices vary, depending on the selected pattern type.

Pattern type	Valid values	Default
Dots	0.05mm–0.20mm	0.20mm
Holes	0.05mm–0.30mm	0.20mm

Note

For watermarks using 150 WPI, when the hole size is 0.25mm or greater, the maximum hole density is 20.

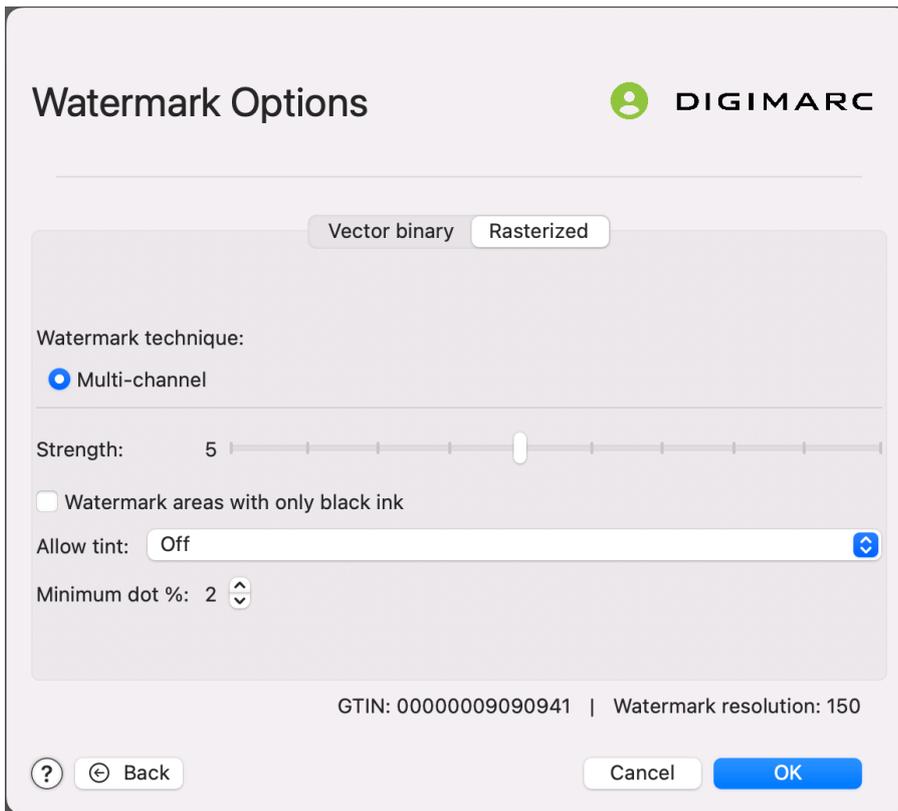
- 4 If you're watermarking white ink, enable the **Watermark white ink** option. For information on white ink watermarking, see the [Center of Digimarc Education](#).
- 5 Click **OK**. The Watermarking Plug-in applies the watermark to the artwork element(s).

Rasterized Options

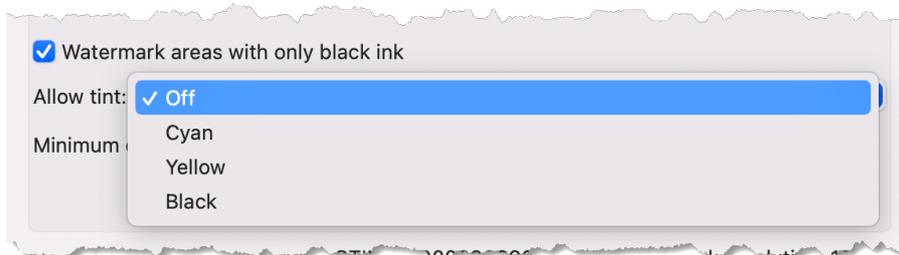
These options are specific to the multi-channel watermark and a rasterized element. If you want a binary pattern watermark, use the [Vector Binary Options](#) with a vector element.

Note

Artwork elements must be rasterized using the **Object > Rasterize** menu option. See [Troubleshooting](#).



- 1 Multi-channel is the only **Watermark technique** currently supported.
- 2 Select the desired **Strength** in the range 1–10. The strength determines how visible and easily detectable the watermark is. The higher the number, the more visible it is.
- 3 Indicate whether you want to **Watermark areas with only black ink**. When selected, areas with only black pixels above minimum dot, such as drop shadows, will be watermarked.
- 4 For the **Allow tint** parameter, choose a color to add as a tint when no other viable ink is available above minimum dot. Options are:
 - **Off**: Does not add tint to the element for watermarking
 - **Cyan**: Adds a cyan tint to the element in which to place the watermark
 - **Yellow**: Adds a yellow tint to the element in which to place the watermark
 - **Black**: If **Watermark areas with only black ink** is enabled, adds a black tint to elements in which to place the watermark

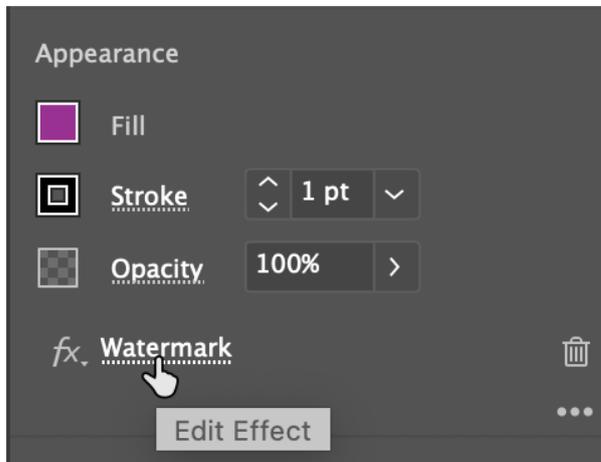


- 5 Select the **Minimum dot %**. The default value is 2.
- 6 Click **OK**. The Watermarking Plug-in applies the watermark to the artwork element(s).

Edit Watermark Options

To edit the options for a watermarked artwork element(s):

- 1 Select the desired artwork element(s).
- 2 Click the effect in the *Appearance* panel to open the relevant *Watermark Options* dialog.



- 3 Change the desired watermarking options as described in [Raster Options](#) or [Vector Options](#).

Next Steps

Use Digimarc Verify to confirm the watermark has been properly applied to the packaging artwork. See the *Guide to Digimarc Verify for macOS* for instructions.

Known Limitations

When working with the Digimarc Watermarking Plug-in, keep these limitations in mind.

Plug-in Compatibility

The technologies used in the Digimarc for Packaging Adobe Illustrator Extension aren't compatible with those used in the Watermarking Plug-in. Don't try to apply watermarks to artwork elements that have already been watermarked using the other plug-in.

Gradients

For rasterized elements, digital watermarks might require a higher dot density setting to be reliably detected in gradients.

Gradients within vector elements are unsupported.

Workflows to Avoid After Watermarking

To avoid placing the artwork file in a state that exposes known issues, it's critical that designers complete the artwork design, layout, and layer structure before using the Watermarking Plug-in. Avoid the following post-watermarking workflows:

- Color correction
- Unembedding watermarked links
- Embedding outside-watermarked links from other applications, such as Photoshop or the Digimarc for Packaging Adobe Illustrator Extension

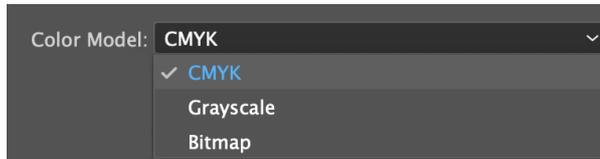
Troubleshooting

If you see errors or are having trouble using the Watermarking Plug-in, consult this section for suggested remedies. If you need further assistance, see [Product Help](#).

Unsupported Selection

You will see this error if you:

- select both raster and vector artwork elements to watermark in one operation
 - Select only raster elements or vector elements before applying the watermark. Artwork for a package can contain both vector and raster elements, but the watermarks are applied differently. See [Apply Watermark Options](#).
- try to watermark a raster element that's less than 300 DPI or greater than 900 DPI
 - Increase or decrease the element's resolution before applying the watermark.
- try to watermark a raster element that's smaller than **128px** or **1.77in @300dpi**
 - Select artwork elements with at least one side that's **128px @72dpi = 533px** or **1.77in** or **45mm @300dpi**. Raster elements smaller than that aren't supported.
- try to watermark a raster element that doesn't contain (CMYK) process colors
 - To be watermarked, raster artwork elements must contain all four process color channels.



- try to watermark a group
 - Double-click an element within the group to enter isolation mode. You can then apply the watermark to a single element in the group or multi-select elements to apply the watermark to them at one time.
 - Alternatively, you can ungroup the elements before applying the watermark.

Watermark options cannot be applied to selected art type

You will see this error if you use the **Effect > Apply Watermark** option

- for a raster element after applying a watermark to a vector element
- for a vector element after applying a watermark to a raster element

Instead, choose **Effect > Digimarc > Watermark** and choose the [watermark options](#) for the selected artwork type.

Watermark Conflict

You will see this error if you try to watermark a document with the Watermarking Plug-in that has already been watermarked using another Digimarc tool, such as the Digimarc for Packaging Adobe Illustrator Extension. See [Known Limitations](#). To apply the watermark to additional artwork elements in the document, use the same tool that was initially used.

Watermark is missing after resizing an element

The Watermarking Plug-in removes the watermark from raster elements that are resized smaller than the minimum dimensions (128x128 pixels). Avoid resizing raster elements after applying the watermark, and ensure the minimum requirements are met for each. See [Apply a Watermark](#).

Raster options aren't available for a rasterized element

To apply the raster watermarking options, be sure artwork elements were rasterized using the **Object > Rasterize** menu option. In Illustrator, the **Effect > Rasterize** option is a non-destructive simulation that doesn't actually rasterize the element; it's still a vector element for which the Watermarking Plug-in displays only the vector binary watermarking options.

Glossary

artwork

The elements of design and text that makeup packaging, labels, or other visual media, in which a Digimarc digital watermark is or will be included.

barcode

The generic term for an optically machine-readable pattern that encodes data in a way that is generally not recognizable to human observation. Barcodes include one-dimensional symbols that encode data into a machine-readable pattern of adjacent, varying width, parallel, dark rectangular bars and pale spaces, and 2-Dimensional Symbols that encode data in the X and Y-axes (sometimes referred to as a 2D barcode), for example, in the case of a QR Code, Data Matrix, and Digimarc digital watermarks.

binary pattern

A form of Digimarc Barcode consisting of a sparse pattern of dots.

DeltaE

A measure of how noticeable the difference is between the overlay and the original spot color, where a DeltaE of 2.3 is barely noticeable and higher DeltaE values are more noticeable. DeltaE is shorthand for the standard CIE ΔE^*_{ab} , which is the Euclidean distance between two colors in the perceptually uniform device-independent color space, CIELAB.

Digimarc Barcode

The Digimarc digital watermark.

Digimarc digital watermark

A novel data carrier that encodes data in media in ways that are generally imperceptible to people, permitting the carrier to be repeated many times over the surface of the Enhanced media. It delivers unprecedented ease of use, reliability, and efficiency in identifying the media due to massive mathematical and graphical redundancy.

digital twin

A digital counterpart of a physical product comprising events and attributes from and about the product. The behavior of the digital twin is customized to deliver an experience that benefits customers and brands across a wide variety of digital applications.

digital watermark

In this guide, digital watermark refers specifically to the Digimarc digital watermark.

dot density

The density of dots per tile in a binary pattern expressed as a percentage of a maximum number of waxels that contain a dot. The maximum number of waxels that can contain a dot marking in a Tile of a binary pattern is 50%. A dot density of 20 means that 10% ($20\% \times 50\%$) of the waxels in a tile contain a dot marking.

dot size

The width of a dot in pixels at the enhancement resolution in binary enhancement. The enhancement resolution is expressed in pixels at a resolution in DPI. If the WPI is 75, and the enhancement resolution is 300 DPI, then there are 4 by 4 pixels per waxel. Dot size 2, for example, is a dot comprised of two by two pixels.

minimum dot

The minimum dot percent that can be held at press. Often abbreviated as "min dot." Min dot is affected by factors such as the printing process, different plating technologies, and the substrates being printed on. For example, a flexographic printer might have a min dot of 2, meaning a 2% dot is the smallest dot they can successfully print at press.

negative binary pattern

A sparse pattern of Digimarc Barcode comprised of light dots or holes in a darker background. A Negative Binary Pattern is not an inversion of the dark dots in a Positive Binary Pattern of the same Digimarc digital watermark.

positive binary pattern

A sparse pattern of Digimarc Barcode consisting of dark dots on a lighter background. This technique places dark dots at the darkest waxels within a tile.

process color

A color comprised of percentages of cyan, magenta, yellow, and black (CMYK) typically printed with halftone printing plates. A type of color model, similar to additive color, which involves "process" colors that are a combination of cyan, magenta, yellow, and black, or CMYK inks. Each process color is comprised of percentages of cyan, magenta, yellow, and black inks. Extended gamut includes additional colors, such as orange, green, and violet. From Pantone: achieving color in printing is referred to as CMYK, four-color process, 4/c process or even just process. To reproduce a color image, a file is separated into four different colors: Cyan (C), Magenta (M), Yellow (Y), and Black (K).

spot color

A color generated by an ink (pure or mixed) that is printed using a single run. This is different from a process color, which is produced by overlaying a series of dots on multiple impressions using different colors.

strength

The suggested technique assumes a default strength of 5. Use the slider to view suggestions for other enhancement strengths. Some colors can be enhanced better at certain strengths.

substrate

The base material to be printed on.

tile

The fundamental unit of Digimarc watermarks, which is repeated in whole or in part across artwork or a label.

unmarked

Artwork that has not yet been enhanced with a digital watermark.

verification

The process of checking that the data carried in Digimarc digital watermark is both accurate and consistent.

watermarking element

A spatial cell in a tile to which a component of a message and synchronization signal can be mapped. Abbreviated as "waxel."

waxel

A spatial cell in a tile to which a component of a message and synchronization signal may be mapped. Waxel is short for "watermarking element."

white ink watermarking

Watermarking white ink is considered an advanced technique that requires specialized training from our Center of Digimarc Education.

WPI

The resolution of a Digimarc digital watermark represented as waxels per inch.