DOMINO

THE CRAFT BREWER'S

GUIDE TO CODING

Everything you always wanted to know about coding your beer (but were afraid to ask)

Your Guide to Coding and Marking

Coding onto your cans and bottles may be a legal requirement these days but it can also have a positive impact on your overall business.

We have created this guide not only to help you select the most suitable coding solution for your business, but also to help you understand more about the world of coding and the many opportunities it can bring.

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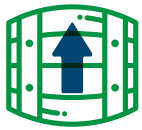
Fast Facts

Before we move on, let's have quick look through some facts and stats about the industry[1] :

The global craft beer market is expected **to reach $502.9bn by 2025.** So good news – you're in the right business!

The major craft beer producing countries are **Australia, Germany and the USA, accounting for over 65% of production** in terms of value as well as volume.



The global number of brewers is growing significantly due to the rising demand for pale ale, IPA and amber ale as they are widely preferred by consumers.

While craft brewers traditionally prefer to go for a bottling operation, **customers have been gravitating more towards canned beers**, with more independent brewers making a break into the industry thanks to significant developments in canning and printing.

[1] http://www.grandviewresearch.com/press-release/global-craft-beer-market

Code of Conduct

The perfect code can help set your beer apart from others when it is on the shelf and there are a number of things you should consider when creating your unique code to help embody the ethos of your brand.

Legal

As you will know, there is a legal requirement to ensure that all the products you sell are coded. Any beverage product that reaches a major retailer must have a code that is clear, correct and easily readable – the quality of your code can have an impact on compliance with legislation.

Traceability

A unique identifier in the form of a human and machine-readable code will help identify and trace specific products, making it as simple as possible to withdraw certain items from sale, if deemed necessary. In the US, for example, this traceability code has been mandatory since 2002.

Transparency

We live in the digital age of information where consumers expect to know as much as possible about your product. You can empower your customers by including a code they can scan or enter on the relevant campaign site, affording them the opportunity to access targeted and accurate information about the products they buy. This will reassure them that the beer is genuine and made according to a brewer's high standards.

Anti-Counterfeiting

Efficient coding and marking of your product and packaging at every stage in the supply chain plays a key role in the battle against counterfeiters.

Directions of Use/Best Practice

A code can advise your customers on what you think is the ideal way to consume your beer. This will highlight your beers' unique personality and accentuate its reputation as a high quality beverage. Are they better aged or fresh? Do they have to be consumed at a certain temperature? A code can help communicate this information.

Marketing and Promotions

A unique item of alphanumeric data (such as a QR or 2D data matrix code) can be a particularly effective marketing tool and allows customers to engage with innovative campaigns, whether in the form of traditional promotional codes for offers, raffles or events, or scannable links to microsites, videos or games.

Export

Codes contain the traceability and supply chain information that allow your beer cans and bottles to be exported. If you are thinking of exporting your beer, the right code can be the key to forging your way into new markets. **Click here** to visit our 'Codes of the World' section to have a look at how other countries code their beers.

Information for Sellers

A code provides important information to wholesalers and retailers, allowing them to check the freshness of the product they are selling. It's also key for them to rotate their product, using the first-in first-out or any other system they may have. Make sure they know how to read your codes, after all, supporting the people that sell your beer is always a good idea.

Making a Mark

Codes can be printed onto almost any substrate, whether it is bottles, cans, boxes or pallets. Here's what you need to know!

Cans

Cans are gaining more popularity with independent brewers, allowing for exciting packaging possibilities, not to mention a variety of coding solutions.

Labels for cans: Labels are becoming more popular for small to medium production batches. Codes can be printed directly onto can labels. These can be as flexible as the ones applied on bottles in terms of finishing and design, while also proving to be a cheaper alternative to printing directly onto the can.

Shrink sleeves for cans: A variant to traditional labels, shrink sleeves provide 360-degree design coverage for cans and allow for more flexibility when it comes to packaging on multiple product lines. Codes can be printed directly onto the sleeve before the shrinking process takes place. However, the most common application is printing onto the underside of the can, as mentioned in the first point.

Printing directly onto cans: Codes can be printed onto the concave underside of a can using black ink or laser. These are the most common coding methods used. A good coding solution will be able to deliver a high quality code on an uneven surface of a can, in line with your expectations.

Making a Mark

Codes can be printed onto almost any substrate, whether it is bottles, cans, boxes or pallets. Here's what you need to know!

Bottles

Due to its flexibility, Continuous Ink Jet (CIJ) is the most commonly deployed coding technology for applying codes onto bottles. Here are some considerations that need to be taken into account when coding onto bottles.

What's the colour of the glass?
Codes need to be visible once printed onto the bottle. Clear bottles will require dark inks (commonly black) and vice versa. However if you produce clear and dark bottles and wish to use a single ink for both, an opaque yellow is the ink you're looking for.

Do you use returnable bottles?
These must be cleaned via a caustic wash process. As these bottles are designed for repurpose, the previously printed code must be able to be removed to allow a new one to be printed in its place.

Do you need UV readable codes?
Perfect for anti-counterfeiting, this is essentially an invisible code that can only be detected using a UV light. This type of code is quite useful in the tracking of returnable bottles, as ink is resistant to the caustic solution and will therefore remain visible after the wash process has taken place.

Making a Mark

Codes can be printed onto almost any substrate, whether it is bottles, cans, boxes or pallets. Here's what you need to know!

Labels

When it comes to labels, codes can be printed using either laser or CIJ systems. Have a look at our **technology section** for more details.

A variety of label substrates can be used on your cans and bottles, including:

- Textured and embossed papers
- Wet resistant papers
- Metallised papers and foils
- White film materials
- "Exotic" materials, such as wood veneer
- Transparent film materials, including ultra-thin transparent film and ultra-clear adhesive, create a no-label look on bottles and aluminium cans.

Whatever design you end up choosing, it is important to ensure the coding solution is compatible with the label substrate and design. For example, a laser will reveal the colour of the paper **(see how it works here)**, which means the label design will require a flat colour area. As paper is normally white, we recommend that you make this area as dark as your design allows, so that it has enough contrast.

A flat colour area will be needed for the ink code too, but as ink comes in different colours, this is more flexible. However, ask your chosen supplier about their ink range beforehand, to be 100% sure they have the ink you need. Let your designers know in advance what coding technology you intend to use to ensure compatibility with the label choice.

Secondary and Tertiary Packaging

Before your coded cans and bottles are ready to be shipped out, you should take a moment to also think about your secondary and tertiary packaging coding needs. Here are some reasons why it is worth applying labels also to your cardboard boxes, shrink wrap trays and pallets.

- Print & Apply systems allow you to assign labels to your products in bulk detailing best before dates, traceability and date of manufacture.
- Premium code quality label printing with GS1 coding capability ensures supply chain compliance is guaranteed on all packaging types.

A few more considerations...

Moisture resistance: Whether you print onto a can, bottle or label, you'll always need to make sure that the inks and coding solution used are moisture resistant, especially as you'll most likely be dealing with spills and condensation.

Production speeds: These can have an impact on the suitability of the printing option selected. To meet customer demand, particularly during hot summer months and the festive season, the speed of your production line is likely to increase significantly. It is important that your coding solution can keep up with demand!

Harsh environments: We are aware that your production environment can get very wet and often reach temperatures of around 45 °C, which can also affect the code quality. The coding and marking system you choose will need to be able to cope with these conditions.

Cracking the Code

Coding technologies are designed to be used on primary, secondary and tertiary packaging stages:

- **Primary packaging** relates to the packaging that actually houses your product, so either the can or the bottle.
- **Secondary packaging** covers things like the shrink wrap that holds multiple drinks cartons together, or the cardboard box that contains cans of beer.
- **Tertiary packaging** which is rarely seen by the customer, relates to the shrink-wrapped pallets used to transport products, in bulk, from manufacturers to the retailer, normally via a distribution centre.

So, let's look at which coding technique is best suited to each type of packaging.

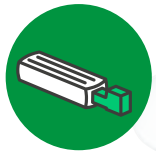
Continuous Ink Jet

CIJ offers a quick-drying, non-contact coding process. Without getting too technical, the process by which CIJ works is relatively simple; electrically charged ink drops are propelled at high speed onto the surface, creating a series of rounded dots that form a dot matrix code.

Ideal for metal, glass, cans, porous and semi-porous card and paper – basically compatible with almost any substrate used by craft brewers.

Advantages:

- ✔ Easy integration
- ✔ Compatibility with different surfaces
- ✔ Can cope with high speed production



Laser

This option allows you to etch or 'vaporise' the surface layers of the material leaving an indelible, permanent mark. Scribing laser coders can 'print' text, graphics and variable data.

Ideal for glass plastic, paper and cartons.

Advantages:

- ✔ High definition codes at high speeds
- ✔ Eco-friendly solution
- ✔ Cost effective

Print & Apply Labelling

PALM systems offer the ultimate modular label coding system for your production line. Easy to operate, the PALM labeller prints data onto a label, before being applied directly to secondary or tertiary packaging.

Ideal for trays, cardboard, stretchwrap, shrinkwrap and pallets.

Advantages:

- ✔ Prime choice for secondary and tertiary packaging
- ✔ GS1 coding capability ensures supply chain compliance

Also worth thinking about...

Some brewers are also requesting ancillary applications and software to improve the operational performance of their production lines – especially in relation to quality control. Therefore an important addition to coding and marking equipment these days are scanning and camera vision systems for code recognition and quality assurance.

Integration

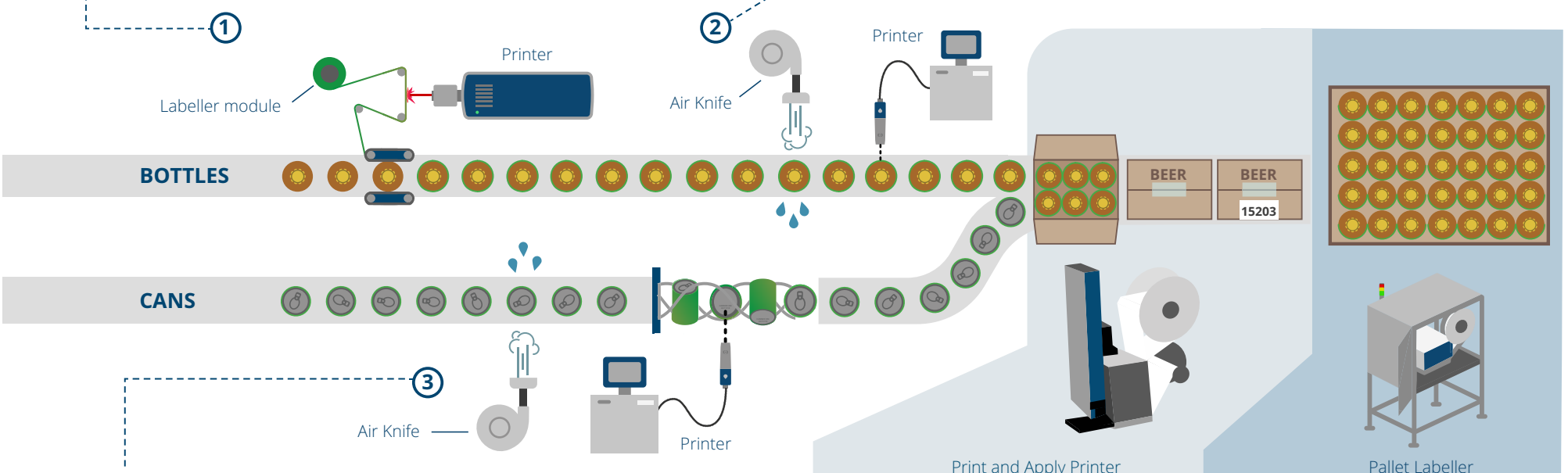
Each brewery is different and presents different challenges when it comes to integration. We highly recommend you always consult a specialised technician before making any integrations plans!

1. PRINTING ON THE LABEL

Once the bottle or the can reaches the conveyor it becomes uncontrollable with regards to label location. So, to code any label with CIJ or Laser, you need to print onto the label on the labelling machine. This can be achieved either on the labeller module, labeller aggregate (pallet station) or simply on the bottle table if the labeller has serveral driven bottle positions which can be programmed to supply the correct bottle orientation. The print head has to be completely perpendicular to the label when printed to avoid code deformations.

2. PRINTING ON GLASS

If you are printing directly onto the glass, we recommend you to place the printer after the bottles have been filled, closed and labelled. This way, you'll only code products that have passed all the quality controls, preventing you from wasting money and time coding bottles that are going to be rejected. Also we recommend that an air knife should be positioned prior to the bottle coding position to remove any water prior to coding. This is also applicable to cans.



3. PRINTING ON CANS

Due to safety and cleanliness features, it is advisable to place the CIJ print head pointing downwards for coding cans. As the code is generally applied on the bottom of the can, most brewers install a twisting device that turns the cans upside down (the same way as a twist-rinser) at this point of the line, and then back to the upright position after the coding process. Like bottles, we recommend to code onto filled and closed cans, also with an air knife to remove any excess water from the coding area of the can.

4. SECONDARY PACKAGING

For both bottles and cans, and regardless of what casing method is used (Shrink Wrapped Products, Brown or White Cardboard Boxes or Cardboard Trays) the label can be applied once the packaging has been applied and sealed.

5. PALETTING

Once the pallet has been wrapped, it's ready to be labelled.

Reading Beer Codes

Types of Code

Lot Number

This can be composed using the production date or any other internal code.

Date Advice

- 'Expiry Date': This one is about safety. Not very common for beers, and is used when a product may be unsafe to consume after a certain date.
- 'Enjoy By' or 'Use By': After this date, the quality of the beer will drop quickly.
- 'Best Before': Use this one to tell your customers when your product is at its best quality.
- 'Display Until' or 'Sell By': This is oriented to retailers and vendors.
- 'Packaged on' or 'Produced on': With this one you can also include recommendations on how long your beer can be consumed after the production date, like "Best Before 40 weeks after production date".

Other Codes

Some brewers combine the date or lot with some other internal codes, so sometimes it is not that easy to read them: 'M3701C0405*2'.

Calendars and Codes

A to M Calendar

In this coding system, the month is coded using the corresponding letter of the alphabet (January is A, February is B, etc.), skipping the letter 'I' (September is H). This system is very common among Canadian beer producers, so in some places it's named Canadian Style.

Gregorian Calendar

The Gregorian Calendar is internationally the most widely used civil calendar. It is a calendar based on a 365-day (366 in leap years), divided into 12 months of different lengths. Depending on the region and personal style it can be shown in a combination of letters and numbers or just numbers:
The Day of Month, Year / Month Day Year / DD-MM-YY / MM-DD-YYYY / DD.MM / YMM / YYYY-MM-DD / etc.

Years can be shown using the whole string (YYYY), or just the last two characters (YY) or even just one (Y). Months can also appear as an abbreviation, September can be 'S', 'SEPT', 'SE', etc. Like 'S7' (MY). When using just a single character, some brewers can use letters different to the month's initial for disambiguation, like 'Y' for May, or 'G' for August.

Julian Day Number

The Julian Day Number is the number assigned to a whole solar day, count starting from 1st of January as day 1.
Example: Day 126 (for May 6th) You can check the complete equivalence table **here.**

Notched date

Instead of written code, the date is marked on a printed sequence of months.

A matter of style, different samples

- Best Before 40 weeks after production date 06/05/2018.
- Enjoy By 06.05.2018.
- Bottled on May 6th, 2017.
- BB8126 (Best Before + Year 2018 + Julian Day) or 1268 (Day + Year).
- SEPT07 (Month + Day).
- Display until 050618 (Month + Day + Year).
- Packed F12 (Canadian Style).

To Buy or To Lease

Key Advantage

Total Ownership
The most obvious advantage of buying business equipment is that you gain ownership of it and are therefore more independent to use it as you see fit.

Disadvantages

Higher Initial Expense
Smaller businesses might not be able to afford to pay for the equipment up front.

Obsolete Technology
There is always the risk that the equipment you've purchased may become technologically obsolete sooner than expected.

Advantages

Less Initial Expense
Equipment leases do not usually require a down payment, which means you can get a hold of your coding system upfront and with little impact on your cash flow.

Flexible Contract
Leases tend to have more flexible terms than loans for purchasing equipment, which can prove highly beneficial if you need to negotiate a longer payment plan to lower your costs.

Available Upgrades
Leasing allows you to upgrade your coding equipment to the very latest model available without adding cost to the bottom line. Some programmes available include an all-in price for printers, services, parts and a 5-year warranty, and can be paid with an operating budget, making the entire process as stress free as possible.

Disadvantages

Higher Final Costs
The final cost for leasing a system ends up being more expensive than purchasing it upfront.

No Ownership
You don't build equity in the equipment you've leased.

Contractual Obligations
Unless you've agreed to a cancellation policy, you are obligated to pay for the entire lease period even if you stop using the equipment.

So should I buy or lease my equipment?

For smaller craft brewers, leasing is a sensible option since this provides a more cost effective way of tackling coding and marking automation. With coding and marking technology updated on a regular basis, to deliver the most efficient solutions available, a leasing option works well since it is far easier to upgrade to the latest tech. What's more, when working on a 'Total Cost of Operation' model, leasing is a very attractive option since maintenance and associated downtime costs are greatly reduced.

Codes of the world [2]

USA

- Name and brand of product
- Class or type of product
- Name and address of bottler or packer
- Name and address of importer if imported
- Country of origin if imported
- All mandatory label information shall be in the English language
- For beer, a minimum type size of 2mm for larger than ½ pint, 1mm for 11/2 pint or less

Australia

- Name of product
- Lot identification
- Name and address of supplier date marking, if shelf life is less than two years
- Directions for use and storage

Russia

- Name of beverage
- Type of beverage
- Name and address of manufacturer or importer
- Country of origin
- Date of manufacture and date of expiry
- Storage instructions and instructions for use if any
- Reference to food safety compliance certificate
- Labels must be in Russian and the original language

European Union

- Name or business name and address of the food business operator
- Country of origin, place of provenance, protected designation of origin if applicable
- Instructions for storage and use where necessary
- Date of minimum durability or 'use by' date; beverages of 10% ABV or higher are exempt from the last
- Mandatory information shall appear in a language easily understood by the consumers of the Member States where a food is marketed

Canada

- Name of product as defined under B.01.001 of the FDR
- Company name and address
- Country of origin
- Durable life date if shelf life is 90 days or less
- Labels must be in both official languages of the country - English and French
- All mandatory labelling information must be printed in font no less than 1.6 mm in height

Mexico

- Name or commercial trademark of the product
- Name and address of producer or importer
- Country of origin
- Lot identification number
- Beverages above 6.0% ABV of expiry 12 months or shorter: date and instructions for storage if necessary
- The label must bear the mandatory information in the Spanish language

[2] http://www.iard.org/policy-tables/beverage-alcohol-labeling-requirements/

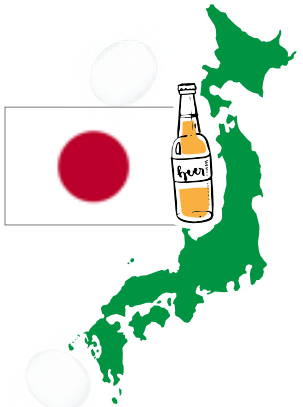
Codes of the world [2]

MERCOSUR (Paraguay, Brazil, Uruguay, Argentina)

- Name of product
- Name and address of producer
- Country of origin
- Name and address of importer if imported
- Lot identification
- Date of expiry; beverages of 10% ABV or higher are exempt
- Storage conditions if any
- Required information must be in the state language (Spanish or Portuguese), regardless of any information in other languages
- The size of the letters and numbers shall not be less than 1mm; the indication of the net contents is exempt

China

- Name of product
- Name and address of manufacturer and distributor
- Date of packaging
- Durability information; beverages of 10% ABV or higher are exempt
- Recommended: lot number, drinking methods, and type of product



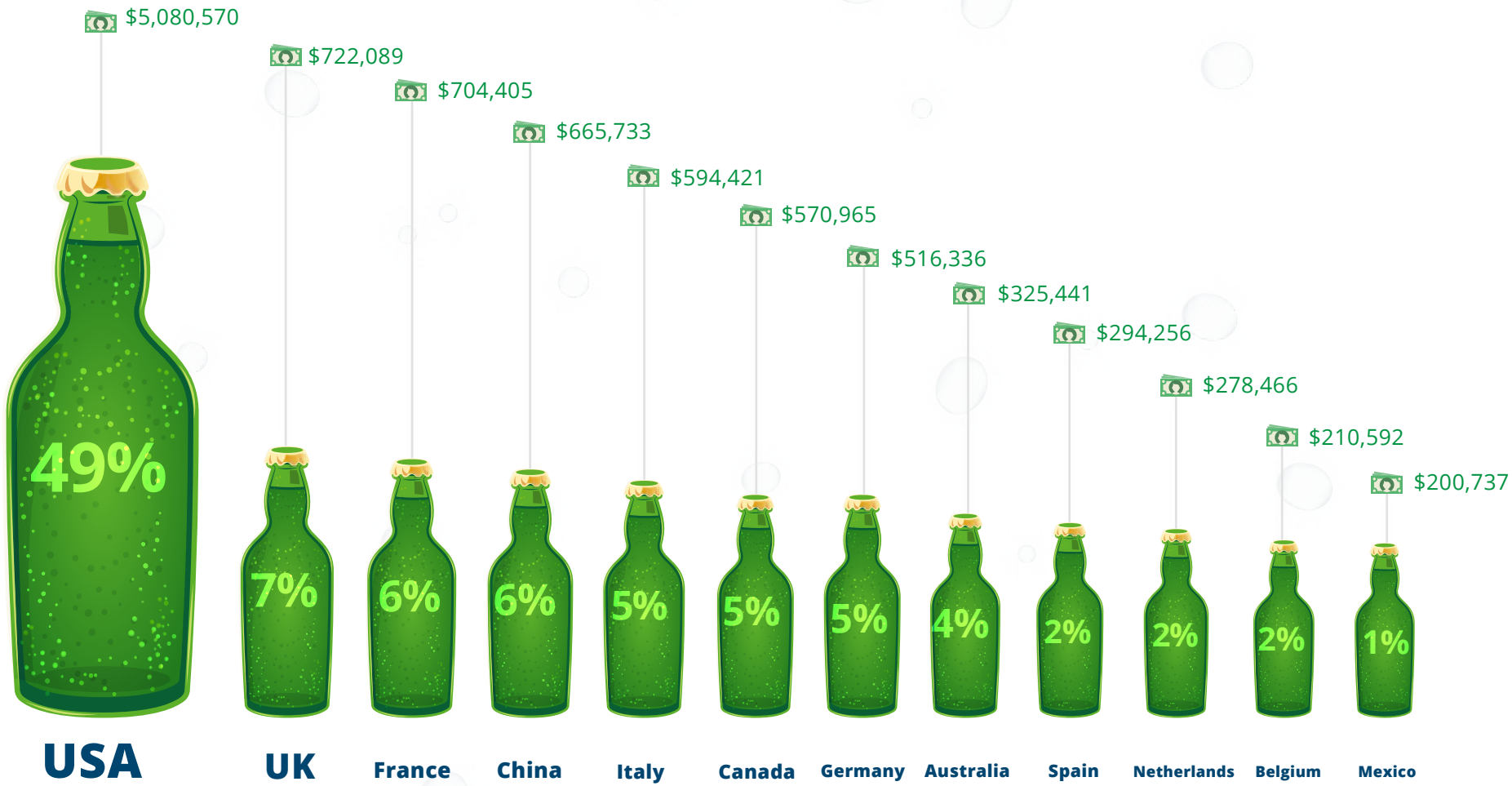
Japan

- Name of product
- The word 'Imported' and country of origin if imported
- Name and address of the importer
- Date 'Best before'
- Special instructions for use, storage, or preparation as established by the Minister of Health, Labour, and Welfare for the product or where absence of this information could cause confusion

[2] http://www.iard.org/policy-tables/beverage-alcohol-labeling-requirements/

Top Importers [3]

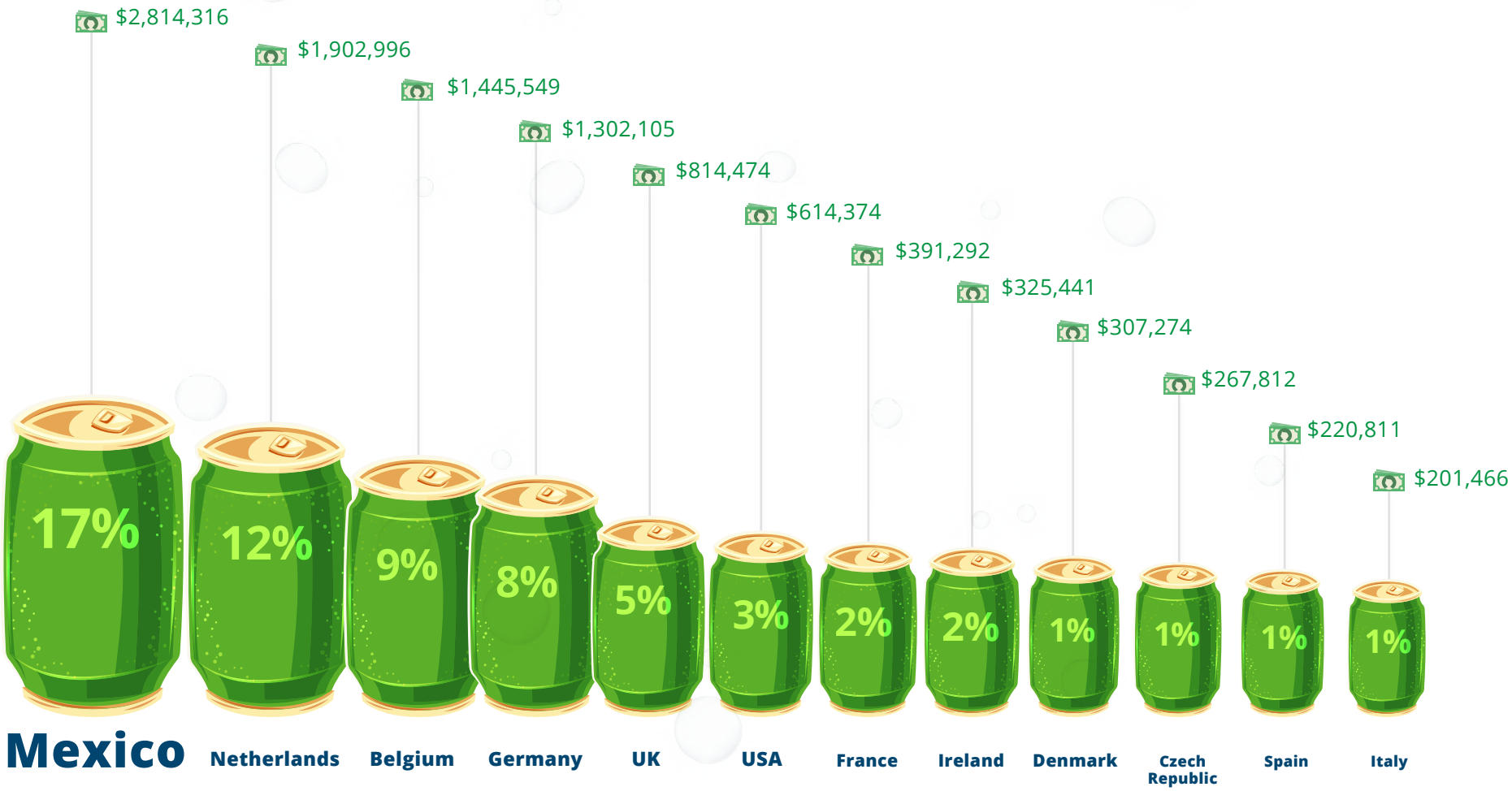
US Dollar, thousand



[3] http://www.trademap.org/

Top Exporters [3]

US Dollar, thousand



[3] http://www.trademap.org/

Glossary

Backlash

Backlash is the ability to detect direction of line travel, enabling the print to be suspended when travelling in opposite direction and restart at the appropriate place.

C & M

C & M is an abbreviation for Coding & Marking.

CAS

CAS is an abbreviation for Chemical Abstract Series which is a number to identify substances.

CIJ

CIJ is an abbreviation for Continuous Ink Jet.

GMP

GMP is an abbreviation for Good Manufacturing Practice.

ISO

ISO is an abbreviation for the International Standards Organisation.

Micron

A Micron is one Thousandth of a millimeter (A strand of human hair is about 100 µm wide).

OCC

OCC is an abbreviation for Outer Case Coding.

OCR

OCR is an abbreviation for Optical Character Recognition- usually applied to particular fonts intended for printing for later automated scanning (e.g. OCR-A or OCR-B).

OEE

OEE is an abbreviation for Overall Equipment Effectiveness.

OEM

OEM is an abbreviation for Original Equipment Manufacturer.

OSHA

OSHA is an abbreviation for Occupational Safety and Health Administration (USA).

Print Trigger

Print Trigger is an abbreviation for the internal trigger signal to initiate printing.

PALM

PALM is an abbreviation for Print and Apply

QR Code

QR code is an abbreviation for Quick Response Code, and is the trademark for a type of matrix barcode that can contain a range of information like URLs, Numeric Strings or even text.

TTO

TTO is an abbreviation for Thermal Transfer Overprint.

T.I.J

T.I.J is an abbreviation for Thermal Ink Jet

Useful links

- Craft Brewing Association
- Cetie
- Brewers Association
- Brewers Of Europe
- Sachon
- China Beverage Industry Association
- Foodbev Media
- Beverage Industry
- Society of Independent Brewers
- Brewing Food Beverage Industry Suppliers Association
- Verband Deutscher Maschinen und Anlagenbau
- British Bottlers' Institute
- Drinks Business Review
- Taps Magazine
- Beer And Brewing
- Packaging Strategies
- American Beverage Association
- Beverage Marketing
- Cision
- China Alcoholic Drinks Association
- Association of the Beverage Machinery Industry
- Brewers Publications
- Brauwelt International
- Domino Printing

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