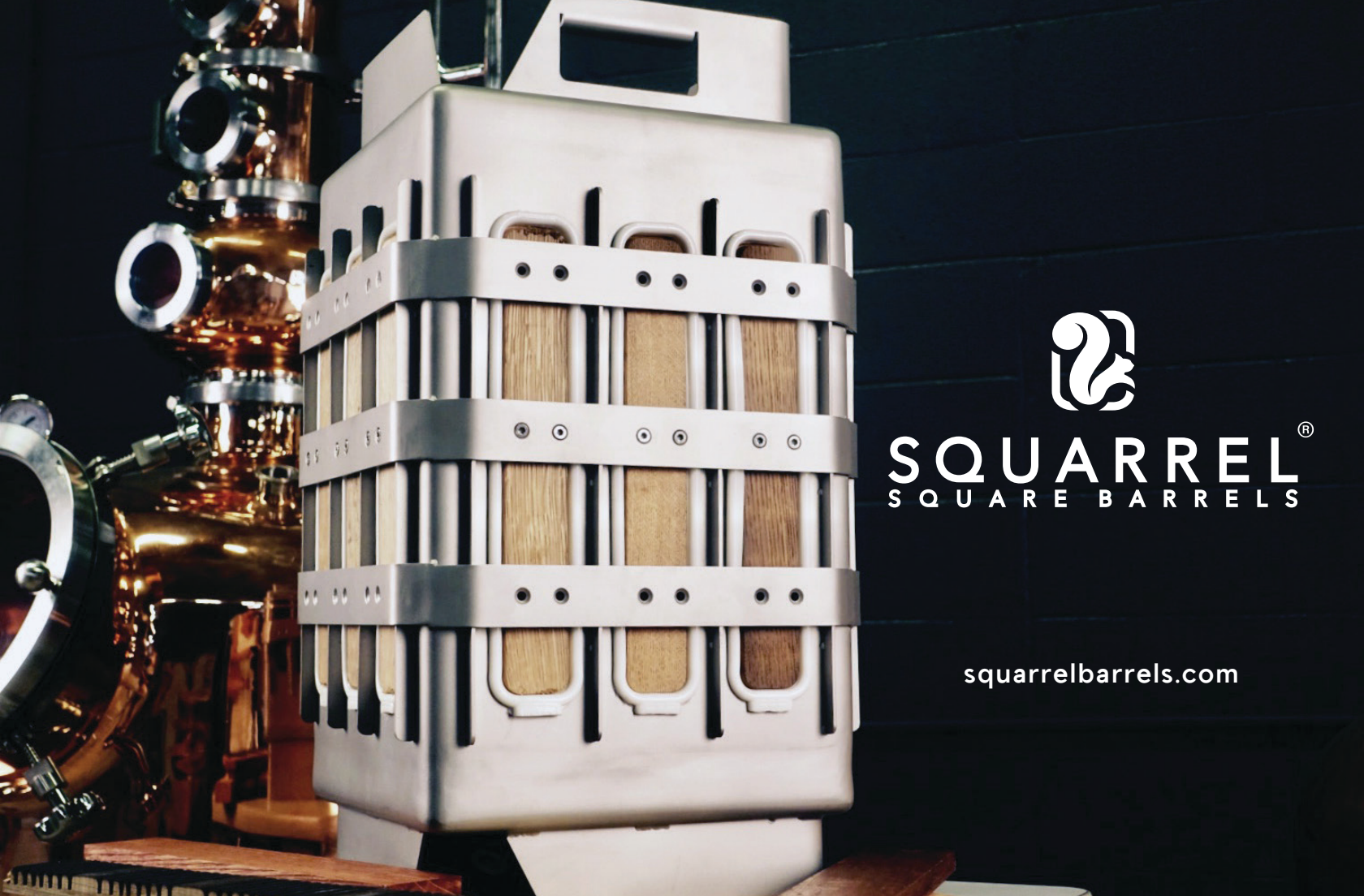
SQUARREL®
SQUARE BARRELS
squarrelbarrels.com

SQUARREL®

SQUARE BARRELS

Increase Productivity | Age Faster | Eco-friendly | Customize Flavors | Cost Savings

SQUARREL
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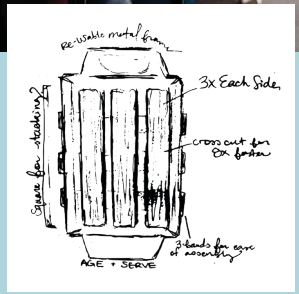


MEET THE SQUARREL SQUARE BARREL

Squarrels are customizable barrels designed to provide the same benefits as a traditional barrel. The original barrel chemistry remains unchanged, it's just more efficient.

With the ability to customize wood staves to create unique flavors, save natural resources and shelf space, age brews, spirits, and wine faster and increase productivity, and reduce long term costs, Squarrels are barrels that can do more than traditional barrels.

INVENTION OUT OF NECESSITY

Minnesota barrel cooper Russ Karasch invented the Squarrel Square Barrel as a solution to an oak tree shortage at his cooperage. Russ had already been toying with production of a square oak barrel, but when he was unable to source enough oak for his traditional barrels he realized there could be a way to create a barrel that didn't rely on wood for its structural shape: a barrel that only used wood where it was actually needed.

Already the inventor of the wood spiral, the honeycomb insert, and the grooved barrel, Russ had a new idea that might change the way barrels had traditionally been made since the Celts invented the wooden barrel some 2000 years ago. So he started asking questions.

- What if a smaller piece of wood could be used?
- What if the structure of the barrel was reusable?
- What if we could use less wood to build a barrel?
- Would less wood affect how flavors were created?

SQUARREL vs BARREL
Comparison with traditional barrels

HOW DOES IT WORK?

Squarrels are designed to provide booze with a similar environment to that of a traditional barrel. They offer comparable micro-oxygenation while still providing that cherished flavoring exchange between the wood and beer, liquor, or wine as it ages.

SQUARREL BARREL

1. Steel structure is reusable, sanitary and sustainable
2. All of the wood affects the chemistry and flavor
3. Built from the same high quality wood as barrels
4. Staves maximize the use of natural resources
5. Staves can be sanitized by baking in an oven
6. Squarrels stack, fitting twice as many Squarrels
7. Pressurize, tap like a keg, minimize top offs
8. Cross cut staves extract sugars and tannins 8X faster
9. Replace staves as needed, quickly recoup cost
10. Replacement staves are shipped in small boxes

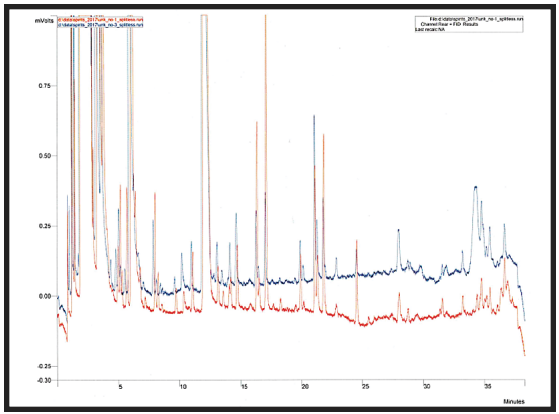
TRADITIONAL BARREL

1. Most of the wood is needed for structure
2. Only 20-30% of the barrel wood affects the flavor
3. Built from 80+ year old oak trees
4. Less than half of the oak tree can be used
5. Hard to clean, high potential for contamination
6. Requires racking
7. Barrels need regular maintenance
8. Longer aging times
9. Higher costs to replace entire barrel
10. Shipping requires significant logistics and cost

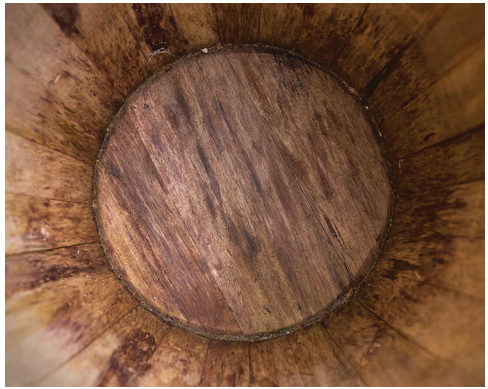
CHEMICAL COMPOUNDS

Gas chromatography (GC) is a common type of chromatography used in analytical chemistry for separating and analyzing compounds that can be vaporized without decomposition. Typical uses of GC include testing the purity of a particular substance, or separating the different components of a mixture.

We did the GC testing with our Squarrel to find out how it matched up to a traditional barrel. The Gas Chromatograph chart below shows the chemical compounds created from distillation and barrel time. Our findings indicate that both barrel types released similar compounds. The spirit of the barreling process remains unchanged, and we achieved results after 41 days in the Squarrels that took 300 days in the traditional barrel.



- Red line:
  41-day old rye whiskey
  in a Squarrel barrel
- Blue line:
  300-day rye whiskey
  in a traditional barrel



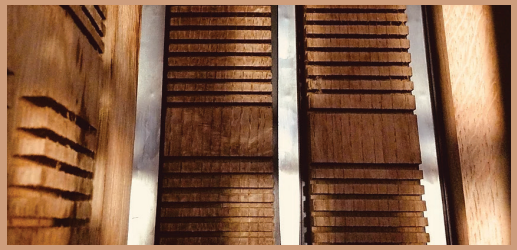
MORE PRODUCTIVITY
The proof is in the product

THE BARREL PROCESS

A barrel's wood—and its relation to its external environment—is what makes a barrel perform the way it does. When we contain a liquid product (e.g., booze) in a slightly porous vessel (e.g., wood), microscopic amounts of oxygen travel inside through the wood (micro-oxygenation) while simultaneously allowing small amounts of liquid to evaporate. This air exchange process is how a barrel works, and it's the same process achieved by the Squarrel.

EXPOSING END GRAIN

End grain exposure is at the heart of this concept, as it provides the increased extraction rates. Every Squarrel stave has a small amount of end grain exposure—because the top and bottom of all staves are exposed to the product inside. But it is the cross cutting action that intensifies this concept.



RAPID AGING

Cross cut staves are proven to work 8 (eight!) times faster than flat staves. Cross cutting means several rows of shallow grooves are cut against the wood's grain. This exposes the end grain and it opens access to the wood's capillaries in order to allow the product to move into the wood in a different, and effective, style. This increased speed of extraction allows maturation to begin earlier, speeding up the overall aging process.

CROSS CUT vs FLAT STAVES

Using a 120 proof spirit, both the University of Minnesota and the University of Wisconsin conducted tests to measure were conducted how much liquid moved into the grain of the wood.

FLAT WOOD

- 1.97 thousandths of an inch, every 7 days
- That's about ½ the thickness of a human hair each week

CROSS CUT WOOD

- 15.67 thousandths of an inch, every 7 days
- That's about the thickness of 4 human hairs each week
- 8 times faster movement!

SOME TECHNICAL NOTES:

Beer and wine have a higher ratio of water than spirits and they will move into the wood even more quickly. Our tests have shown that a product with 10% alcohol will move about 12-16 times faster into a cross cut stave. We're currently conducting additional research on this.

Cross cut wood can be a great tool for aging spirits specifically, and the additional surface area is also useful when souring beers—but otherwise, we recommend using mostly flat staves when aging wines and (most) beers.

The size of the barrel also plays a role in aging times. A 10-gallon Squarrel will provide quicker rates than a 30-gallon Squarrel. The 30-gallon and the 60-gallon Squarrels have the same geometry and will age at the same rates.

Based on the initial product and desired goals, temperature, surface area, oxygenation, and yeast will increase flavor extraction rates while pH and ABV (generally) decrease extraction rates.

BIG IMPACT, SMALL IN SIZE

Squarrels only use 1/3 the wood that a traditional barrel does. That also happens to be the exact amount of wood a barrel needs to provide equivalent micro-oxygenation to a traditional barrel of the same volume. Stave wood used in Squarrels is sourced from the same high-quality wood used in traditional barrels—it's just smaller.

Squarrel's square barrel shape was intentionally designed around the ability to use stave wood that would otherwise be destined for the wood chipper. In a cooperage, the most common piece of scrapped stave wood is around 15 inches long. While perfect for a Squarrel, it is too small for a traditional barrel's head, and therefore doesn't have much use in the conventional barrel world. Using this wood is an eco-friendly way to minimize industry waste and create a positive impact on our natural resources.

DID YOU KNOW?

- 1 Oak tree has enough wood for 1 to 3 traditional barrels
- Only 20-30% of the wood in a barrel creates the flavor
- Most wood in a traditional barrel is simply structural
- Less than half of an American Oak tree can even be used

CUSTOMIZATION
Create your ideal barrel

10 GALLON
45 lbs
13" x 13" x 27"

30 GALLON
80 lbs
22" x 22" x 25"

60 GALLON
130 lbs
22" x 25" x 50"

IT'S HIP TO BE SQUARE

With three different barrel sizes to start from, you can mix and match woods, toasts, chars and cuts styles to create your own unique flavor profile. From alternative wood species to unique treatments, you can be creative every time or you can be creative consistently—that's the beauty of the independent stave. We also offer a variety of accessories so you can make the Squarrel work even harder for you.

Check out our current wood stave species available: World Wide Wood Chart

Each Squarrel can have the following customizations:
Wood Species, Stave Type, Toast Level, Char Level (optional)

SQUARREL DESIGN
Sustainable, reusable, stackable

ANATOMY OF A SQUARREL

1. Square shape for easy stacking and maximizing space. Squarrels can be bolted together for added security and stacked three high.

2. Stainless steel 304 frame for pressurizing and sanitization

3. Steel bands for added strength. Squarrels can hold 1.5 bars or 21 psi

4. Star headed stainless steel wood screws for replacing staves

5. Stave Gaskets are EPDM and NSF International certified

6. Multiple staves types can be set in one barrel

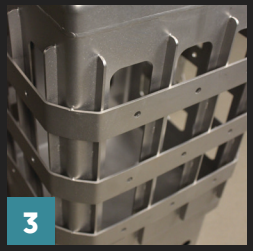
7. Uses a 6” tri-clamp cap for easy infusions, easy clean-ups, and easy accessory customization. Put under pressure and tap like a keg.

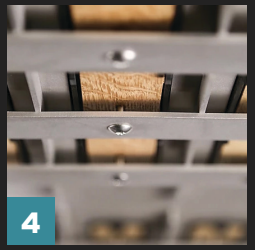
8. The 10 and 30-gallon models use a 1.5” tri-clamp sample drain port. There is a 6” tri-clamp bottom on 60-gallon Squarrels.

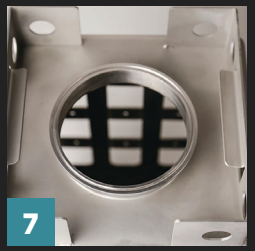
9. Choose from 10, 30 or 60-gallon sized Squarrels

PATENTS

9,212,343 and #9,885,010







SQUARREL BARRELS SPECS SHEET

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(855) 773-2337

SQUARREL*	STAVES REQUIRED	SKU	COST
10-GALLON HALF WOOD	6 STAVES REQUIRED	SBP10GHW	$670
10-GALLON FULL WOOD	12 STAVES REQUIRED	SBP10GFW	$700
30-GALLON HALF WOOD	10 STAVES REQUIRED	SBP30GHW	$810
30-GALLON FULL WOOD	20 STAVES REQUIRED	SBP30GFW	$880
60-GALLON HALF WOOD	20 STAVES REQUIRED	SBP60GHW	$1170
60-GALLON FULL WOOD	40 STAVES REQUIRED	SBP60GFW	$1290

All Squarrels come with included required hardware:

- Stave Gaskets, Screws
- 6" Tri Clamp, Gasket, Cap
- 1.5" Tri Clamp, Gasket, Cap

***Staves Sold Separately**

ACCESSORIES	SKU	COST
6" TRI CLAMP CAP w/ SANKEY SPEAR w/ SAFETY PRV VIA .25" NPT	S6TCSNSV	$145
6" TRI CLAMP CAP w/ SANKEY SPEAR w/ SAFETY PRV VIA .25" NPT & 1.5" TRI CLAMP REDUCER	S6TCSN15SV	$160
6" TRI CLAMP CAP w/ 1.5" TRI CLAMP REDUCER	S6TC15	$35
1.5" TRI CLAMP SAMPLE VALVE	SSV150	$25
1.5" TRI CLAMP BUTTERFLY VALVE	SBV150	$40
1.5" TRI CLAMP CAP w/ .75" NPT REDUCER	S5NPTR	$25
1.5" TRI CLAMP CAP w/ CIP SPRAY BALL VIA .75" NPT REDUCER	SSB	$40
EPDM STAVE GASKET	SSG	$8
SET OF 20 SCREWS	SSCREW20	$6

SQUARREL STAVES SPECS SHEET

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WOOD SPECIES	ORIGIN	SKU	FLAT STAVE	CROSS CUT STAVE
AMERICAN WHITE OAK	USA	AMO	$7	$7.50
FRENCH OAK	FRANCE	FRO	$12	-
AMBURANA	BRAZIL	AMB	$18	-
JEQUITIBA	BRAZIL	JEQ	$18	-

STAVE TYPE	FLAT	CROSS CUT

TOAST LEVELS	LIGHT	MEDIUM	MEDIUM PLUS	HEAVY

CHAR LEVELS	#1	#2	#3	#4

Any combination of Squarrel stave toasting and charring is included in the listed price.

Minimum order of 4 staves.

American Oak Squarrel staves are the only staves with the proper grain structure to hold pressure.

Current wood stave species list available upon request.

Minnetonka BREWING & EQUIPMENT COMPANY

Squarrel Barrels are sold and distributed by Minnetonka Brewing & Equipment Company.

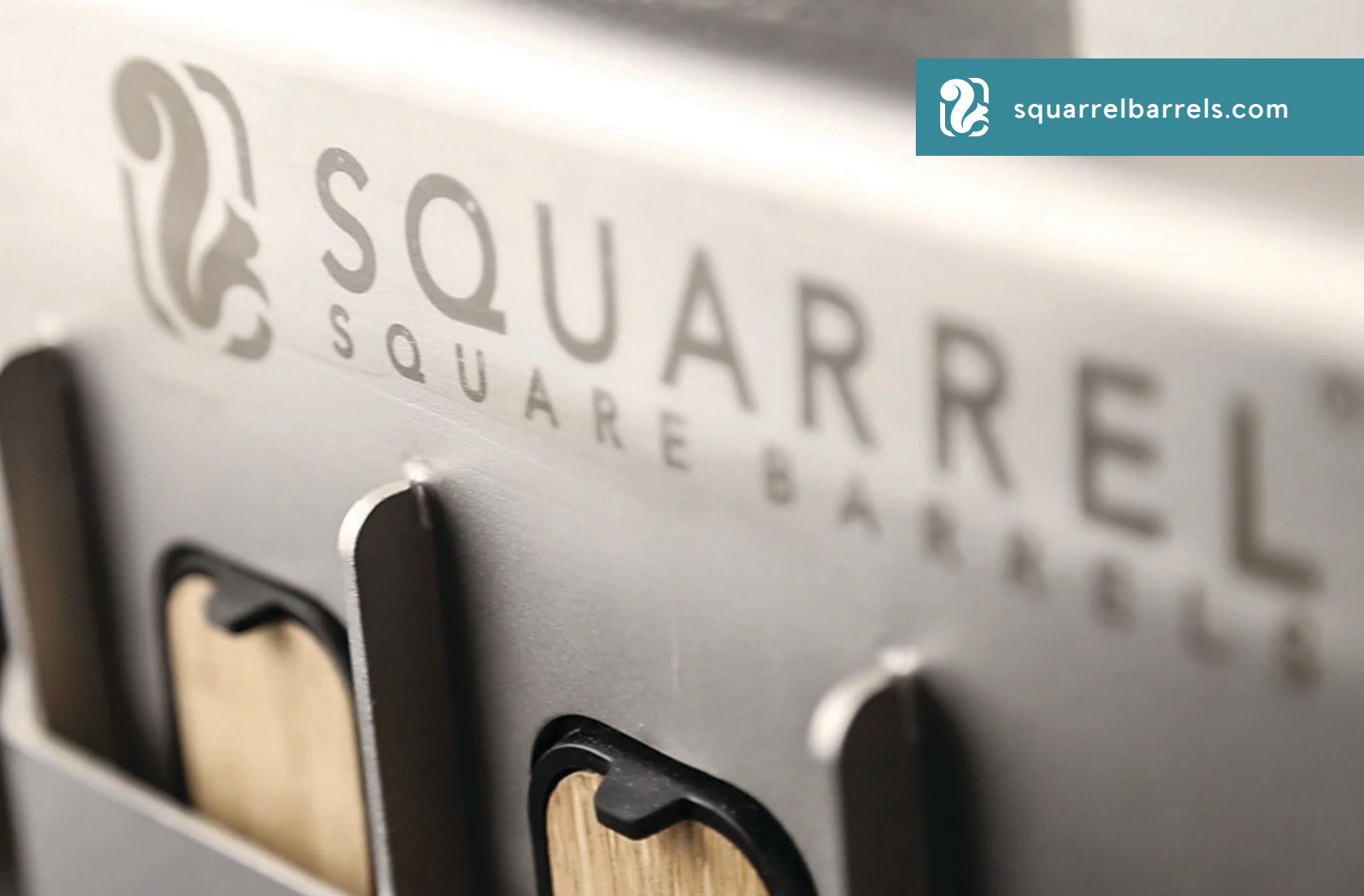
www.mtka-bec.com

Black Swan COOPERAGE, LLC Est.2009

Squarrel Barrels staves are designed and produced by Black Swan Cooperage.

www.blackswanbarrels.com

SQUARREL® SQUARE BARRELS



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