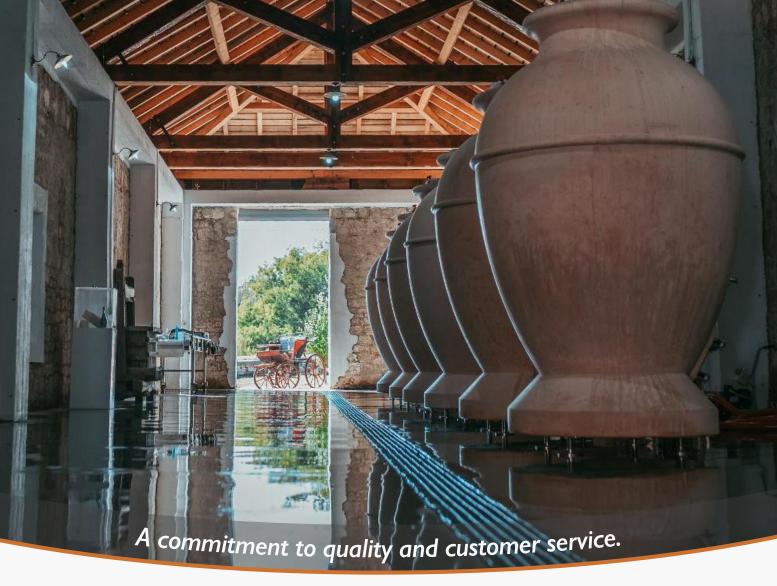


NON-OAK PORTFOLIO

NEW ZEALAND 2020











TEL: 03 445 4440 • CELL: 027 424 6929



Bouchard Cooperages is very proud to work with three non-oak, independently owned, artisanal suppliers:







It is during the Bouchard family's tenure abroad that they learned about the usage and tradition behind non-oak vessels used for winemaking composed of natural earth-driven materials.

All three suppliers craft their jarres, eggs and amphorae from naturallyoccurring products. However, all three suppliers are unique and the vessels
they craft have very distinct oenological results. Due to the raw material
the vessel is crafted from and the method of production used,
the vessels vary in terms of their porosity and permeability,
hence giving each supplier a certain style.

- POROSITY

Porosity is the space that is not occupied by the given material. For example, if you put 100 liters of water in a stone tank and it has a porosity of 2.5%, it means that 97.5% corresponds to the water touching the stone material and 2.5% to inconsistencies such as vacuum, small holes, pores, air bubbles, etc. Normally, you will need to add an additional 2.5 liters of water to fill the tank for that water to replace the inconsistencies in the material. Sometimes it takes time because the pores can be complex and it will take a while for the water to reach the holes.

Porosity and permeability are inherently related.

One cannot exist without the other.

PERMEABILITY

Permeability is the speed at which the liquid or gas can partially or completely cross through the material and is a function of the material's variations. The liquid's viscosity and the material's durability over time are also factors that impact permeability. The greater porosity a material has, the more space there is for the liquid or gas to penetrate the material and consequently the material becomes more permeable. Permeability and porosity in the world of wine containers are important to consider from a micro-oxidation perspective.



VIN ET TERRE:

Grés Sandstone Jarres

Vin et Terre was founded by Patrick Lalanne in Bordeaux France and produces different styles of "jarres" or jars made of "grés" or sandstone for the fermentation and aging of wines. For over forty years Patrick has supplied the French wine industry with winemaking materials and has always been impressed by the results of ceramic vessels for aging wine. With contacts in the ceramic industry, Patrick decided to design and patent his own product range of grés jarres for winemaking purposes.

MATERIAL -

Vin et Terre crafts their jarres exclusively from grés, which contains a high concentration of SiO2, found naturally in "silex," also known as quartz.

Once cooked, grès is extremely durable over time.

HISTORY

The craftsmanship technique of these jarres was invented by Chinese **ceramic specialists along the Yellow River in 1500 BC** and was later developed in Northern Europe.

PRODUCTION

The jarres are assembled by hand via different layers of sandstone clay. The finished jarre is then cooked at over 1300 degrees Celsius or 2372 degrees Fahrenheit. After being cooked, the jarres are extremely durable and resistant to chemical and temperature changes, and have walls about 3 cm thick.

The jarres are made from natural materials and the smooth interior makes them easy to clean. The jarres have very strong natural thermal inertia characteristics. For some jarres, Vin et Terre does a salt glaze finishing on the exterior of the jarre to make it smoother and easier to clean. The salt glaze does not change the porosity of the grés.



- POROSITY

Once cooked, the porosity of the vessel is less than 2.5% (the porosity of an oak barrel is between 3% - 5%) and the average radius of the pores is 0.004 micron. This allows for a very slow and extended micro-oxidation process that can easily be controlled and monitored.

WINEMAKING & STYLES OF WINE

The jarres perform best for the fermentation and elevage of white wines or very delicate elegant reds and have good thermal inertia characteristics. The different models allow for different natural fluid dynamics that impact the rate of the elevage of the wine. These jarres allow the wines to express their varietal characteristics and showcase their crystalline and mineral components resulting in very pure, linear, fresh and high tension wines that completely respect the fruit and vineyard. Because of a reduced porosity, extended aging time is advisable.



All prices below are listed in Euros (€) and include transport, duty and customs to our warehouse in Christchurch. For other delivery locations, please enquire.

Order by 1st Nov for custom jarre. Below prices do not include GST.

2020 NEW ZEALAND PRICES VIN ET TERRE: Grés Sandstone Jarres

Your invoice will be in \$NZD based on the exchange rate at the date of invoice. 30% deposit due at order confirmationwith 70% balance due before delivery to the winery.

ATTENTION: Biosecurity NZ / MPI currently does NOT require compulsory

BMSB Heat Treatment for containers originating in France or Italy
as is currently required for Australia. Should this change, additional Heat

Treatment charges will be added to your invoice as a separate line item.

INCLUDE SALT GLAZE

ZEN 500L	500					
	300	200	110	90	50	4,330 €
ZEN 1000L	1000	320	155	110	50	6,150 €
ZEN 1200L	1200	391	175	110	50	7,060 €
		silicone joint, but	terfly valve, inox	pallet, silicone bun	g	
CORALIE 320L	320	160	90	83	30	3,700 €
CORALIE 500L with Salt Glaze	500 500	240	110	110	40	4,465 € 4,730 €
CORALIE 1000L	1000	320	145	126	50	6,415 €
		one joint, butterf	ly valve, inox pal	let, silicone bung		
OVO COUCHÉ 230L	230	100	70	104	5	3,495 €
OVO COUCHÉ 300L	300	130	80	115	5	3,750 €
INCLUDED ACCESS	ORIES: Silicone b	oung				
0V0 500L	500	380	137	100	12	5,280 €
0V0 1200L	1200	700	160	115	12	7,530 €
OVO 1200L with Lid	1200	700	160	115	50	7,795 €
		t, silicone bung				L OVO MODE DE SALT GLA
SPHERO 600L	600	400	120	115	12	5,620 €
SPHERO 1000L	1000	700	150	115	12	6,850 €
SPHERO 1000L with Lid	1000 with Lid	700	150	115	50	7,120 €
		t, silicone bung				PHERO MODE DE SALT GLA
DIVINE 950L	950	600	120	109	50	8,350 €
	INCLUDED ACCESS Grés sandstone lid CORALIE 320L CORALIE 500L with Salt Glaze CORALIE 1000L INCLUDED ACCESS Grés sandstone lid OVO COUCHÉ 230L OVO COUCHÉ 300L INCLUDED ACCESS OVO 500L OVO 1200L With Lid INCLUDED ACCESS Salt glaze, butterfl SPHERO 1000L SPHERO 1000L With Lid INCLUDED ACCESS Salt glaze, butterfl SPHERO 1000L SPHERO 1000L With Lid INCLUDED ACCESS Salt glaze, butterfl	INCLUDED ACCESSORIES: Grés sandstone lid with clamps and CORALIE 320L 320 CORALIE 500L 500 with Salt Glaze 500 CORALIE 1000L 1000 INCLUDED ACCESSORIES: Grés sandstone lid with clamps, silic OVO COUCHÉ 230 230L 300 INCLUDED ACCESSORIES: Silicone be a	INCLUDED ACCESSORIES: Grés sandstone lid with clamps and silicone joint, but CORALIE 320L 320 160 CORALIE 500L 500 240 with Salt Glaze 500 CORALIE 1000L 1000 320 INCLUDED ACCESSORIES: Grés sandstone lid with clamps, silicone joint, butterf OVO COUCHÉ 230 100 OVO COUCHÉ 300 130 INCLUDED ACCESSORIES: Silicone bung OVO 500L 500 380 OVO 1200L 1200 700 OVO 1200L 1200 700 INCLUDED ACCESSORIES: Salt glaze, butterfly valve, inox pallet, silicone bung SPHERO 600L 600 400 SPHERO 1000L 1000 with Lid 700 INCLUDED ACCESSORIES: Salt glaze, butterfly valve, inox pallet, silicone bung With Lid 1000 700 SPHERO 1000L 1000 700 INCLUDED ACCESSORIES: Salt glaze, butterfly valve, inox pallet, silicone bung	INCLUDED ACCESSORIES: Grés sandstone lid with clamps and silicone joint, butterfly valve, inox CORALIE 320L 320 160 90 CORALIE 500L 500 240 110 with Salt Glaze 500 CORALIE 1000L 1000 320 145 INCLUDED ACCESSORIES: Grés sandstone lid with clamps, silicone joint, butterfly valve, inox palloyo couché 300 130 80 INCLUDED ACCESSORIES: Silicone bung OVO COUCHÉ 300 380 137 OVO 500L 500 380 137 OVO 1200L 1200 700 160 OVO 1200L 1200 700 160 INCLUDED ACCESSORIES: Salt glaze, butterfly valve, inox pallet, silicone bung SPHERO 600L 600 400 120 SPHERO 1000L 1000 700 150 SPHERO 1000L 1000 with Lid 700 150 INCLUDED ACCESSORIES: Salt glaze, butterfly valve, inox pallet, silicone bung INCLUDED ACCESSORIES: Salt glaze, butterfly valve, inox pallet, silicone bung	INCLUDED ACCESSORIES: Grés sandstone lid with clamps and silicone joint, butterfly valve, inox pallet, silicone bund	INCLUDED ACCESSORIES: Grés sandstone lid with clamps and silicone joint, butterfly valve, inox pallet, silicone bung

and silicone joint, butterfly valve, inox support, silicone bung

ACCESORIES

Vin et Terre's Grés Jarres



ACCESSORY	APPLICABLE ON	PRICE
STAINLESS STEEL PALLET JACK FRIENDLY STAND	All Zen, Coralie, Ovo and Sphero jarres include a stainless steel pallet jack friendly base support system.	Included
INOX LID	■ Zen: 500L, 1000L, 1200 L ■ Coralie: 500L, 1000 L	345 €
COLMATORE GLASS BUNG SYSTEM	All Jars34 cm tall45 cm tall	105 € 135 €
50 CM WIDE INOX SUPPORT SYSTEM	Sphero: 1000 LOvo: 1200 LDivine: 950 L	200 €
OVO COUCHÈ ROTARY SUPPORT SYSTEM	Ovo couchè:230 L300 L	300 €
SALT GLAZE	The salt glaze is an exterior coating which is included on the Ovo, Sphero, and Divine and is optional on the Coralie 500 L. It allows for exterior surface smoothness and ease of cleaning.	200 €



MOVEMENT STUDY OF WINE INSIDE

Vin et Terre's Grés Jarres

*Made by the Celsius Laboratory located next to Lyon

THERMAL CONDUCTIVITY

Thermal conductivity is a quantity introduced to quantify the ability of a structure to conduct heat, represented by the unit Wm-1 k-1.

Conductivity of the different main materials used for the storage of wine are:

Material	Conductivity (Wm-1 k-1)
0ak	0.16
Terra Cotta	0.83
Grès	1.30
Concrete	2-5
Stainless Steel	26

GRÉS IS THEREFORE A MATERIAL THAT IS NOT VERY CONDUCTIVE AND CAN BE TERMED AN INSULATE.

MOVEMENT

The movement of a liquid is dependent on:

- The temperature gradient acts as the energy for movement
- Gravity is the motor
- The form is the accelerator or the brake

Form of Jarre	Zen	Coralie	Ovo	Divine
Average Speed in cm/day inside of the jarre provoked by a thermal gradient of 3°C	8	43	52	130

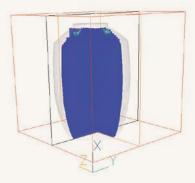
For example, if we compare the movement of the wine in the form of the standing egg (Ovo) made in other materials, it would yield the following results:

Oak : 17 cm/day

■ Concrete: 60 cm/day

■ Inox: 69 cm/day

ZEN JARRE FLUID DYNAMICS



The shape of the Zen jarre has no curvature to give movement to the wine allowing the wine to rest peacefully with very little movement

CORALIE JARRE FLUID DYNAMICS



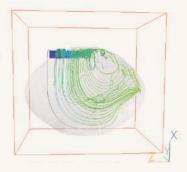
The shape of the Coralie jarre allows the wine to be tranquil with some very weak movement which allows for the enological quality of a slow exchange of tannin in the wine.

OVO JARRE FLUID DYNAMICS



The shape of the Ovo jarre allows for a movement from top to bottom with some random circulation. It allows for some uncertain agitation that further develops the wine's texture.

DIVINE JARRE FLUID DYNAMICS



The Divine jarre with its elliptical shape allows for the propagation, acceleration and recirculation of the wine inside of the Jarre.

DIVINE JARRE FLUID DYNAMICS



Thanks to this movement, the wine close to the wall is renewed and allows more interaction with oxygen. This movement does not put the lees in suspension but renews the wine in contact with them.

VIN ET TERRE GRÉS FRENCH WINERY REFERENCES



*FOR REFERENCES IN OTHER COUNTRIES, PLEASE CONTACT US





DRUNK TURTLE:

Cocciopesto and Concrete

Drunk Turtle is a family-owned company located in Tuscany that has rediscovered the use of Cocciopesto for winemaking (fermentation and aging) in the form of Cocciopesto eggs that they call Opus. They also craft the same vessels out of concrete but are best known for their Cocciopesto eggs because of the material's advantages and lower CO2 production footprint as compared to concrete.

MATERIAL

Cocciopesto is a very durable ancient Roman building material that is crafted from a mix of Italian stone, sand, marl and terracotta that is all brought together with a natural binding agent that is extremely low in heavy metal content. In fact, it is so low in heavy metal content that alimentary goods can be put in direct contact with it. The material is also less basic than concrete, therefore only a very light tartaric acid neutralization treatment is needed before usage.

HISTORY

Cocciopesto was used by the ancient Romans as a building material for the transportation of water around the Roman empire by acqueducts and viaducts. But the material was also crafted into wine transportation vessels. Through recent discoveries and comparative experiments with Drunk Turtle's concrete eggs, Drunk Turtle now primarily crafts their eggs in cocciopesto as opposed to concrete.

PRODUCTION

The cocciopesto or concrete is mixed and then **poured by hand into molds** and then left to air dry over a couple months. The molds contain two pieces that are then assembled and jointed together with the **vessels' wall being around 8 cm thick.** Once dry, the eggs need to be treated with a **light tartaric acid solution** to neutralize the basic limestone content in the cocciopesto so as to not increase the ph of the wine.



POROSITY -

The porosity of untreated cocciopesto or concrete is between 2 and 5%. If they are lined with epoxy or a layer of tartaric acid, their porosity initially becomes 0%; but over time, the acidity from the wine will eat into the epoxy or tartaric acid layer and their porosity will increase. Therefore, the porosity of cocciopesto or concrete eggs is extremely variable over time, but still less than Impruneta terracotta.

WINEMAKING & STYLES OF WINE

Cocciopesto contains bits of Impruneta terracotta inside the mix and therefore the eggs show thermal inertia characteristics in terms of fermentation qualities. Meaning, the vessels will lengthen the ferment over time without any temperature spikes, thus adding complexity and more fruit-driven notes to the ferment. The egg's practical external hatch doors make emptying them very easy because the vessels have a lower porosity than terracotta, they cater to brighter, higher tension and more elegant reds and whites. The natural egg shape keeps the lees in constant suspension, heightening the wine's textural qualities.



Cocciopesto & Concrete Eggs Made in Italy All prices below are listed in Euros (ϵ) and include transport, duty and customs to our warehouse in Christchurch. For other delivery locations, please enquire.

Order by 1st Nov for custom Opus. Below prices do not include GST.



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0PUS 3.5						
(exactly 3.72 HL)	372	550	117	97	4,675 €	3,990 €
OPUS 10 (exactly 10.5 HL)	1050	1250	192	130	10,095 €	7,665 €
OPUS 17 (exactly 18 HL)	1800	2196	246	160	14,520 €	10,605 €
OPUS 25 (exactly 26 HL)	2600	2950	269	176	, €	,€

Each Opus includes a "5 point system" stainless steel top door, a stainless steel oval external opening door, a draining valve, a racking valve (only for 10 HL, 17 HL and 25 HL) and a wine tester.

Ancient blend of different Italian crushed stones & terracotta

Premium Italian concrete

- Spray ball for the preparation protocol, included in order.
- For the 3.5 HL, it is possible for the Opus to come without a stainless oval external door upon request.

FEATURES 25 17 Silicone gaskets on top and external opening door Racking Valve 10 ■ 5 point system top door ■ Draining Valve 3.5 Forklift friendly feet system New positioning of draining & racking valve on OPUS: 10, 17 and 25 **OPUS 10 COCCIOPESTO** 3.72 HL 10.5 HL 18 HL 26 HL

OPTIONAL ACCI	ESSORIES	Price
	winery logo decoration vailable upon request with a surcharge	300 €
	 Small Colmatore glass bung system Large Colmatore glass bung system 	80 € 109 €
	Internal Food Grade Epoxy Coating for Concrete OPUS 3.5 OPUS 10 / 17 / 25	375 € 525 €

- Safety ladder brackets, thermometer, quick inert gas attack, internal cooling plates and custom exterior decoration available upon request.
- No metal rebar or netting used in structure and mixture.
- Can be used for fermentation, aging, or both.



MONTECCHIO:

Impruneta Terra Cotta Amphorae



Antica Fornace Montecchio has been producing Impruneta terracotta goods since the I700s and remains a family-run farm, winery and business located in San Donato which is in the commune of Impruneta in the Chianti region of Tuscany. In collaboration with Massimmo Ricci; a famous architecture professor from Florence, Marco Boracchini from Montecchio produces small, large and practical Impruneta terracotta amphorae for winemaking purposes.

MATERIAL -

Impruneta terracotta is famous because of its mineralogical composition that is low in metals, with the most sought after representations coming from around Tuscany's Impruneta area. Here the clay has high levels of a calcareous residual called "galestro," which makes it a natural heat sink.

HISTORY

Terracotta, which translates to "baked earth," remains the oldest ceramic that man has created, with traces of it appearing 6000 years BC. It was later discovered in Tuscany and Impruneta by the Etruscans around 700 years BC. While terra cotta can be found everywhere, the uniqueness of Impruneta terracotta is its high levels of galestro, crucial for making wine amphora.

PRODUCTION

The amphorae are handmade either via the traditional "colombino" technique, where the clay is hand rolled and built 30 cm high per day, or using a method where the clay is placed in molds. Before being cooked, the amphorae need to undergo a 7 week air drying process where they will lose 10 - 15% of their weight due to water evaporation. The amphorae are then cooked in large ovens that reach 1020 degrees Celsius or 1868 degrees Fahrenheit.



POROSITY

Once cooked, the porosity is between 6-12%, sometimes even a little bit more depending on the amphora's production.

The average radius of the pores are between 0.4 to 1.1 microns.

WINEMAKING & STYLES OF WINE

Montecchio Impruneta terracotta works very well for the fermentation of reds because they naturally draw the fermentation out without any stalling or temperature spikes. The vessels have very practical external doors for emptying. For aging, they work best on bold, tannic and reductive reds because of the increased micro-oxidation qualities. Due to their increased porosity and permeability, shorter aging times are advised.

2020 NEW ZEALAND PRICES

Traditional Impruneta Terracotta Amphorae Handmade in Tuscany

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Price

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BARREL RACK FRIENDLY AMPHORAE: CIGARS AND PUNCHEONS





Product	Volume (L)	Weight (kg)	Height (cm)	Diameter (cm)	Price
Cigare 250L	250	160	142	51	3,105 €
Cigare 500L	500	279	155	94	4,715 €

Each includes 2 x 1.5 inch Stainless Steel Tri-Clover Valve Supports, 2 x 1.5 inch Stainless Steel Tri-Clover lids and a Stainless Steel Top Door 12 inches wide by 4 inches high. Each cigar and puncheon can also come with a valveless stainless steel door on customer's request.

ΔΜΡΗΩΡΑΕ-**BEEHIVE VERTICAL**



Product	Volume (L)	Weight (kg)	Height (cm)	Diameter (cm)	Price
Beehive 7HL	700	320	179	80	6,525 €
Beehive 10HL	1000	695	207	93	8,560 €
Beehive 16HL	1600	920	221	110	12,080 €

Each Beehive includes 2 x 2 inch Tri-Clover Valve Supports, 2 x 2 inch Tri-Clover spherical valves, a wine tester and a stainless steel top door 16 inches wide by 4 inches high. The 700L and 1,000L sizes also include a stainless lateral door 7 inches wide by 9 inches high, while the 1600L size includes a stainless steel lateral door 13 inches wide by 17 inches high. Each beehive can be made without stainless steel external doors and valves upon request. Custom Beehive sizes can be made on request.

AMPHORAE:

ROTUNDA

ORCIO

EGG







Product	Volume (L)	Weight (kg)	Height (cm)	Diameter (cm)	Price
Rotunda 1000L	1000	409	149	127	8,655 €
Orcio 800L	800	363	146	120	5,225 €
Egg 800L	800	386	134	100	5,820 €

Each Amphora Rotunda, Orcio and Egg includes a stainless steel top door 16 inches wide by 4 inches high. Each Rotunda and Egg also include 1x 2 inch Tri-Clover Valve Support, 1x 2 inch Tri-Clover spherical valve, and a stainless steel lateral door 7 inches wide by 9 inches high. However, each Rotunda and Egg can also be made without the valve and external hatch door. Different sized Rotundas, Orcios and Eggs can be made on customer request.

OPTIONAL ACCESSORIES



Small Colmatore glass bung system

- 80 € 109€ Large Colmatore glass bung system
 - Thermometer and cooling plates available per request.
 - Since each Amphora is made by hand, there can be small variations in dimensions.
 - Different sizes that are not in listing can be made upon request.
 - Can be used for fermentation, aging, or both.
 - Unless cigar or puncheon, its recommended to keep Amphorae on Pallets, or to make a wooden structure for it to stand on.



Proudly Representing

OAK BARRELS, CASKS AND ALTERNATIVES













AMPHORAE, EGGS AND JARRES







