

OIS&Associates

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The technology of the Infusion Spiral® (TIS®) Present: GUIDE TO BEER PREPARATION WITH TIS®



WHAT IS TIS®?

TIS® is known as *“The intelligent tool to age and ferment alcoholic beverages.”*

WHY THE INTELLIGENT TOOL?

It's unique and patented design allows an accelerated process without losing essential quality. In fact **TIS®** has proven, among numerous trials and clients, to give the same quality or even greater than traditionally used, new wood barrels.

“Brewmasters traditionally produce with used barrels to age beers despite knowing that air entry has some negative effects within the beer. By using TIS®, beer oxidation can be avoided and the same results are achievable or even better. The aging process is competitively faster with TIS®. This concludes production and supply introduction to the market will be favorable to our clients.”

“Brewmasters enjoy to produce with used Spirits barrels to give beers the additional flavor of the spirit. With TIS®, it is possible to submerge/infuse the spirals into any spirit beverage and then retrieve them and put them into the beer container.”

WHAT TYPES OF TIS® CAN BE FOUND ON THE MARKET?

TIS® is available in two different sizes:

- 9 x 1.5 inch Barrel Pack System: one (1) set brings six (6) individual inserts united by a food grade nylon netting. One (1) case brings fifteen (15) sets



- 48 x 1.5 inch Tank Pack System: one (1) set brings five (5) individual inserts united by a food grade nylon netting. One (1) case brings ten (10) sets.



TIS® is available in several wood species:

- American Oak
- French Oak
- Eastern European Oak
- Sugar Maple
- Amburana
- Spanish Cedar
- Cypress
- Cherry
- Assorted Blended Toast Packs



TIS® is available in different toasts: Light, Medium, Medium Plus, Heavy and Char #3.

“TIS® is a custom made product, we can adapt our production to our clients requirements by creating a toast level that better suits their desired profiles.”

WHAT BENEFITS ARE RECEIVED FROM USING TIS® RATHER THAN OTHER WOOD ALTERNATIVES?

LESSER COSTS:

- THAN NEW BARRELS AND STAVES.
- OF PRODUCTION PER LITER.
- OF STORAGE AND LOGISTICS, BOTH EXTERNAL AND INTERNAL.
- OPERATIONALLY, IN REFERENCE TO MANPOWER; MANIPULATION AND IMPLEMENTATION OF PRODUCT VERSUS OTHER ALTERNATIVES.
- IN REGARDS TO ACCESSIBLE CONTROL STRATEGIES.

OTHERS:

- SHORTER TIME OF PRODUCTION OF BEVERAGE.
- LOWER IDLE CAPACITY IN PLANT/ GREATER EFFICIENCY IN THE USE OF THE INFRASTRUCTURE.
- EXCLUSIVE DESIGN OF PROFILES UPON REQUEST. (CUSTOM MADE)
- GREATER ECOLOGICAL SUSTAINABILITY.

- BLEND-ABILITY OF DIFFERENT SPECIES OF WOODS TO CREATE UNIQUE PROFILE.

IN WHICH PART OF THE BEER PREPARATION PROCESS CAN TIS® BE USED?

TIS® can be used during the Cooking, Fermentation and the Aging/Maturation stage of the process.

All wood species can be used in every mentioned stage, but the recommendation is not to use OAK spirals in the cooking stage, until clients have already learned the oak attributes of the spirals. Once knowledgeable about the way to incorporate the oak spirals and the profiles provided to particular beers, then it is wise to begin experimenting with them in the cooking stage.

That said, it should be noted that the sooner it is used in the general process, the greater the extraction of the Brew with the spirals. Thus it can be said:

- In cooking- it is where greater extraction of the qualities of wood is obtained. This is due to the high temperatures of the cooking stage itself.
- In fermentation- it is where average extractions of the qualities of the wood are obtained. Although there is no external temperature heating the drink, the fermentation process generates physical-chemical events that raise temperatures.
- In maturation- it is where less extraction is obtained from the qualities of wood. Here the drink is at rest in contact with the spirals.

(*) BECAUSE OF THE ABOVE HIGHLIGHTED INFORMATION THE FOLLOWING VERY IMPORTANT POINTS SHOULD BE TAKEN INTO ACCOUNT:

(*) The cooking and fermentation stage have a certain beginning and end. Ripening or Maturation instead, depending on the characteristics of the beer in question, can last from one week to months. The latter depends on the beer profile that the Brewmaster wants to achieve. IT CAN SAY THEN THAT THE SPIRALS HERE ENTER AN EQUATION TIME VS DOSAGE, in which the Brewmaster after knowing the potential of the spirals, will decide how to work in terms of dose and time.

“Using TIS® oak spirals in the cooking stage without taking the previous time and effort to study its profiles, can result in an “OVERLY WOODY BEER.”

I. HOW TO USE TIS®:

Depending if you are working with smaller recipients or big tanks, you will use either the 9" Barrel System or the 48" Tank System. It is important to note that in the stainless steel tanks we suggest using the 48" spirals since it is convenient to use these over the 9" ones (for quantity reasons simply, since what a spiral of 48" provides is equivalent to 5.3 spirals of 9"). The process of inserting and removing the spirals is more efficient using the largest commercial measure.

If working with small containers, then the 9" System is ideal. The handling and even the cutting, if necessary, of the spirals would be easier.

II. HOW TO USE TIS® & REUSE POTENTIAL:

TIS® has been designed with the clear purpose of maximizing the contact surface. No less important, is the spiraled -scientific helical shape of **TIS®**, which is meant to support the natural molecular movement inside any type of recipient. Creating a truly homogeneous liquid.

"TIS® has a competitive reuse potential depending on how it is used previously. Lesser contact times or when used for maturation/aging will allow for additional implementation of spirals. For reuse, just retrieve it from the recipient by pulling from the string and secure and submerge it again into another Barrel or Tank of the same type of beer."

"It is recommend to reuse spirals always from the latest stages to the first, for sanitary issues. Steam cleaning in between alternations is recommended as well."

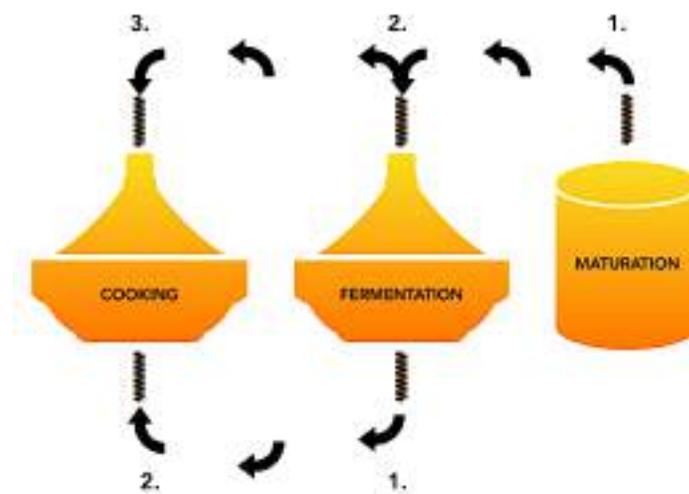


FIG.1 SPIRALS USED IN MATURATION CAN BE REUSED INTO THE FERMENTATION OR COOKING PHASE. THE SPIRALS USED IN FERMENTATION CAN ONLY BE REUSED INTO COOKING PHASE.

TO TAKE ADVANTAGE OF THE CAPABILITIES FROM THE TIS®:

- It is recommended to secure them with a string (TIS® will not float and it will sink to the bottom shortly) somewhere at the top of the tank or the barrel.
- TIS® must be submerged at the middle of the recipient, where the movement epicenter should be occurring. As shown in FIG.2 below.
- To retrieve the TIS® from the recipient, just pull the string used to secure them in the beginning stage.

“When working in containers smaller than 50 liters, it is not necessary to tie the spiral. Due to the small size of the container and the less liquid inside, the spiral will still achieve the expected results”.



FIG.2 TIS® SUBMERSION RECOMMENDATION

(*) Note flow of liquid in container in relation to TIS® incorporation

HOW MANY SPIRALS SHOULD BE USED IN THE FIRST TRIALS?

One 9" Barrel System can treat up to 6000 liters and one 48" Tank System set can treat up to 26,500 liters.

HOWEVER:

Recommendations for lower contact ratios based on products already produced by clients are the following:

TIS® SYSTEM	LITERS TO TREAT	TIS® SYSTEM	LITERS TO TREAT
One 9" Barrel System Insert	100 up to approx. 1000	One 48" Tank System Insert	500 up to approx. 5300

The Barrel System set brings 6 inserts and Tank System set brings 5 inserts

Experiences with beer producers confirm that contact ratios are very different between each customer. In the wine and spirits industry ratios are very similar, but in beer, differences can go from 100 liters to 1000 liters per every 9" spiral, for example.

"It is recommend to run several trials using different contact ratios. After several tastings, brewmasters will be able to notice the TIS® profiles and they will also be able to improve the process considering their own expectations. As any decision, the more information you have, the better result, that is why several trials are always recommended using identical woods in identical beers."

"Please always take into consideration that using woods in beer is not only a question of wood quantity, but also about time and stage of the process where it is being used."

HOW SOON CAN I RECEIVE RESULTS FROM TIS®?

COOKING STAGE: This is a process with a clear beginning and a clear end. So once this process is completed, you can retrieve the spirals from the beer or you might continue using them in the next stage, that is fermentation (after a cleaning and sanitary process of the spiral).

FERMENTATION STAGE: This is a process with a clear beginning and a clear end. So once this process is completed, you can retrieve the spirals from the beer or you might continue using them in the next stage, that is maturation (after a cleaning and sanitary process of the spiral).

MATURATION/AGING: The end time of this process, depends only upon the brewmaster and the profile goals set to achieve. Traditional experiences with clients show that the contact time in maturation can go from 15 days to 3 months, or even more in some cases. It is advisable in this part of the process to have a tasting of the beer at least once per week to conclude if further time is preferable.

TIPS TO ENSURE FRESHNESS OF TIS®:

TIS® is a custom made product design as mentioned previously. Spirals are kept in bags that are sealed considering some humidity degree. By keeping the bag closed, TIS® can be used for up to two years safely.

“If the bag has been opened for use and some spirals are still remaining, please seal the bag in the best possible way to keep the humidity controlled. Humidity plays a key role in the quality because it ensures that clients will not find ‘overly woody’ attributes in their beers. It also allows the spiral to submerge into the recipient faster.”

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TIS® Made In USA

US Patent 7357069

Infusion Spiral is a registered trademark of The Barrel Mill

