




# February Newsletter



**RIVERBEND MALT HOUSE**  
20 BARLEY WHEAT RYE 10  
NORTH CAROLINA

**MALT CERTIFICATE OF ANALYSIS**

Date: 7/20/2020  
Product: Southern Se  
Batch: 2031

Moisture	%	5.1
Friability	%	
Extract	%	81.4
Color	SRM	3.2
$\beta$ -glucan	mg/L	41
Soluble Protein	%	5.65
Total Protein	%	10.4
S/T	%	54.3
FAN	mg/L	196
Diastatic Power	$^{\circ}$ L	135
Alpha Amylase	D.U.	49.5

~Using a COA for  
Malting & Brewing Pt.2~

## Inside the Matrix....Beta Glucan and Arabinoxylan

$\beta$ -glucan is a glucose polymer that is found in the cell walls of the endosperm.  $\beta$ -glucan along with another non-starch carbohydrate called arabinoxylan (or pentosan) comprise more than 70% of the molecular weight of these cells.

High  $\beta$ -glucan levels in finished malt can lead to a laundry list of headaches for brewers, so it lands squarely on the shoulders of the maltster to manage the degradation of these polymers. In truth, we are simply setting the stage for a variety of enzymes to go to work breaking down these matrices.

Steeping the grain to approximately 45% moisture with adequate fresh air delivery is the key first step. This hydration activates the aleurone layer to synthesize hydrolytic enzymes such as  $\alpha$ -amylase,  $\beta$ -glucanase, and pentosanases which are released into the endosperm. Cell wall degradation quickly follows and  $\beta$ -glucan is solubilized. This process continues over the four day germination period. Maltsters focus on delivering large amounts of humidified air and maintaining cool temperatures in the grain bed to support this enzymatic digestion. The final kilning step stabilizes the enzyme package, making them available for use in the mash.

The success (or failure) of the maltster's efforts in this department are reflected in the  $\beta$ -glucan levels concentration reported in the Certificate of Analysis. These levels are reported in milligrams per liter. This methodology primarily captures the longer chain polymers that represent the high molecular weight portion that contributes to filtration issues and stuck mashes in the brew house.

In the United States, most brewers look for this concentration to be below 100 mg/L. However, European brewers accept much higher levels, sometimes exceeding 250 mg/L. This discrepancy could be a result of the need for rapid filtration among the larger breweries in the United States.

Arabinoxylan levels are not reported in the CoA, but are present in all cereal grains but found in highest concentrations in rye. These carbohydrates play a significant role in determining viscosity and filterability rates for brewers. Published research has documented levels exceeding 300 mg/L from samples that registered ~50 mg/L  $\beta$ -glucan. In other words, that stuck mash could be a result high molecular weight arabinoxylans and not  $\beta$ -glucan.

So what can we do as maltsters to drive degradation of arabinoxylan? The answer is not much. Early enzymatic activity within the endosperm is focused on stripping sections of pentosan away which allows access to the  $\beta$ -glucans beneath. Current

research has documented the presence of a xylanase inhibitor that develops midway through the germination stage which reduces further degradation. Some have suggested that the introduction of exogenous enzymes would aid in this function.

Just something to consider the next time you are dealing with a slow runoff or stuck mash!

-Brent



## ~Brewing with Scott: Dry Irish Stout~

With St. Patrick's Day around the corner, it's a great time to consider brewing a Dry Irish Stout. This recipe is a timeless classic. Sláinte!

Malt:

65% Southern Select

25% Flaked Barley

6% Roasted Barley

4% Chocolate Malt

Hops:

Fuggles @60 mins (20 IBU's)

East Kent Goldings @30 mins (10-15 IBU's)

Yeast:

Lallemand Nottingham Ale Yeast

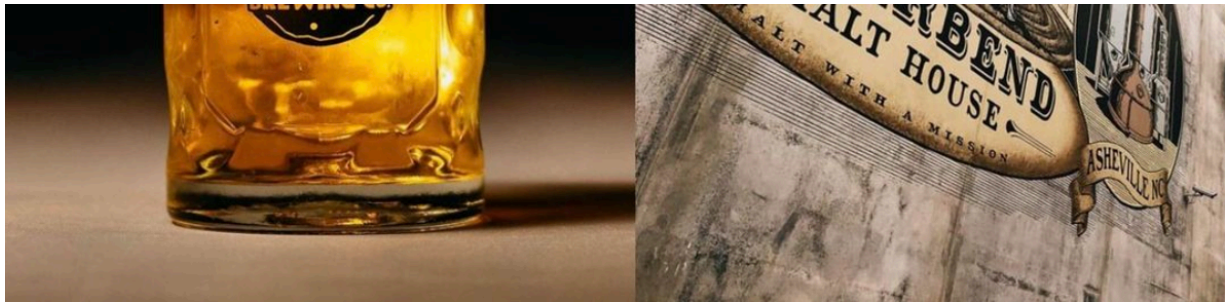
Mash this brew at no higher than 150F for 75 minutes for that dry finish indicative of this style. The key is balancing the roasty bitterness with the thin body of this beer in order to make a highly drinkable session beer. Hops are the background players in this brew so use just enough to get where you need to be in bitterness. Personally, I like a little floral and earthy tones in the taste so british hops are my go-to. Keep the ABV between 4-4.5%. You can substitute another highly attenuative yeast but I prefer to stray from the Irish ale yeasts.

Being a low ABV beer means fermentation will happen fast for this one. You can pitch yeast in the low to mid 60's and then allow it rise a couple degrees a day for about 3-4 days. Fermentation should be complete by the end of that regiment but it is recommended to give this brew at least a week and a half to two weeks to clean up properly.

~Scott Chadwick~.







## ~Great Chit~

"The foam is amazing and has our customers dazzled. They call it a Tommy pour cause if I am behind the bar I pour the pilsner with that thick, foamy top," says Tom Wilder, Young Veterans Brewing Company .

Thanks to Tom for the kind words. Our new Great Chit (Chit Malt) is taking the brewing world by storm. We recommend that brewers substitute Great Chit for Carafoam or Carapils for superior head retention. Typically about 5% Great Chit in a mashbill will give you that "thick, foamy top". It's the Chit!

And if you are in Virginia Beach, VA be sure to stop by Young Veterans Brewing Co!

Reach out to [orders@riverbendmalt.com](mailto:orders@riverbendmalt.com) for more info on Great Chit and other world class malts.





## Sustainability: Bag Recycling

What may look like a boring stack of grain bags actually represents a big step for us and the environment. We've been looking for a way to recycle these for years because they are essentially single use items.

Our friends at Sierra Nevada successfully applied for a grant to establish a recycling station for brewery waste in Asheville and invited us to participate.

Earlier last month we made our first delivery of polyester bags to American Recycling and will continue to do so throughout the year.

This program will divert several tons of plastic from our landfills every year!



About Riverbend Malt House

Riverbend Malt House, founded in 2010 and headquartered in Asheville, NC, is one of the original craft malting facilities in the US. Utilizing grain sourced from local, family owned farmers, Riverbend malt fuels high quality, unique beverages produced by hundreds of North America's finest craft breweries and distilleries. [www.riverbendmalt.com](http://www.riverbendmalt.com)

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