

**Central, Texoma & Wheat State Districts' Joint Summer Conference** 

### "A Baker's Perspective on Milling"



- Grew up in my grandma's bakery/restaurant
- B.S in Forestry from Clemson Univ., 1982
- Owned retail/wholesale bakery in NC, 1990-1996
- Graduate of American Institute of Baking, Manhattan KS, 1996, 16-week Resident Course
- Currently married to Wendi; a 1979 KSU grad from St. Francis KS

### Dave Krishock Manager, Bakery Technical Services



dkrishock@graincraft.com (785) 410-6073



# Still running in the bakery industry.....

- Flour Tech, King Arthur Flour
- Prod. Mgr, Zingerman's Bakehouse
- Began at KSU in 2005 as Professor in Baking Science & Management Curriculum
- January 2018, joined Grain Craft, as Manager, Bakery Tech Services
- A hybrid tech..... large producers, co manuf., retail bakeries and lots of pizza work

Melding the **baker's needs**, the **miller's needs** and the **farmer's needs** creates some interesting challenges.



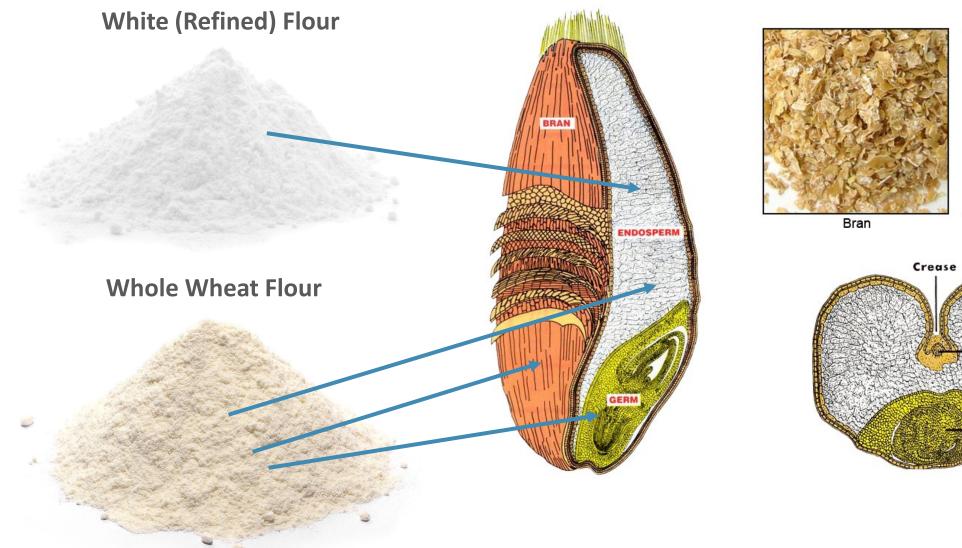
# What Affects Wheat and then FLOUR Quality?

### 1. Environment

- Water / Rain / Drought
- Temperature / Sunshine / Photosynthesis
- Disease / Weeds
- Nutrients / Fertilizer
- 2. Genetics / Variety

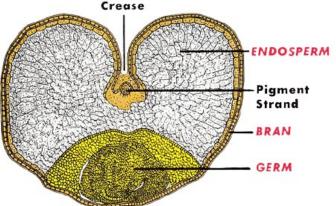








Fine white flour



## **FLOUR APPLICATIONS IN THE USA**

Hard Red Spring (HRS)	Bread, pizza crust, bagels, hearth bread and other yeast raised products
Hard Red Winter (HRW)	Bread, tortillas, pizza crust and other yeast raised products
Hard White Winter (HW)	Bread, tortillas, pizza crust, other yeast raised products and Asian noodle production
Soft Red Winter (SRW)	Cakes, crackers, cookies and pastries
Soft White Winter (SW)	Cakes, crackers, cookies, donut mixes and pies
Durum	Macaroni, spaghetti and other pasta products, and pizza crust





Classification	Protein Content %	
Bread Flours (Hard Wheat)		
High Gluten (Spring Wheat)	13.0-14.5	
Spring Wheat Bakers	12.8-13.2	
Spring/Winter Wheat Blend	11.8-12.2	
Winter Wheat Bakers	10.2-10.6	
Clear	12.0-14.0	
All Purpose (Hotel/Restaurant) Flour		
Hard Wheat or Soft/Hard Wheat Blend	10.0-11.0	
Pastry Flour (Soft Wheat)	9.0-10.0	
Cookie/Cracker	9.0-10.0	
Cake Flour (Soft Wheat)	7.0-8.0	

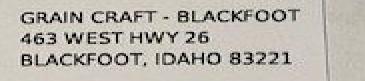






GRAIN CRAFT 201 W. Main St., Suite 203, Chattanooga, TN 37408				Product Specification & Technica Data Sheet	
Mill:	Billings MT	Product Name		Bugening Bread Flour	
Date:	8/8/2019	GC Product Code			A Contraction
	Customer:		State State	Pack Size:	50 lb.
Ci	ustomer Location:	- Antonio -		Revised:	8/8/2019
Cu	stomer Product #:			Supersedes:	5/17/2019
A. A i B. Th all	is product is food gra	ed from select blends of w de in all respects, in comp s thereunder. It shall mee FR 137.	liance with the		
A. A I B. Th all flo	high quality flour mill is product is food gra applicable regulation	de in all respects, in comp s thereunder. It shall mee FR 137.	liance with the		
A. A I B. Th all flo Che	high quality flour mill is product is food gra applicable regulation ur as outlined in 21 C	de in all respects, in comp s thereunder. It shall mee FR 137.	liance with the t FDA standard	s for wheat flour or	enriched wheat
A. A I B. Th all flo Che	high quality flour mill is product is food gra applicable regulation ur as outlined in 21 C emical Properties (14 isture (%)	de in all respects, in comp s thereunder. It shall mee FR 137.	liance with the t FDA standard Target	s for wheat flour or	enriched wheat Method
A. A I B. Th all flo Chu A. Mo B. Asi	high quality flour mill is product is food gra applicable regulation ur as outlined in 21 C emical Properties (14 isture (%)	de in all respects, in comp s thereunder. It shall mee FR 137.	liance with the t FDA standard Target 13.6	Tolerance 14.2 max.	enriched wheat Method AACC 44-16

GRAIN CRAF				Product Specification & To Data Sheet	
Mill:	Ogden	Product Name			
Date:	2/8/2021	GC Product Code			
18-10	Pack Size	50 lb or	Bulk	Revised:	2/8/2021
1.2.19				Supersedes:	7/23/2018
А. В.	This product is food gr	lled from select blends of v ade in all respects, in comp cable regulations thereund	pliance with the		
А. В.	A high quality flour mil This product is food gr amended and all applic or enriched wheat flou	ade in all respects, in comp cable regulations thereund ir as outlined in 21 CFR 13	pliance with the ier. It shall meet		
A. B.	A high quality flour mil This product is food gr amended and all applic	ade in all respects, in comp cable regulations thereund ir as outlined in 21 CFR 13	pliance with the fer. It shall meet 7.	FDA standards for w	/heat flour
A. B. A. 1	A high quality flour mil This product is food gr amended and all applic or enriched wheat flou Chemical Properties (1	ade in all respects, in comp cable regulations thereund ir as outlined in 21 CFR 13	pliance with the der. It shall meet 7. <b>Target</b>	FDA standards for w	/heat flour Method
A. B. A. M. B. /	A high quality flour mil This product is food gr amended and all applic or enriched wheat flou Chemical Properties (1 Moisture (%)	ade in all respects, in comp cable regulations thereund ir as outlined in 21 CFR 13	pliance with the ier. It shall meet 7. Target 14.0	FDA standards for w Tolerance 13.8 - 14.2	Method AACC 44-16

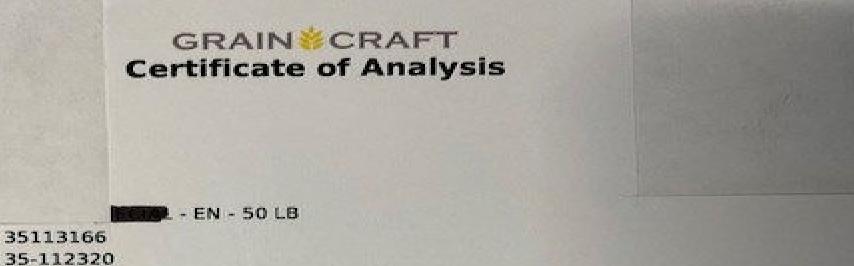


Product Number

Order Number

Lot Number

Product Description



 PO Number
 622342

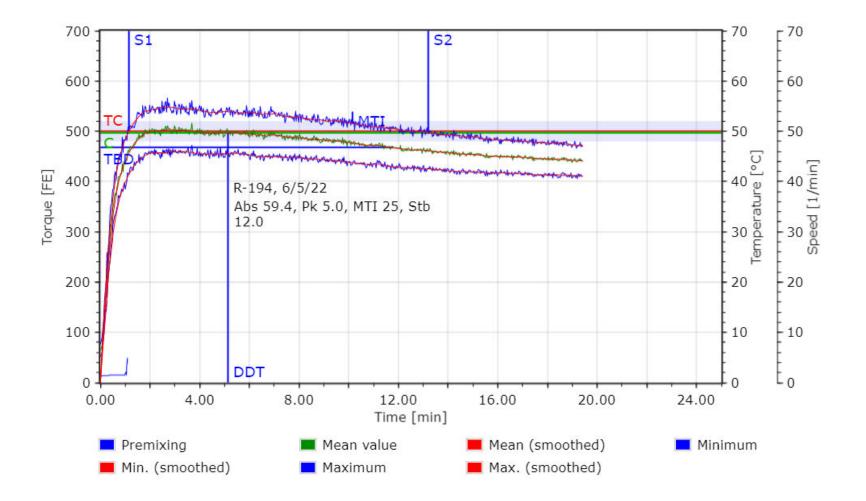
 Ship Date
 12/07/2020

 Caution: Flour is not a ready to eat product. This product has not been processed to control microbial pathogens.

Allergen: Contains Wheat

Attribute (Units)		Result	
Moisture (%)		13.1	
Ash (%)		0.57	
Protein (%)	14	13.1	
Farinograph Absorption (%)		63.6	
Farinograph Peak (Min)		6.1	
Farinograph MTI (8U)		39	
Farinograph Stability (Min)		12.9	

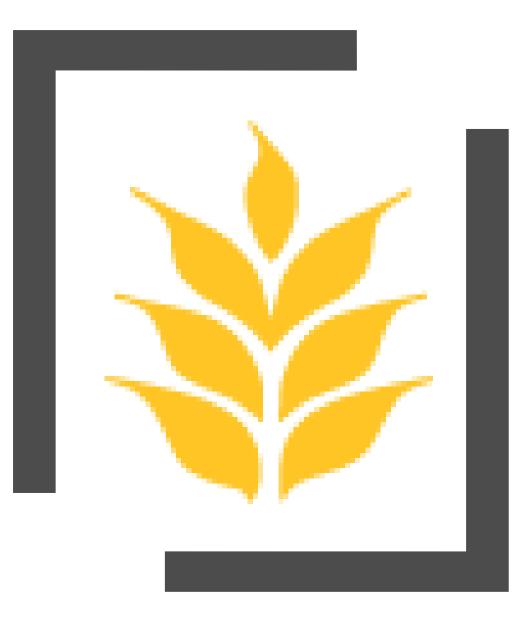
## Farinograph for a Bread and Bun Producer





Can you walk and chew gum at the same time?





## Additional Flour Treatments

• Enrichment – mandated by FDA; intent is to replace vitamins and nutrients lost when milling white/ refined flours. (Niacin, thiamine, riboflavin, reduced iron and folic acid. Not required for whole wheat flours.

• Malted Barley Flour - Natural additive that helps baking performance.

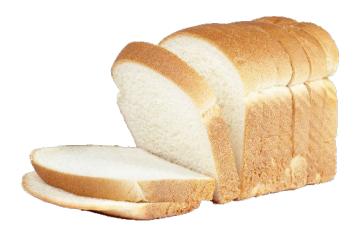
• **Fungal Alpha Amylase** - Performs same as malted barley flour, though enzymatically. (Sometimes listed as a Baking Enzyme).

• **Ascorbic Acid** –Used as a flour 'improver' or dough conditioner. In the presence of oxygen, ascorbic acid becomes an oxidizing agent and can:

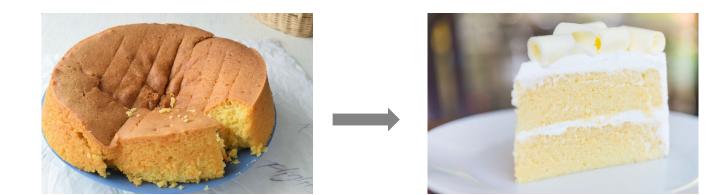
- Strengthened gluten
- Greater loaf volume
- Improved oven spring



**Benzoyl Peroxide** (Bleached Flour) - Benzoyl peroxide is used as a whitening agent in wheat flour. Benzoyl peroxide differs from chlorine in that it only brightens the flour; it does not affect pH whatsoever. **Soft wheat flours are often bleached to produce a whiter final crumb.** 



**Chlorine** (Bleached Flour) - Chlorine is used as a whitening agent in wheat flour. Chlorine brightens the flour and alters the pH value of the flour. Normal pH value of unbleached wheat flour is 6.0 - 6.7. Chlorination improves the functionality of soft wheat flours to meet current customer preferences such as crème cakes and muffins.



# Thank You



#### 🔼 YouTube

Learn more about wheat, flour, dough and processing on the **Grain Craft YouTube Channel** and check out the <u>Dough with Dave Playlist</u>!

<u>dkrishock@graincraft.com</u> (785) 410-6073