



# Agricultural Marketing Service

Creating Opportunities for American Farmers and Businesses

# HVAC in Durum Wheat

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# Hard and Vitreous Kernels of Amber Color (HVAC)

- **HVAC (Kernels that are 100% Hard and Vitreous of Amber Color)** - Vitreous is the characteristic which gives the wheat kernels a hard, glossy appearance
- **NON-HVAC** – Soft durum kernels that lack the hard vitreous characteristic, or semi-hard kernels that contain soft chalky spots
- **How HVAC is Determined** - Visual inspection on a 15-gram portion

## SUBCLASS

Durum wheat is divided into three sub-classes based on the percentage of HVAC in the representative lot

**Hard Amber Durum Wheat** *Durum wheat with 75 percent or more of hard and vitreous kernels of amber color*

**Amber Durum Wheat** *Durum wheat with 60 percent or more, but less than 75 percent of hard and vitreous kernels of amber color*

**Durum Wheat** *Durum wheat with less than 60 percent of hard and vitreous kernels of amber color*

Even though durum is certified by subclass, contracts may dictate specific limits

# Vitreous and Non-Vitreous Kernels

HVAC

Non-HVAC or Soft



# Non-HVAC Kernels with Soft Spots



# Non-Difficult HVAC Samples



High HVAC %



Easy to detect soft kernels



## Challenging HVAC sample



- Weather-affected kernels
- Require more time to locate and cross-section difficult kernels
- Samples of this appearance are more subjective and can result in more inconsistencies

# What is FGIS doing to Improve HVAC Results?

- Monitoring programs in place for inspectors and Quality Assurance Specialists (QAS)
- Referee samples used to assess inspector and QAS ability
- Conduct annual grain grading seminars for QASs
- Provide on-site training for inspectors and elevator personnel
- Conduct research on alternative methods for HVAC determination



# QAS Alignment to the Board of Appeals and Review (BAR) for 2018

Overall QAS HVAC alignment 96%

In 2018 the BAR issued three Referees

1. 84.7% Accuracy
2. 96.4% Accuracy
3. 96.8% Accuracy

The BAR's monitoring program is used to align QASs to the BAR who in turn align their agency inspectors

# Domestic Inspection Operations Office (DIOO)

- Four on site visits with agencies and issued referees
- All four agencies independently averaged over 95% accurate
- Overall average of 96.7% accuracy
- 859 samples were evaluated by DIOO for HVAC in 2018
  - 93.6% Accuracy

# USDAA

## 2018 HVAC BLEACHING METHOD

# Potential Benefits of Bleaching

- Produces a bright vibrant kernel
- Makes difficult weather-affected kernels easier to separate
- Potentially minimizes inspector variation and increases accuracy and consistency
- FGIS to explore using the bleach method with imaging technology



# Natural vs Bleached

**Natural**



**Bleached  
w/ Potassium Hydroxide (KOH)**



# Questions?

