



Australian Grain Industry – Code of Practice Technical Guideline Document

No. 7 WHEAT BLENDING

**Compiled on behalf of the Australian Grain Industry by:
Grain Trade Australia**

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Technical Guideline Document

No. 7 Wheat Blending

Version Control

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May 2015	1.0	Original document development and release
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1. Application

This Technical Guideline Document (TGD) refers to Industry best practice for the blending of more than one parcel of grain. It complements Australian Grain Industry – Code of Practice (GTA Code of Practice) and GTA Wheat Trading Standards.

2. Discussion on Blending

2.1 What is Blending

Blending may be defined as combining grain (varieties or grades) to obtain grain of a particular quality or consistency.

2.2 Types of Blending

Blending may occur in a number of ways as outlined below:

2.2.1 Heterogeneous Admixture

Grain of the same or different variety or grade may be added together:

- To achieve a desired result such as increased tonnage;
- If permitted by industry standards; and
- With no attempt made to create a homogeneous product of the combined parcels. Depending on the storage type, the resulting grain may be of variable quality when outturned in numerous transport units (road trucks, rail wagons, containers etc.).

2.2.2 Homogenised Admixture

Grain of the same or different variety or grade may be blended:

- To achieve a desired result of a consistent quality product where the rate and amount of the two or more different grain parcels added together is controlled to ensure the outcome is of a known and consistent quality. The resulting grain is generally well suited to processing e.g., desired for grain supplied to flour mills for milling.

2.3 Factors Influencing Blending and Desired Outcomes

Blending of grain may occur at various locations along the supply chain, depending on a range of factors including but not limited to:

- The quality of the original parcels of grain to be blended;
- The desired quality of the final product;
- Commercial aspects e.g., contractual obligations of grain quality to be supplied following blending;
- The end-use of the grain;
- Location where the parcels are to be blended;
- Infrastructure available to undertake the blending; and
- Whether regulatory controls permit that blending (e.g., rejected grain at the point of loading).

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The following table describes common blending scenarios in grain supply chain and factors which may be generally considered to achieve a particular outcome.

Table 1. Common Blending Scenarios

Nature of Blending Activity			Major Consideration
Location	HET	HOM	
On-Farm			
Variety A + A	✓		For on-farm stockfeed use: <ul style="list-style-type: none"> • Quality less important. • Low priority for grain to meet industry standards.
Variety A + A		✓	For seed retention: <ul style="list-style-type: none"> • Desire for high seed purity. • Desire for good quality. • Desire for consistent product.
Variety A + A		✓	For delivery to a BHC or sale to an end-user: <ul style="list-style-type: none"> • Desire for the load to be of a consistent quality to assist meeting industry grade standards or specific contract specifications.
Variety A + B		✓	For delivery to a BHC: <ul style="list-style-type: none"> • Blended parcel must meet the varietal purity limit within each grade standard. • Desire for consistent quality and varietal level throughout the load tendered for delivery.
Bulk Handling Company			
Variety A + B, classified as same grade	✓		For classification & storage purposes: <ul style="list-style-type: none"> • Classification follows the Varietal Masterlist rules. • Stored as per Varietal Masterlist rules. On outturn: <ul style="list-style-type: none"> • A homogeneous product is generally desired but may not be able to be supplied as it is impractical due to infrastructure restrictions.
Variety A + B, classified as different grades*	✓		For storage: <ul style="list-style-type: none"> • Industry standards and Varietal Masterlist rules apply. Thus generally stored separately. • Market or buyer requirements may enable grain to be stored together. On outturn to domestic market: <ul style="list-style-type: none"> • A homogeneous product is generally desired but may not be able to be supplied as it is impractical due to infrastructure restrictions.
Domestic Processor			
Grade A + A		✓	For grain sourced from the same or different storages, generally a consistent quality is desired however this varies depending on: <ul style="list-style-type: none"> • The functional characteristics and desired end-product

Nature of Blending Activity			Major Consideration
Location	HET	HOM	
			<ul style="list-style-type: none"> The ability to assess each parcel and homogeneously blend before or during processing.
Grade A + B*		✓	When sourcing two or more grades, it is often highly desirable to create a homogeneous product through understanding the functional characteristics of the supplied grain and the impact of blending on achieving the desired end-product.
Export Outturn			
Grade A + A	✓ ✓	✓	<p>For all exports, a homogeneous product is generally desired.</p> <p>For container exports:</p> <ul style="list-style-type: none"> Achieving a consistent quality in each container is generally limited if grain cannot be blended in storage prior to container loading. Achieving a consistent quality in the container consignment is generally limited if grain cannot be blended in storage prior to container loading. <p>For bulk exports:</p> <ul style="list-style-type: none"> Achieving a consistent quality in each hatch is generally able to be done as grain may be received and placed in storage. On outturn, various storage units may be sourced enabling grain to be homogeneously blended into each hatch.
Grade A + B*	✓	✓	<p>For container exports:</p> <ul style="list-style-type: none"> While approval may be granted, given infrastructure limitations, this is generally not desired given the additional complexity in achieving a homogeneous product. <p>For bulk exports:</p> <ul style="list-style-type: none"> If approval is granted, achieving a consistent quality in each hatch is generally able to be done as grain may be received and placed in storage. On outturn, various storage units may be sourced enabling grain to be homogeneously blended into each hatch.

Note:

* See 2.4.1 below.

HET = Heterogeneous blending

HOM = Homogeneous blending

2.4 Regulatory Control

2.4.1 Industry Control

There are generally three main issues to be considered when determining whether to blend grain.

Industry Standards:

- The GTA Wheat Trading Standards state:
 - *“The Grade into which a load is classified shall be determined by its variety, and then by the various physical quality specifications detailed in these Standards”.*
 - *“Deliveries must meet relevant Standards to be able to be received into that bin grade”.*
 - *“If the segregation is not available, the next (highest permitted) bin grade will apply if the grain is delivered unless other requirements are stated in the relevant Storage & Handling Contract”.*
 - *“Where the load is declared as being of more than the one variety, determine the different varieties contained in the load and for each, review the applicable maximum grade classification as per the Variety Masterlist. No matter the percentage of each variety in the load, the maximum grade classification of the load can only be as per the lowest Grade classification of the declared varieties. Based on the quality results, Grade the load no higher than the lowest Grade classification and record that variety.”*
- When industry standards are applied or quoted, the above rules must apply unless variations are permitted as outlined below.

Code of Practice:

- Section 2.5.1 (ii) of the Code of Practice states the following:
“Segregations are created according to market requirements and based on the industry standard for that commodity and grade.

Documentation of each delivery is checked prior to unloading to ensure the integrity of the grain in storage will be maintained.

Grain of differing varietal grade classification is not blended unless:

- *The outcome of the resultant grain quality is known; and*
- *Appropriate approval has been obtained from the owner of the grain’.*
- Thus, different grades are permitted to be blended provided the above conditions are met. In these instances, grade purity is maintained.

Contractual obligations

- This refers to specific agreement between the buyer and seller of the grain, or the storage agent who receives/stores/outturns the grain on behalf of the relevant parties.
- The specific conditions to apply or variations to industry standards are generally documented in a contract e.g., Storage & Handling Contract.

2.4.2 Government Control

There are no Australian government regulations stipulating the classification of grain, permitted variety and grade blending or contractual obligations regarding application of standards.

Importing country governments may apply specific quality restrictions on grain exports from Australia. Refer to information available from the relevant importing country and the Australian Department of Agriculture and Water Resources (DAWR). Generally, such restrictions do not include restrictions on blending.

3. Blending Controls and Outcomes

Different methods of blending are more suited to achieve blending and quality outcomes. The following table provides common examples of grain blending, although the list is not exhaustive.

Table 2. Common Examples of Grain Blending

Quality Parameter to be Considered / Blended	Blend Type	Outcome
Protein (or Screenings, Test Weight, stained, various weed seeds etc.)	Blend tonnage based on protein content of each parcel.	Specific protein content of entire grain parcel. Product may or may not be homogeneous.
Moisture	Blend tonnage based on moisture content of each parcel.	Specific moisture content of entire grain parcel. To consider impacts of moisture migration if the final product is not homogeneous.
Falling Number	Blend parcels based on Perten Liquefaction Number.	Specific Falling Number value of entire parcel. Product is generally not homogeneous.
Flour parameters	Blend based on original wheat quality of individual parcels	Desired flour quality for particular end-use. Product may or may not be homogeneous.
Post-harvest grain protectants	Blend tonnage based on the residue level of the specific chemical of each parcel.	Specific residue level of the grain protectant. Product may or may not be homogeneous.
Mycotoxins	Not recommended due to: <ul style="list-style-type: none"> Highly variable nature within a grain parcel makes it difficult to accurately predict level. Regulations may not allow blending to low levels. 	If done, concentration at a specific level. Product is generally not homogeneous.
Other food safety issues (mould etc.)	Not recommended due to: <ul style="list-style-type: none"> Highly variable nature within a grain parcel makes it difficult to accurately predict level. Impact of that quality parameter on combined parcel of grain. Regulations may not allow blending to low levels. 	If done, need to accurately sample and test to ensure level detected is correct and sample assessed is representative. Product is generally not homogeneous.

To comply with the Code of Practice:

3.1 Document Procedures

This includes documenting procedures such as:

- The actual blending process;
- How the blending is to be done;
- Who carries out the task;
- When and where the blending is conducted;
- The “starting quality” and the desired “end quality” or tonnage;
- Monitoring the blending process; and
- How the final outcome of the blending will be measured and its success determined.

3.2 Know the Outcome of Blending

This includes knowledge of the grain quality such as:

- How to determine the initial quality of the grain parcels to be blended;
- How the final quality of the blended parcel is to be determined to ensure it meets the intended quality; and
- A comparison of the result of the blending versus the desired quality, including documentation of any permitted variances.

3.3 Obtain Appropriate Approval

This includes where relevant seeking the appropriate approval from parties that may include:

- The owner of the grain who may or may not be the party conducting the blending;
- Approval from the owner of the grain has been granted to the party undertaking the blending; and
- The recipient of the grain has given approval.
- In seeking the approval to blend, that approval process may be in various forms, but at a minimum should involve the following:
 - Documentation of the details of the blending including that outlined at 3.1 and 3.2 above.
 - Written approval from the relevant party(s) that the blending may occur.