Cereal grains

Acceptance Guidelines for Raw Materials in a Feed Factory

H&N® INTERNATIONAL

Barley grain

General description

The grain of *Hordeum vulgare L.*, and *Hordeum districhum L.*

General aspect

Grain is a pale yellow colour, without impurity content such as other seed, sand, or foreign material. Delivery product must present as a healthy and uniform cereal, with absence of moisture, rancid or acidic smell (absence of heating and fermentation).

Observation

In the feed factory, if the grain is properly dried, storage in silos doesn't present difficulties. In batches with high humidity, it is advisable to add fungicides while in storage. The mill's performance can be significantly affected by the specific weight of the grains. Also, due to the presence of the glumes, barley grains are more effectively ground using hammer mills compared to roller mills. It does not pose any issues for the granulation process. A representative sample should be stored for complementary analysis.

General controls and acceptance requirements

Parameter to analyse	When	Parameter to analyse	Values		
			Normal	Reclaims	Decline
Humidity (%)	Before Unloading	Basic	10–11		>14
Bulk density (kg/Hl)			62	<62	<58
Damaged kernels and foreign material (%)			<5	>5	>9
Insects and plague			Absence		Presence
Temperature[1] (˚C)					>10

[1]*In relation to the environmental temperature*

Maize grain

General description

The grain of *Zea Mays*. Maize breeders have created many cultivars that correspond to specific climatic or agronomic conditions and uses. "Dent corn" maize is the most widely grown type of maize and the one typically used for feed.

Other name: Corn (USA)

General aspect

Colour of maize is yellow. Delivered product must present as a healthy and uniform cereal, with absence of moisture, rancid or acidic smell, no presence of impurities such as other seeds, or foreign material as sand, metal objects, insects, and plagues.

Observation

Pay attention to batches with warm grains. Depending on the growing season and storage conditions, mold and associated mycotoxins can be a problem. In the case of suspected products, is recommended to analyse mycotoxins before purchase, directly in the sample taken at the supplier's warehouse. To store a representative sample for complementary analysis.

General controls and acceptance requirements

Parameter to analyse	When	Parameter to analyse	Values		
			Normal	Reclaims	Decline
Humidity (%)	Before Unloading	Basic	13	>13	>15
Damaged kernels and foreign material (%)			<5	>5	>8
Insects and plague			Absence		Presence
Temperature[1] (˚C)					>10
Aflatoxins B1[2] (µg/kg)	After unloading	Extended			>20

[1]*respect environmental temperature*

[2]*zearalenone > 2000 µg/kg.*

Sorghum

General description

The grain of the *Sorghum bicolour*. White sorghum is the most widely used variety in animal feed.

Others name: Sorghum, broomcorn, grain sorghum, milo, great millet, durra, dourah.

General aspect

The colour of sorghum grain varies from blonde to brownish and must appear as a healthy and uniform cereal, free from musty, damp, rancid, or acidic odors and without the presence of impurities such as other seeds, or foreign material as sand, insects, and plagues.

Observation

In the feed factory, grains properly dried can be stored without any problem. For batches with high humidity, it is convenient to add fungicides in the silos during the storage. Excessive grinding of grains could cause high pulverulent feed. Pay attention to batches with dark, orange or red grains of sorghum as this is highly associated with high tannin content. In the case of suspected batches, it is recommended to analyse mycotoxins and tannins before purchase with a sample taken directly from the supplier's warehouse. A representative sample should be stored for complementary analysis.

General controls and acceptance requirements

Parameter to analyse	When	Parameter to analyse	Values		
			Normal	Reclaims	Decline
Humidity (%)	Before Unloading	Basic	12	>13	>14
Bulk density (kg/Hl)			>75		<70
Damaged kernels and foreign material (%)			<5	>5	>8
Insects and plague			Absence		Presence
Temperature[1] (˚C)					>10
Tannins (%)			<0.2		>0.3
Aflatoxins B1[2] (µg/kg)	After unloading	Extended			>20

[1]respect environmental temperature.
[2]zearalenone > 2000 µg/kg.

Wheat

General description

The grain of the *Triticum sp.*

General aspect

The colour of wheat grain is dark beige, and it must appear as a healthy and uniform cereal, free from musty, damp, rancid, or acidic odors of impurities such as other seeds, or foreign material as sand, metal objects or insects and plagues.

Observation

In the feed factory, grains properly dried can be stored without any problem. For batches with high humidity, it is convenient to add fungicides in the silos during the storage. Excessive grinding of grains can lead to the accumulation of fine particles in poultry beaks, resulting in problems. Wheat grain presents good propensity to grinding by hammer mills or at granulation process. Its inclusion in feed improves pellet durability compared to corn. Before unloading wheat, it is highly recommended that humidity and bulk density are first checked.

General controls and acceptance requirements

Parameter to analyse	When	Parameter to analyse	Values		
			Normal	Reclaims	Decline
Humidity (%)	Before Unloading	Basic	12	>13	>15
Bulk density (kg/Hl)			>72		<70
Damaged kernels and foreign material (%)			<5	>5	>8
Insects and plague			Absence		Presence
Temperature[1] (˚C)					>10

[1]*respect environmental temperature.*