

How Granulating Aid Enhances Granule Strength and Durability



Granulating aids are far more than simple adhesives in the fertilization industry. All of them determine how strong and uniform and how long-lasting the final granules are. If you don't use **fertilizer granulating aids**, you'll get dust, wrong nutrients release, and breakage during transport. This impacts yield and farmer satisfaction. Granulating aids achieve strong structural reliability in fertilizer, which is essential for modern agriculture.

The Science Behind Granulating Aids

A granulating aid helps fertilizer particles bind well. On their own, the fertilizer salts are often too fine and chemically inert to stick together well.

The granulating aid works by forming bridges between particles. When a very controlled amount of moisture is added, the aid softens and coats the particle surface. Over time, it solidifies and locks the neighboring particles together.

This fills the internal void and creates a denser particle. Since porosity is one of the biggest contributors to weak granules, reducing it has an outsized effect on overall strength.

In many fertilizers, the base material recrystallizes as it cools. [Fertilizer granulating aid](#) also affects this by influencing how these crystals form. It promotes the formation of even-sized crystals.

Granulating aid doesn't affect the chemical properties and the end use of fertilizer. **NAQ GLOBAL's** most famous GREENFIX and NAQFIX series are non-toxic and easily biodegradable, and their primary purpose is to improve the crushing strength and reduce fines in the fertilizer.

Why Do Granule Strength And Durability Matter?

Fertilizer like complex NPK may become overly powdery during handling and transportation or in the granulator itself during production stage. Hence, the final product generated would have very high percentage of fines or under sized granules.

The granule strength is one of the important characteristics of fertilizer efficiency. The world's cultivational capacity increases with the adoption of technology, and so does the demand for global fertilizer. This means products must be shipped over long distances. But weak granules break during handling, storage, and transportation. When products reach the field, quality suffers significantly.

Brittle granules also cake and clump. This is especially high during humid conditions.

Once the granulation process has happened, it helps in the following way:

- The strong granules retain their shape even when they are stored in bags for a long time.
- This helps to evenly distribute nutrients in the soil.
- Granules are more robust and produce less dust which is not harmful for workers' health.
- There is a reduced moisture-related weakness. This is because the aids control how water interacts with raw materials during formation.
- Also, the increased strength helps preserve the [coloring agents](#) often blended into granules for multiple reasons.

Manufacturers thus benefit from higher yield, reduced production downtime, and a safer working environment for workers on the ground.

Testing the durability

Some standard measures evaluate durability. These include:

- **Crush strength testing:** This process applies controlled force to a sample until it fractures.
- **Abrasion test:** It replicates the abrasion of granule during transportation.
- **Moisture testing:** The granules are exposed to a humid storage environment and observed for behavior.

NAQ Global conducts rigorous testing to ensure the granules are durable and can withstand the abuse of harsh conditions.

Balancing Sustainability And Performance

Environmental regulations are tightening around the world as we move toward a greener, more sustainable planet. Interestingly, granule strength and environment are strongly correlated. Dense granules are naturally resistant to environmental degradation as they reduce the internal porosity and the hygroscopic properties of raw fertilizers.

The move is part of a wider push toward [green technology in fertilizer quality](#) as manufacturers rethink how they make the product.

Conclusion

The granulating aids directly affect how the fertilizer performs in the field. They improve particle bonding, reduce breakage and increase crush strength. The cultivation industry today is increasingly moving toward **green technology in fertilizers**, which encourages manufacturers to think of the environmental aspects in addition to the technical ones. Areas of increasing focus include reducing binder-related emissions during processing, sourcing biodegradable additives and more. Needless to mention, core sustainability principles are actively shaping the modern fertilizer manufacturing industry.

Source Link:

<https://sites.google.com/site/naqglobalfertilizers/blog/granulating-aids-enhance-granule-strength-durability>