Honeywell Sulf-N® 26: A New Fertilizer for a New World

What's at stake

Seven billion people need to eat every day and we need nitrogen fertilizers to feed them

…but nitrate fertilizers can be unsafe to transport and store

…and nitrate fertilizers, especially ammonium nitrate, can be used to make explosives

How Sulf-N® 26 can help

Powerful agricultural benefits

Safe to handle, transport, and store

Low detonation potential

Honeywell

Powerful agricultural benefits

Equal or better crop yields and quality for a broad range of crop and soil combinations

- Dry solid fertilizer, 26-0-0-14S
- 26% nitrogen (N) and 14% sulfur (S), two essential nutrients plants need to thrive
- Both critical forms of nitrogen
  - 6.5% nitrate nitrogen for early green up
  - 19.5% ammonium nitrogen for healthier root zone
- Sulfate form of sulfur
  - Sulfate is immediately available to plants unlike other forms of sulfur
  - Plants need sulfur for maximum nitrogen uptake
  - World soils are increasingly sulfur deficient

Improves operational efficiency

- Blends with other fertilizers and crop-protection chemicals unlike ammonium nitrate (AN)
- Stable when stored with urea even in humid climates
  - Retains particle integrity
  - Does not “sugar” like AN

In multiple crop tests pitting Sulf-N® 26 against various combinations of nitrogen and sulfur fertilizers, Sulf-N® 26 has delivered equal or superior crop yields and quality. For grains, vegetables, tree crops, and berries – Sulf-N® 26 delivers.

	Compatibility with phosphorus and potassium fertilizers	Compatibility with urea	Ease of application
Ammonium nitrate	Moderate	Low	Difficult “sugars” in hot, humid climates
Calcium ammonium nitrate	Moderate	Good	Moderate
Urea	High	—	Good
▶ Sulf-N® 26	**▶ High**	**▶ High**	**▶ Good**

Safe to handle, transport, and store

Safe to handle

- Classified as non-hazardous
- Safe to handle and apply unlike other fertilizers such as anhydrous ammonia
- Can be safely impregnated with petroleum based pesticides

Safe to transport

- No special transportation requirements
- DOT Class 5 – non-oxidizer (unlike AN)
- DOT Class 1 – non-explosive

Safe to store

- Stores safely with other fertilizers such as DAP, MAP, MOP, SOP, NPK and urea
- Can be packaged and sold in small bags or in bulk

That safety means lower cost for the value chain

- No special security or reporting requirements
- Lower risk and insurance premiums

Ammonium nitrate accidents have killed or injured thousands of people and cost billions of dollars. Sulf-N® 26 is safe for storage and transportation, offering peace of mind and cost savings to the entire value chain.

	US Department of Transportation (DOT) Regulation	
Ammonium nitrate	Regulated oxidizer	(Regulated or banned in the US, Canada, Europe, Australia, Afghanistan, Philippines and many other countries)
Calcium ammonium nitrate	Not regulated	
Urea	Not regulated	
▶ Sulf-N® 26	**▶ Non-hazardous, not regulated**	

Low detonation potential

Low detonation potential

- Sulf-N® 26 technology fuses ammonium nitrate (a fertilizer and explosive) with ammonium sulfate (a fertilizer and fire retardant)
  - The result is a “double salt” matrix with two AN molecules for each molecule of AS
  - The AS in the Sulf-N® 26 matrix dampens the rate of AN combustion
- When used as a supplementary fuel source for high explosives, Sulf-N® 26 is less effective than sugar or sawdust
- When mixed with a sensitizer (as in AN/fuel oil bombs), Sulf-N® 26 is as ineffective as sand

Detonation testing

- Only fertilizer awarded SAFETY Act Designation by U.S. Department of Homeland Security
- Extensive detonation testing conducted under guidance of US Bureau of Alcohol, Tobacco, Firearms and Explosives
- Successful testing by other defense and security entities

Terrorist bombs have killed or wounded over 50,000 people in the last two years. Nitrate fertilizers are the single largest source of the improvised explosive materials used in those devices.

	Detonation Potential
Ammonium nitrate	Very High
Potassium nitrate	Very High
Sodium nitrate	Very High
Calcium ammonium nitrate	High
Urea	Medium
▶ **Sulf-N® 26**	▶ **Low**

Find out more

Please visit sulfn26.com to learn more about Honeywell Sulf-N® 26

Honeywell Specialty Materials

www.honeywell.com

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July 2011