Shell Sulphur Solutions

SHELL THIOGRO

Shell Thiogro TSP-S fact sheet for fertilizer producers

FACT SHEET

At Shell we understand the importance of safety in manufacturing operations; our new technology is backed by many years of experience in safely handling sulphur.

- A new technology to produce sulphur-enhanced TSP utilises a unique patented sulphur micronization process which avoids the generation of potentially explosive sulphur dust. This wet micronization technology eliminates the risk of dust explosion from the milling process
- Sulphur particle size can be managed and controlled in the 20-200 µm range
- Shell Thiogro technology processes sulphur in any available liquid stream found in the manufacturing process – usually phosphoric acid – feeding a complete additive/elemental sulphur/phosphoric acid slurry to the existing TSP reactor
- Simple batch or semi-batch process
- Sulphur micronization process can also be utilised in the production of sulphur-enhanced MAP, DAP and NPK.

Key Markets for Shell Thiogro TSP-S

- Regions not economically served by SSP fertilizer plants
- Sulphur deficient regions, in particular with soybean and cotton crops, where sulphur fertilizers are not currently applied
- Geographical areas where currently TSP and SSP are used.

Shell Thiogro TSP-S Process Advantages

- Unique process to micronize elemental sulphur and produce sulphur-enhanced TSP with minimal dust
- Can be used in conjunction with almost any TSP production process; with low initial capital cost for installation and without any substantive change in operating conditions. The technology is supported by extensive research and development at recognised global fertilizer research facilities and universities
- Easy to control and operate. Changing sulphur particle size and particle distribution require adjustment of operational parameters only
- Can use a wide range of raw materials, from concentrated phosphoric acid to diluted scrubber liquor
- Can be added to existing installations as a new section of the plant and be operated 'on-demand'
- Few additional personnel requirements with possibility of full automation.

Shell Thiogro TSP-S Product Advantages

- TSP with 12% micronized sulphur: same sulphur content as SSP but with 2-2.5 times the P_2O_5 content
- Premium product able to cost-effectively compete with other sulphur fertilizer products – Ammonium Sulphate, SSP or blends – on basis of higher nutrient density, improved handling properties over incompatible blends, and logistical cost advantages
- Elemental sulphur particle size and particle size distribution can be custom tailored to different markets and specific agricultural environments (e.g. soil and climatic conditions)
- Product differentiation in competitive markets
- An excellent delivery vehicle for plant nutrient sulphur.

Typical formulations from agronomic recommendations and soil requirements will target a P_2O_5:S ratio range of two to four. These formulations will include sulphate sulphur, which is beneficial for early crop development before the oxidation of elemental sulphur to sulphate takes place. The remainder of elemental sulphur becomes a 'slow release' form of sulphur, which is available during the full growth cycle of the crop.

Some TSP-S product examples are:

- 0-41-0 12S (11% ES, 1% SO4-S)
- 0-38-0 12S (9% ES, 3% SO4-S)
- 0-37-0 10S (6.7% ES, 3.3% SO4-S)

Final formulas, average sulphur percentage (usually between 8-12%) and physical characteristics for an individual producer would be defined and designed based upon the producer's specific requirements, including market opportunity, raw materials quality, and plant design.

For further information

please contact your local representative or;

www.shell.com/home/content/sulphur/your_needs/products/in_fertilizers/tsps_technology/

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