

SOLVAir[®] Solutions odium Dry Sorbents for Flue Gas Treatment September 1, 2016

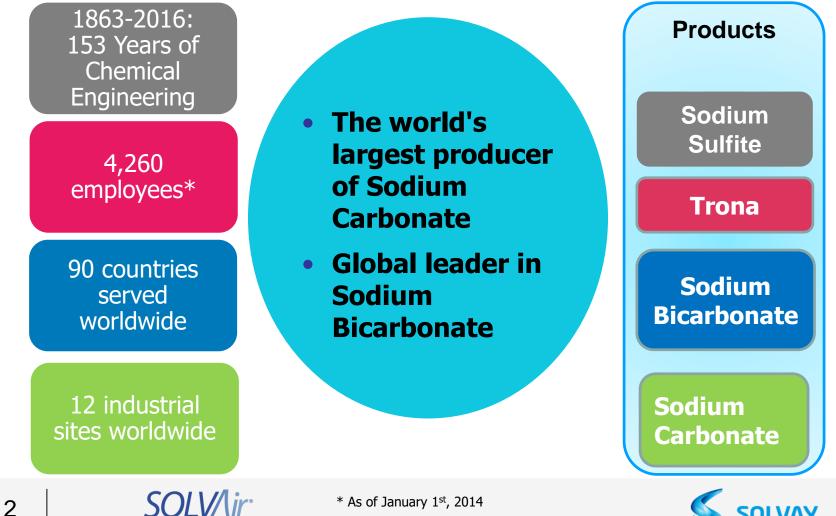


Soda Ash & Derivatives

A leading player and a very competitive supplier



Global Business Unit Soda Ash & Derivatives Key Facts & Figures





* As of January 1st, 2014

asking more from chemistry®

GBU Soda Ash & Derivatives Global Presence







SOLVAir® Solutions

WE DO

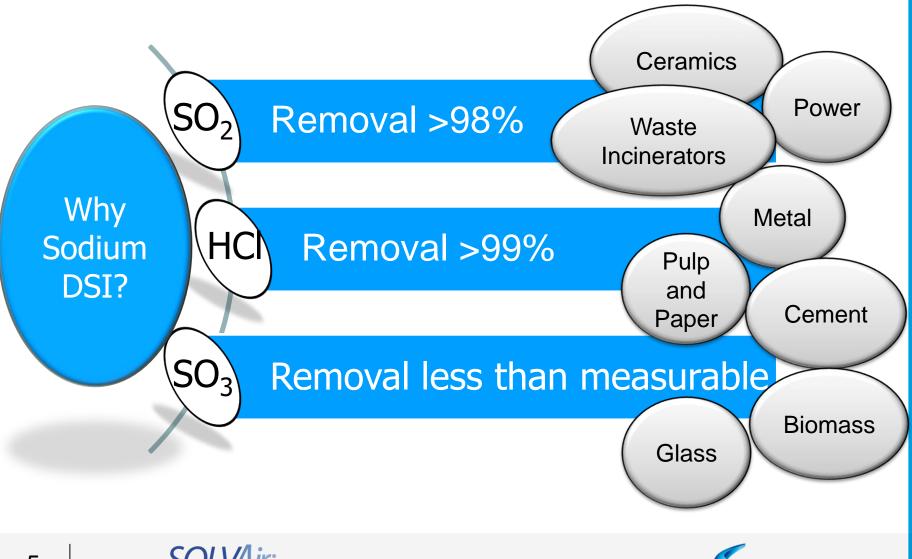
- Develop and continue to improve Emissions Control strategies
- Supply DSI sorbents: trona & sodium bicarbonate
- Provide design specifications
- Assist at plant start-up and after
- Suggest solutions to optimize the existing flue gas treatment systems
- Technical, logistics, and commercial support

WE DO NOT

- Design, supply or build flue gas treatment facilities
- Sell spare parts or equipment packages
- Provide process guarantees



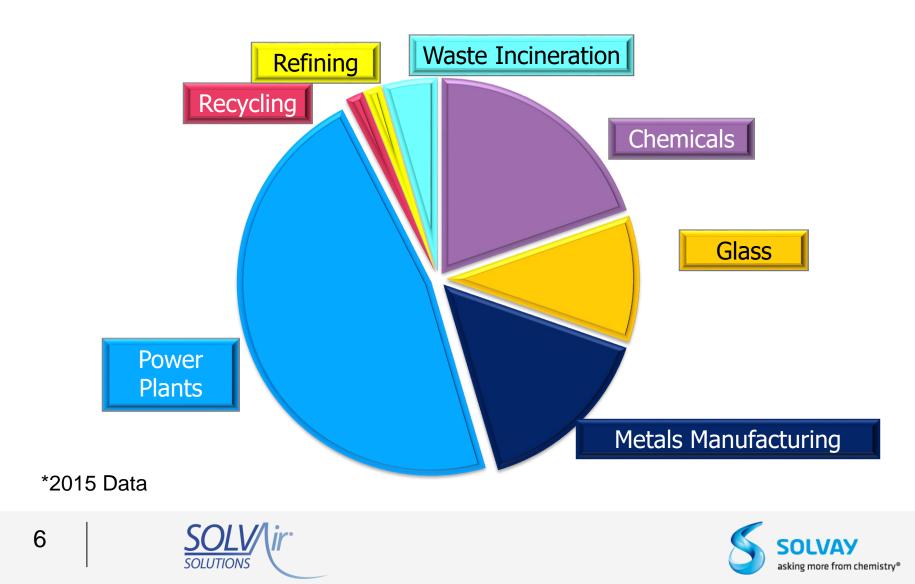
Applications



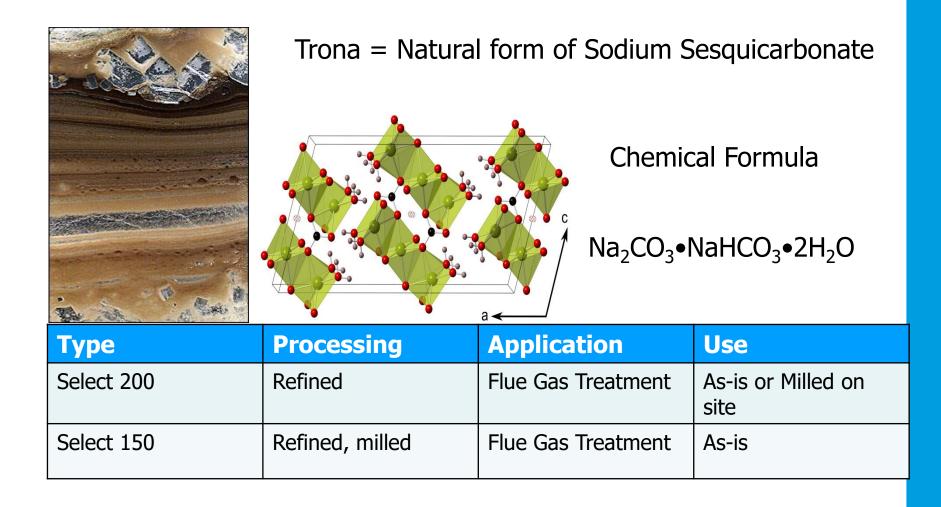
SOLVAY asking more from chemistry*



Sodium Sorbents Flue Gas Treatment NAM Number of users by application in the industrial field



Trona SOLVAir[®] Select 200, 150

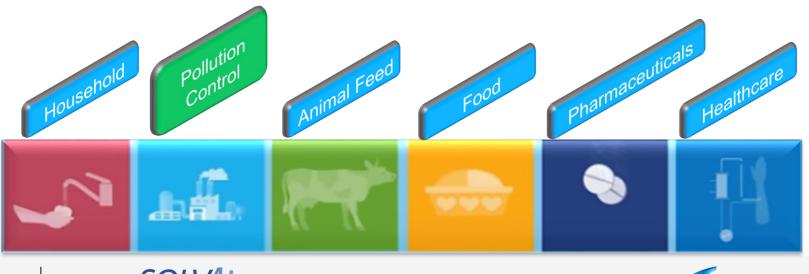




Sodium Bicarbonate SOLVAir[®] Select 300 & 350



Chemical Formula: NaHCO₃ Select 350 pre-milled, ready to use Select 300 milled on site







Reaction Chemistry: *Thermal Activation*

At T >275°F the Sodium Sorbents rapidly form Soda Ash: Na_2CO_3

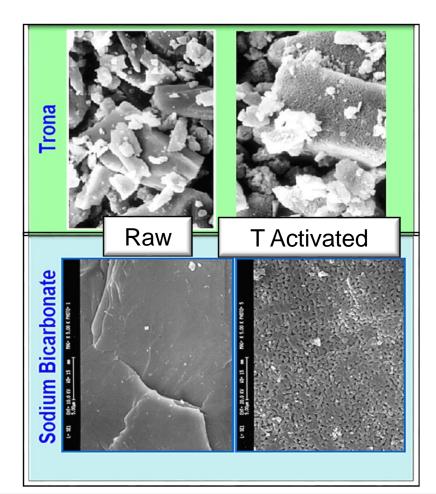
◆ Trona (*Injection at 275°F - 1500°F*) 2(Na₂CO₃•NaHCO₃• 2H₂O)_(s) + heat_(△)→3Na₂CO_{3(s)}+5H₂O_(g)+CO_{2(g)}

◆ Sodium Bicarbonate (*Injection at 275°F - 600°F*) 2NaHCO_{3(s)} + heat_(△) → Na₂CO_{3(s)} + H₂O_(g) + CO_{2(g)}





SOLVAir® Products: Surface Area



Rapid thermal activation causes an 10-20X increase in specific surface area ("popcorn" effect)

High surface area and small particle size, as well as chemical affinity, make Sodium Sorbents highly effective in reacting with acid gases



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MILLING: an option to evaluate

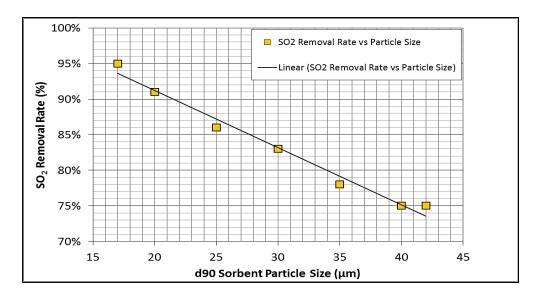


Consider in design phase:

Type of mill for Particle Size and Volume to process

Finer particles improve distribution and mixing

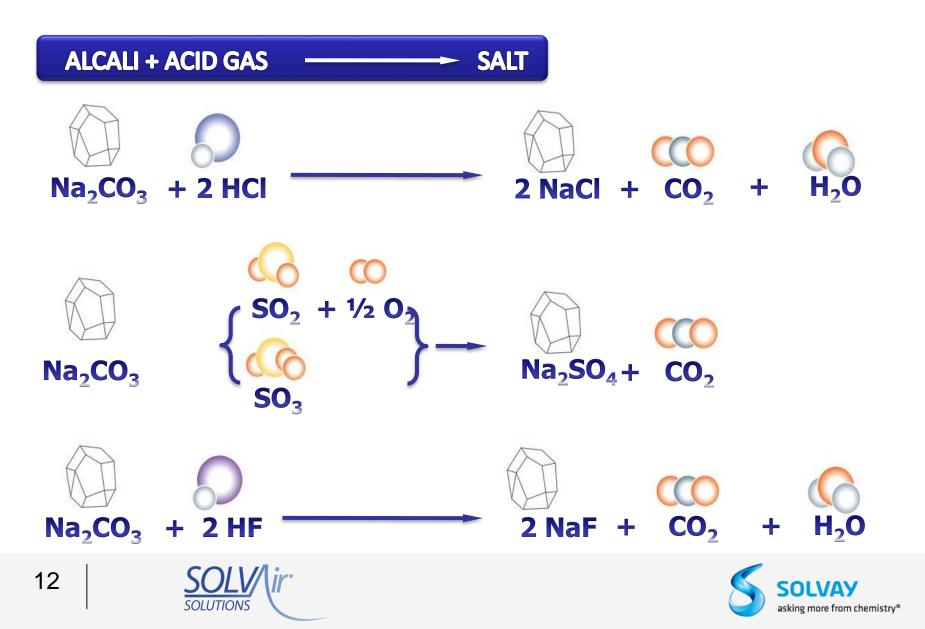
- \equiv Higher treatment efficiencies
- \equiv Less unused sorbent
- \equiv Less fly ash production



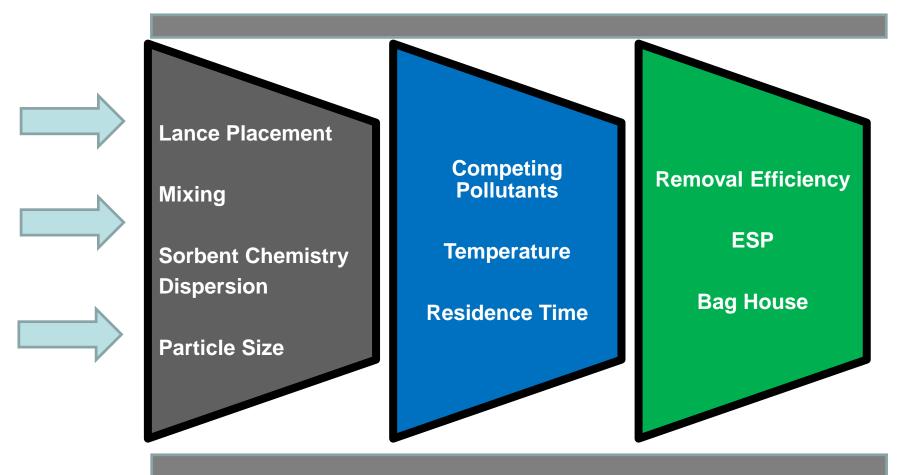




Acid Gas Reactions



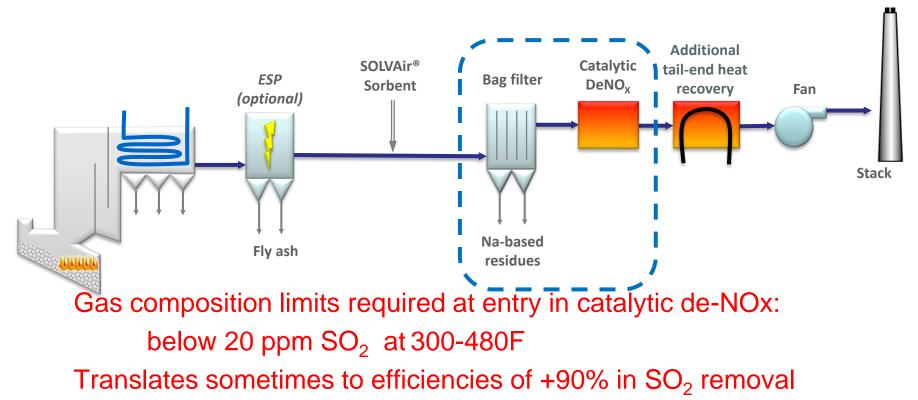
Parameters Influencing Performance of Sorbents in DSI







Sodium Sorbents and de-NOx Catalytic Systems



Sodium Bicarbonate is the premier DSI sorbent able to achieve sustained performance under these conditions and has the ability to react quickly to changing SO₂ levels







SOLVAir[®] Solutions Advantage What can we do for you?

Technical support

- Sorbent consumption estimations
- Estimation of by-product production
- Fly ash analysis
- Technical specifications for storage and handling
- Flue gas treatment optimisation expertise
- Over 20 years of knowledge in the air pollution control market

Logistic support

- Terminals
- Railcar Supply
- Transload Locations
- Milling Facilities
- Packaging Super Sacks, Bulk Trucks

Commercial support

- Different products for different needs
- Multi year contracts
- One on One Support





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