

# Transporting Finished Goods in Bulk

By Shivani Carriers Pvt. Limited | Category: Most Innovative Supplier

Meeting customer requirements has always remained a key focus area for Shivani Carriers. Their strategy has been to partner with their customers in their journey of growth. They have been associated with Tata Chemicals Ltd. (TCL) as a vendor for transportation of finished goods. Post a successful mission of using bulkers for transportation of dense ash, Tata Chemicals approached Shivani Carriers for transportation of another, lower bulk versions of their product, called light ash. Though transportation of soda ash dense was an easy proposition, soda ash light has never been tried with this form due to its material properties.



## The Innovation

Soda ash light was traditionally transported in 50kg bags and 750kg jumbo bags. One of Tata Chemicals' valued customers, HUL, wanted it in the bulk form for their Gandhidham and Silvassa units. The challenge was to design a bulk transportation solution keeping in mind the properties of materials such as low bulk density and sticky and fine material, cost constraints considering movement over larger geographies like Silvassa.

The team had to meet the following specific requirements:

- Current cost of transportation should not be breached (50 kg/jumbo bag)
- Solution should match customer's unloading and storage capacity
- Materials to be discharged completely (as it is very fine and sticky powder)
- Solution should be simple and easy to operate

The team considered various options which included transportation in open trucks, in sealed HDPE liner bags. To eliminate all these challenges and make it cost effective, phased changes were made to the current bulker design. The changes ranged from changing the loading design, using a different material to make the bulker, and modifying the vehicle attachments. Moreover, the silo capacity for two different locations is different, the different sized bulkers were made. Traditional bulkers have valves below the vehicle body, which compromise the safety of driver. However, in this design the team provided remotely operated valve considering driver safety.



## Overcoming Challenges

### Challenge 1: Low bulk density and cost effectiveness

TCL's primary requirement was to maintain the current cost structure for transportation (freight cost + packaging cost of 50kg/jumbo bag). It was tough to match the costing to normal truck. Moreover, low bulk density results in lower load-ability due to higher volume requirements. To mitigate this, high tensile steel was used instead of normal steel, which was lighter in weight but higher in strength. Due to use of tensile steel, weight of the bulker reduced by 500kg, to just 1 tonne. Installation of tubeless tyres helped reduce the weight further, by 250-300kg. In addition to this, tubeless tyres enhance fuel efficiency and tyre mileage. A lighter bulker helps move more material and maintain optimum utilisation of rated tonnage of vehicle. By optimum utilisation of vehicle, the team was able to match TCL's expected cost.

### Challenge 2: Loading the material at full capacity

Traditionally, bulkers have 2 manholes for loading. During the first trial, only a 16-tonne material was able to be loaded against rated 18-ton capacity. The reason was that soda ash light was not evenly spreading through the whole bulker body. The team modified the body with one extra manhole for loading. After the trial, they were able to load the vehicle completely with 18.5/19-tonne materials.

## Impact of the Innovation

improved

customer satisfaction

reduced

manpower involvement

reduced

warehousing cost