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Calcium Chloride *Market Reviews*

Industrial Uses

13 Tire Weighting

Calcium chloride ($CaCl_2$) solution greatly improves vehicle performance when it is used to weight tires on tractors and off-road equipment by improving traction. This improves stopping, starting, acceleration, pushing and pulling, as well as overall stability and tire life on construction sites, farms, mines, ore process facilities and logging operations.

DESCRIPTION

When pneumatic tires lose traction, they lose pulling power and can wear prematurely. One way to prevent this and improve vehicle efficiency is to fill tires with $CaCl_2$ solution. Liquid inflation adds weight were it does the most good, right on the tread. This practice costs less than using counterweights on the rear axle and does not force the axle to carry additional weight.

On tractors, graders and payloaders, tires filled with $CaCl_2$ solution not only add ballast to improve traction, they help prevent lifting of front or rear wheels during stops, starts, acceleration, and loading or unloading. The additional weight also reduces lateral rocking in sharp turns and enhances stability so operators can use full bucket capacity, which reduces loading and unloading time.

Liquid tire inflation with $CaCl_2$ solution for mining and logging equipment, e.g., ore trucks, tractors and bulldozers, aids pushing and pulling ability and reduces wheel spin and bounce at higher speeds. The decrease in bounce also helps increase tire life by decreasing stress on sidewalls and tread. Weighted tires also improve scraper performance with light materials like coal and make it easier to fill the bucket.

Liquid $CaCl_2$ does not affect rubber adversely and is less corrosive to rims than plain water. The solution does not weaken with use. Unless it is lost because of tire damage, it will work for the life of the tire and can even be moved from one tire to another.

APPLICATION INFORMATION

A 30% $CaCl_2$ solution (10.8 lbs./gal or 1.295 kg/L) gives the maximum weight advantage. It is 30% heavier than water and can be used year-round because it does not freeze down to -59°F (-51°C). The solution can add as much as 10% to a vehicle's weight with little or no loss of vehicle power.

Fill tires with the valve at the highest position using a 30% $CaCl_2$ solution fed by gravity, pump or air compressor. Use only enough solution to fill 90% of the tire. The rim should be covered to reduce the possibility of rim deterioration. Finally, insert the valve stem and fill with air to the required pressure.

Use noncorrosive valve stems to avoid the electrolytic corrosion that occurs when more than one metal is present. "Brine stems" made of red brass or silica bronze resist corrosion by electrolysis.

The weight added to a tire can amount to thousands of pounds. Here are some examples of the weight $CaCl_2$ solution adds to different size tires:

Tire/Rim Size	Weight Added Lbs (Kg)
7.5L – 15/6	124 (57)
11.2 – 24/10	373 (170)
15.5 – 38/14	995 (452)
16.9 – 28/15	1103 (501)
18.4 – 30/16	1430 (650)
20.5 – 25/18	1911 (869)
23.1 – 34/20	2564 (1166)
30.5 – 32/27	3574 (1624)

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