

## Roof Coating



Men are atop this row of 53-foot-long by 102-inch-wide Hyundai semitrailers, preparing to apply the ceramic-based insulating coating to their roofs. The trailers haul bread one way and ice cream back.

PHOTOS: CURT LUNDBERG

## Ceramic Roof Coating Saves Fuel for Food-Hauling Fleet

**S**unshine brings warmth and happiness, but to refrigerated trailers it brings only heat, and too much of it. Those hot rays from far away can raise temperatures inside the trailer to unbearable levels and cause the reefer unit to work really hard to keep things cool.

That was the case with Pacific Shipping & Trucking of Denver, which has a two-way food products haul with temperature extremes that were difficult to deal with. Then came a special roof coating that proved to be an impressive solution.

The carrier moves truckloads of baked bread from Denver to Phoenix, then returns to Denver with ice cream, explains Keith Robertson, the fleet's owner and president. Bread is maintained at 80 degrees, but ice cream must stay frozen at minus 20 degrees – “extreme heat to extreme cold,” he says. It's a drop-and-hook operation, with trailers full of bread left at docks in the usually hot southern Arizona city while empty reefer trailers wait nearby.

A driver backs his tractor onto an empty, then starts the reefer unit to begin cooling down the trailer's interior so it can take on ice cream. Temps inside the trailer can be 120 degrees or more, and it's got to be cooled to below zero. “It was taking us two and a half hours to get



**Bare aluminum roof bakes to 144 degrees on a moderately warm day in Denver, but measures only 54 degrees after it's coated.**

the reefer that was sitting out in the sun to get to minus 10 – from there they can start loading – then,” Robertson says. “Now it takes 45 minutes to an hour,” so the reefer runs less and burns less fuel.

The product is called Super Therm, a ceramic-based compound that blocks the sun's rays and prevents the trailer's roof

from becoming a heat sink. The product costs \$900 to \$1,000 to apply, but saves enough fuel to pay for itself in 10 to 11 months, Robertson says. He has had Super Therm installed on 22 trailers involved on this

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haul and plans to put it on more of his 100 trailers.

Super Therm is a water-borne insulating coating that also prevents moisture penetration and air infiltration over a surface, says its maker, Superior Products International, of Shawnee, Kan. "It is the most effective and longest lasting ceramic insulation coating on the market today," SPI claims on its web site, [www.spicoatings.com](http://www.spicoatings.com). It is ecologically safe, fire-resistant and approved for use around food by the federal Food and Drug Administration. SPI makes seven insulation coatings for various applications, and others for corrosion and fire control.

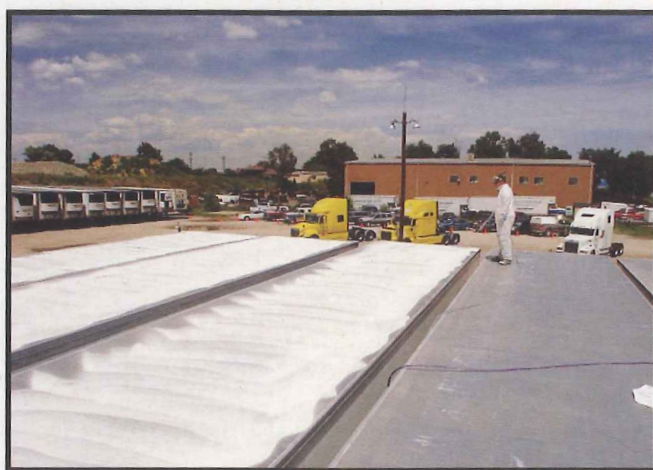
Super Therm reflects over 95 percent of the three radiation sources from the sun, which are ultraviolet, visual light and infrared rays, the site says. On building roofs, where it has been used for more than 20 years, it does the work of 6 to 8 inches of traditional insulation. It is Energy Star qualified as a 20-year roof coating.

Curt Lundberg, a Denver-based distributor of SPI products who sold the Super Therm to Robertson, did a study of Pacific's bread-ice cream operation that measured fuel use before and after the coating was in place. As Robertson said, after coating roofs with Super Therm, the cool-down time in Phoenix was cut by 1.75 hours or 44 percent. The study showed a reefer unit also used less fuel while under way: 20 percent less fuel on the outbound "hot" haul and 29 percent less on the return "cold" leg.

A reefer burned thus 5.75 fewer gallons per day and



**The roof is power-washed with a common detergent before it's coated.**



**Super Therm can be sprayed over large areas or rolled onto smaller surfaces. Coating needn't be cleaned to stay effective and lasts more than 20 years.**

saved about \$13.50 with non-road fuel at \$2.35 per gallon. Long-term savings depend on the number of trips a trailer makes; at 200 to 250 trips a year, the savings could total \$2,500, Lundberg says.

Installation is fairly simple, he says. "You pressure-wash the roof with a detergent – we use Simple Green – then roll or spray it on. It goes on to the thickness of a credit card, 18 mils wet and dries to 9 mils, or about a thousandth of an inch. We have had it on buildings in Kansas for years and it doesn't deteriorate and it lasts through hail storms. It will last more than 20 years, which is more than the life of a trailer. You don't have to re-coat it at any time; you don't even have to clean it for it to work."

Another part of Pacific's operations involves hauling refrigerated containers of meat to West Coast ports for export to Asia. Robertson says

he doesn't use the coating on the containers because they are stacked aboard ships, which blocks the sun for most of them. He also says roofs painted white at the factory perform better than the bare aluminum he had covered by Super Therm.

Lundberg has measured roof-surface temperatures and found them to be even higher than interior temps. "A roof gets to 144 degrees in Denver in the sun. Elsewhere it'll get to 200 degrees," he says. "By putting this on, the product doesn't allow the roof to heat up. It'll only be 2 or 3 degrees above ambient. It amounts to putting a tent over the trailer."