

Mission Pharmacal Invents Skin Protectant Spray for Adults and Babies using Solstice[®] Propellant

Enhanced Environmental Safety Drives Decision

Case Study





The Challenge

Globally, propellants like HFC-134a are being phased out due to their high global warming potential (GWP), plus there are growing safety concerns about flammability. When Mission Pharmacal Company decided to introduce a spray product to treat diaper rash in babies and the elderly, it needed a propellant that could meet criteria for nonflammability, low environmental impact, formulation compatibility and reliable application performance – in addition to long-term regulatory compliance.

The Solution

After attempting to convert an existing diaper rash zinc ointment into a spray product, Mission Pharmacal turned to Formulated Solutions, its experienced development partner, for assistance. As described above, Mission Pharmacal set high standards as criteria for success: the spray had to perform with “elegance” and reliability, and be safe and environmentally friendly. Formulated Solutions recommended Solstice® Propellant due to its nonflammable properties, VOC-exempt status, and ultra-low GWP of less than 1 – in addition to its excellent performance and regulatory staying power. Today, Solstice® Propellant is successfully powering all of the company’s brands of Dr. Smith’s® spray products.

Daring To Be Different

Aggressive phase-out schedules for propellants like HFC-134a and other high-GWP blends are pushing many companies to choose alternatives that comply with changing regulations while delivering the necessary performance. The more proactive in making the switch the better, especially when developing new products.

Mission Pharmacal Company, a privately-owned pharmaceutical firm based in San Antonio, Texas, takes “proactive” to the next level. The company is focused on meeting unmet healthcare needs with a variety of products, including popular over-the-counter products like Dr. Smith’s® 10% zinc oxide diaper rash ointment for babies.

Mission Pharmacal, however, dared to be different. To further improve convenience and quality of care, the company decided to offer the zinc oxide-based ointment as a convenient aerosol spray too – something not yet available to consumers due to formulation and propellant challenges. A touch-free spray would allow faster application, reduce cross-contamination and re-infection, and help preserve the dignity of the elderly in long-term care (LTC) settings.

“Our primary challenge was to develop an effective, fast-acting barrier spray delivery system that is safe to use in every environment, from the home nursery to highly-regulated LTC settings,” said Phillip Dritsas, senior vice president and general manager for the Consumer Division & Specialty Markets at Mission Pharmacal. “In particular, we needed a propellant that could stand the test of time from both a safety and regulatory standpoint, which is why we chose Solstice® Propellant.”

Meeting Performance Criteria

Propellant selection was crucial to market success. It not only needed to comply with changing regulations, but also had to be safe, nonflammable and compatible with formulation ingredients to ensure product performance.

Mission Pharmacal then turned to Formulated Solutions, a contract development and manufacturing organization, for their expertise. The company was tasked with adjusting the formulation to an “elegant, usable and effective” spray format, selecting a propellant and manufacturing the product.

Choosing Solstice® Propellant

Prior to accepting the Mission Pharmacal project, Formulated Solutions had already been on a quest for ultra-low GWP propellants. High on its list was Solstice Propellant – the only non-flammable, ultra-low global warming potential (GWP) propellant available today. After subjecting Solstice Propellant to rigorous internal testing to validate everything from performance and safety to manufacturing qualifications, the company was confident Solstice Propellant could meet performance needs.

“With Solstice Propellant, we were able to create a diaper rash spray formulation for Mission Pharmacal that made a great system in a can, actually improving product performance while meeting important needs for nonflammability in the marketplace,” said Eric Dann, president of Formulated Solutions. “From a manufacturing standpoint, we were able to easily convert an existing aerosol line to Solstice Propellant with minimal modifications – saving time and money.”

Becoming First to Market

In 2014, Mission Pharmacal achieved its vision, introducing a patented 10% zinc oxide diaper rash spray to the marketplace: Dr. Smith’s® Diaper Rash Spray. This was followed by the launch of Dr. Smith’s Adult Barrier Spray in 2015 into the LTC nursing home market.

According to Dritsas, Solstice Propellant was a key enabler to spray format success, meeting both formulation and market needs.

“The nonflammability and ultra-low GWP of Solstice Propellant in the spray product is bringing an important peace of mind to any caregiver concerned about safety,” he said. “It has therefore helped open the door to a new level of treatment with a game-changing product. In fact, various focus groups and independent studies are showing high satisfaction and improved healing, and we at Mission Pharmacal could not be more pleased.”

What Consumers Are Saying About Spraying

Long-Term Care Facilities

An [independent study](#)* published in 2017 shows that the Dr. Smith’s Adult Barrier Spray used in an LTC utilization trial brings efficiencies and cost reductions in the prevention of incontinence-associated dermatitis (IAD) and urinary tract infections (UTIs). Nursing staff and other caregivers preferred the spray delivery system to cream, expressing that it improved healing and quality of care, was faster and easier to use, saved time and experienced less waste. Also, because it was easier to use, staff was more likely to comply with treatment protocols.

Those findings are supported by comments from staff at other LTC facilities, including:

“We love this product. We had one specific resident that we tried several different products to heal the redness/excoriation, but they had nothing that would improve it. We then used Dr. Smith’s Adult Barrier Spray and within a month the area was completely healed!” – LPN, Tennessee

Key product properties include:

- Ease and speed of application
- Touch-free sprayability
- Excellent coverage and adherence
- Accommodation of at least 10% zinc oxide
- Long-lasting but easy to remove
- No staining

Select propellant properties include:

- Ultra-low GWP
- Compatible with the spray formulation
- Nonflammable for consumer safety
- VOC-exempt for air quality



“Dr. Smith’s Adult Barrier Spray is easy to apply and it really works well.”

– Nurse, Wisconsin

“Dr. Smith’s Diaper Rash Spray is perfect for quick and complete coverage. Just a quick spray on red areas, and my son’s rash was gone by the next diaper change.”

– Stefanie, Texas

“Dr. Smith’s Adult Barrier Spray has been an outstanding addition to our skin impairment prevention/protection program. We use it for situations of skin-to-skin contact which can predispose the patient to fungal infections and skin breakdown. It is excellent for incontinence care in the protection of tender perineal tissue. The easy application and effectiveness of this product has been well received by staff and residents.” – *Nurse, North Carolina*

“Dr. Smith’s Adult Barrier Spray is easy to apply and it really works well.” – *Nurse, Wisconsin*

Moms and Babies

Feedback from mothers reveals that most moms use two to three diaper rash products, depending on the situation and environment. The majority appreciate the spray alternative as a nice, on-the-go option for easy application and clean-up.

Comments include:

“Dr. Smith’s Diaper Rash Spray is perfect for quick and complete coverage. Just a quick spray on red areas, and my son’s rash was gone by the next diaper change.” – *Stefanie, Texas*

“Having diaper rash ointment all over my fingers is not the greatest thing so the spray makes it no mess, no fuss, very easy.” – *Molly, Florida*

“This is a parenting game-changer. It’s never been easy to use rash cream.” – *Claire, Maine*

*<https://kestrelhealth.leadpages.co/adult-barrier-spray-for-prevention-of-iad-wp/>

*Solstice Propellant is a UN class 2.2 nonflammable liquefied gas. It is designated as nonflammable by U.S. DOT, GHS, IATA and IMDG standards, and by ASTM E-681, ISO 10156 and EU-A11 methods.

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Dr. Smith’s is a registered trademark of Mission Pharmacal Company.

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