



Aerosol dispensers are widely used for the application and use of products such as cosmetics, lubricants, paints and coatings, medications, foam insulations, fragrances, cleaners, and cooking oils. This popular form of product packaging is a sophisticated, pressurized system which takes into consideration not only the aerosol container design and manufacturing, but also the product formulation, transportation, storage, and end-user interaction with the system.

Unfortunately, incidents involving aerosol dispensers can result in serious injury and/or property damage. Professional Analysis has conducted numerous investigations involving aerosol dispensers, including: analysis of the mechanical design of the aerosol dispenser, materials of construction, product formulation, and potential failure mechanisms.

Our aerosol experience also includes environmental studies on the aerosol system to understand the impact of temperature and corrosives on the system. Department of Transportation (DOT) pressure/temperature testing, and drop and impact testing, have also been utilized in cases where user misuse and/or abuse are alleged.

Services

- Pressure / temperature analysis
- Flammability testing
- Product misuse / abuse analysis
- Impact failure
- Materials analysis
- Fracture / impact mark analysis
- Projectile analysis

Testing Capabilities

- Metals / materials analysis
- Product formulation analysis
- Pressure burst test (DOT 2Q and SP 10232)
- Dispenser drop / impact testing
- Hot water soak test
- Pressure / temperature testing
- Enclosed space combustion test



Practice Area Leaders

Aerosol Dispensers

Timothy M. Hicks, P.E. – Principal Engineer, Mechanical



Mr. Hicks performs investigations and failure analysis from a mechanical engineering perspective. He has conducted numerous investigations involving aerosol dispenser failures. These have included accident investigations; impact, projectile and temperature/pressure studies; mechanical design; and systems modeling. Mr. Hicks is licensed by exam as a Professional Engineer in Mechanical Engineering, and active member of the American Society of Mechanical Engineers, Society of Automotive Engineers, National Society of Professional Engineers, and the National Safety Council.

Roch J. Shipley, Ph.D., FASM, P.E. – Principal Engineer, Materials/Metallurgical



Dr. Shipley performs engineering investigations and failure analysis from a materials engineering perspective. His evaluations involve design, manufacturing, materials, and operational factors. He specializes in complex issues involving multiple disciplines and/or accident reconstruction. He has experience with both ferrous and non-ferrous alloys, including aluminum, titanium, and nickel-base superalloys. Dr. Shipley is licensed by examination as a Professional Engineer and has testified in both State and Federal Courts.

Michael G. Koehler, Ph.D. – Principal Scientist



Dr. Koehler has extensive experience in the chemistries and materials used in aerosol systems. His career includes extensive research and development of aerosol propellants and aerosol system formulations. His experience crosses a broad range of chemicals and materials including protective coatings, metals and corrosives, and aerosol propellants. Dr. Koehler's technical expertise involves the complete cradle-to-grave life cycle of products including the design, manufacturing, transportation, application, toxicity, failure analysis, flammability, and product disposal. Dr. Koehler is a member of the American Chemical Society (ACS) and serves on the ACS National Committee on Chemical Safety.