



In 1987 Roger Bower formed Chemguard with the express intention of producing foam concentrates. After thousands of hours of research and development and live fire tests, the first UL Listings for Chemguard's AFFF concentrates were achieved in 1988. UL Listings for AR-AFFF, high expansion, protein and fluoroprotein concentrates quickly followed, growing to the point where Chemguard is today offering the most extensive line of environmentally-friendly UL Listed foam concentrates in the industry with over 20 UL listed products.

Chemguard's growth was supplemented in 1992 with the company's integration of its foam system hardware. This afforded Chemguard substantial expansion and growth, allowing the company to move into its new manufacturing and corporate headquarters in Mansfield, Texas. At the same time Chemguard worked diligently and achieved its ISO 9001 accreditation.

In 1997, in order to become more vertically integrated and more important to the worldwide industry of fire fighting, Chemguard took the leadership position in the chemical side of fire suppression foams in committing to new technologies and by employing industry expert Dr. Kirtland Clark (former director of corporate research at Ciba-Geigy Corporation). Dr. Clark's many patents (6 alone related to AFFF) herald his leadership in formulating AFFF agents and specialty hydrocarbon and fluorochemical surfactants, key ingredients in all of today's AFFF fire fighting foams.

Roger Bower believed Chemguard could develop new surfactants and subsequently, new proprietary, earth-friendly AFFF agents. Chemguard believed that a new approach to AFFF was necessary because to this point, AFFF agents were driven by more costly fluorochemical surfactants. Dr. Clark saw that the development of an efficient hydrocarbon surfactant (HCS) could replace standard high volume/low cost/off-the-shelf HCS and indeed provides that new approach. It became clear that by developing a proprietary HCS in conjunction with Chemguard's own high-efficiency fluorochemical surfactants (FCS), the company could manufacture fluorine efficient AFFF agents while surpassing all UL-162 performance requirements.

Chemguard built a new high-tech organic/synthetic research laboratory and mounted an intense three-year research and development program. This led to the development and manufacture of CHEMGUARD HS-100, a specialty HCS that provides excellent foam expansion and drain-time properties in AFFF agents while not interfering with FCS performance. Chemguard also developed its FS-100, a custom FCS that provides exceptional film spreading properties in the presence of HS-100. With these two proprietary surfactants, Dr. Clark developed and obtained UL Listings on AFFF and AR-AFFF agents having 30%-70% lower fluorine content than competitive products.

On May 16, 2000, 3M\* announced their exit from various fluorochemical markets due to global environmental concerns over the persistence of perfluorooctanyl sulfonate (PFOS) and sent a shockwave through the industry. Coincidentally, that same day at the NFPA show in Denver, Colorado, Chemguard announced its breakthroughs in development of a new line of high-efficiency, dramatically lower fluorine AFFF agents. A key factor in this development was that Chemguard's FCS was synthesized from telomer-based fluorocarbons and contained no PFOS or derivatives.

## ***Chemguard Today***

In 2004 Chemguard purchased the Ciba Lodyne surfactant business from Ciba Specialty Chemicals. Combining that business with Chemguard's existing line of fluorochemicals has produced the largest range of products specifically designed for the fire fighting foam industry. Chemguard is the leading supplier of fluorochemicals to the fire fighting industry today.

AFFF agents, by definition, must have positive spreading coefficients, excellent fire extinguishing and burn back performance, superior drain time, and low application rates. Chemguard's new AFFF products provide exceptional features with as little as ½ of the fluorine content compared to other UL Listed products on the market today. Chemguard has also increased fire extinguishing and burn back performance and lowered products application rates.

## ***World-Wide Foam Manufacturing Facilities***

Chemguard's expansion of its distribution and manufacturing capabilities has taken a major step forward with the establishment of remote blending facilities located strategically throughout the world. It is Chemguard's commitment to provide these facilities, which will allow for quicker supply and reduced cost to local markets.

## ***Future of Foam & Chemguard***

Chemguard believes the lesson from 3M's PFOS ordeal should mandate that we produce AFFF agents with lower fluorine content and that the future of AFFF agents can only be advanced through the continued development of increasingly more efficient products having negative or only slightly positive spreading coefficients. Such fire-extinguishing agents would have fluorine levels of about 0.15% to 0.25%, by weight, thus reducing environmental impact without giving up any fire extinguishment properties. The recent major breakthroughs by Chemguard are evidence of Chemguard's commitment to continue to drive towards these goals for the future of fire protection and the preservation of our environment.

Chemguard's staff is among the most experienced of any company in the fire protection and fire related manufacturing industries. Each of our chemical, engineering and design department staffs has an average of 25 years experience in fire fighting chemicals, fire systems design or fire equipment production. Our experienced staff is ready to serve you with all your fire-related needs.

\* 3M is a registered trademark of Minnesota Mining and Manufacturing