Key components in the formulation of soluble oils and semi-synthetic fluids are primary emulsifiers. Natural sodium sulfonates have been the traditional choice to formulate these types of fluids because of their excellent emulsification and rust inhibition performance.

Additive Companies

Additive companies are driven to meet current market challenges for technology, innovation and simplification with a variety of options. Companies with regional manufacturing facilities who offer innovative products provide advantages to metalworking fluid companies seeking security of supply, improved performance, differentiation and reduction in formulation complexity. For example, companies who supply synthetic sodium sulfonates of branching chains and with broad molecular weights, such as Afton Chemical’s TecGARD® 260A Synthetic Sodium Sulfonate, offer primary emulsifiers with excellent emulsification and rust inhibition performance.

Metalworking fluid companies find PBSSAs add value to their formulations. These primary emulsifiers offer higher formulation complexity and costs resulting from supplemental additives used to achieve desired rust performance in their fluids. When utilized in the presence of select chemistries, PBSSAs can impart extended life, bioresistance characteristics to metalworking
coolants. This formulation approach can reduce biocide use as well as frequency of maintenance calls and new fluid purchases to end users.

Un-neutralized PBAs, such as Afton Chemical's TecGARD® 235 PIBSA, provide metalworking fluid companies the opportunity to build differentiation into their formulations (Figure 2). Basic chemistries, such as amines, are reacted in these formulations with PIBSA to facilitate emulsification and impart stability to the resulting emulsion. Currently, formulators have a number of toxicologically and environmentally acceptable basic chemistries available in the marketplace from which to choose.

Additive companies with broad product lines support MWF manufacturers' efforts to simplify their supply and blending operations. These portfolios typically offer extended product offerings consisting of industrial packages and components as well as metalworking fluid additives and emulsifying bases that service the needs of fluids utilized in the metals industry.

Bases not only simplify formulation, blending and supply operations for fluid manufacturers who wish to reduce their technical development and inventory costs, but they provide these metalworking companies formulation agility as well. They perform robustly in a variety of base stocks available in the North American market with waters of varying hardness and can be utilized as core packages to build a formulation to meet a more challenging target performance (Figure 3).

Common Thread

While market factors affect each player in a different fashion or not at all, the strong focus by union and regulatory agencies on protection of workers’ health impacts the entire market value chain. This includes the elimination of carcinogenic or highly toxic formulation as well as in-use control. Additive companies, metalworking companies, and end users must provide and utilize solutions to meet market challenges that are acceptable from a health, safety, and environmental perspective.

How is Afton Chemical Continuing to Help Formulators Meet These Market Challenges?

With our recent inclusion of an emulsifying base offering in the portfolio, Afton Chemical deepens its commitment to provide solutions to the challenges faced by this market.

The TecGARD line of metals-industry additives is very broad so we continue to tailor products to meet the needs of the industry with our Passion for Solutions.

References
2. Tool Trends (Winter 2009), ANTEA, 7631 Calhoun Place, Suite 520, Raleigh, NC 27615

With TecGARD®, your hard work can pay off in a very big way.

For metalworking fluid manufacturers, TecGARD® 260A is a major catch. Because this specialty-designed synthetic sodium sulfonate combines both excellent rust inhibition and emulsification performance in one product—and that means the opportunity for you to reduce formulation complexity and simplify supply and blending operations. Talk to your Afton rep about TecGARD® 260A. You’ll learn how it can help you face current market supply challenges, and then, you’ll be hooked.