



Shepherd Chemical Case Study #18

Product Area: Metal Organics

Chemical: Rare Earth Carboxylates

A customer approached the Shepherd Chemical Company seeking the development of a range of metal carboxylates based on rare earth starting compounds.

The customer shared the technical targets for the program including economic expectations, starting metals, desired concentrations, purity levels, and desired solvent systems. Technologists from Shepherd Chemical also reviewed the customer's desired use/application to determine if there were suggestions or improvements that could be made from a supplier point of view. Once agreed, Shepherd Chemical began work on prototype samples in the laboratory.

Shepherd Chemical began a series of evaluations to assess the best routes to the desired compounds; these evaluations included starting samples from various suppliers as well. Once the most appropriate suppliers were chosen – a set of samples were made for the customer for evaluation.

Shepherd provided analytical data on each of the samples including:

- **FTIR**
- **TGA**
- **Metal Content**
- **Color**
- **Viscosity**
- **Moisture content**
- **Impurity levels**

In some cases, methods were developed to analyze the specific property in the desired matrix.

The customer evaluated each of the samples and provided feedback to Shepherd on the efficacy of each of the samples via a technical meeting between the companies.

Shepherd Chemical then provided quotations for pilot scale volumes of the chosen formulations and preliminary pricing for commercial volumes.

Currently the customer is utilizing regular production volumes of several of the rare earth carboxylate compounds developed in this project.



Shepherd Chemical Case Study #18 (continued)

Shepherd Chemical provided several pilot lots of the desired compounds for the customer. These lots were evaluated at the customer with successful results. The next step was to determine formal specifications for the new product which are done in conjunction with the Shepherd QC group. Upon receipt of the customer's order for the first commercial run, Shepherd Chemical formed a team to insure first run success on the trial batches. The team consisted of representatives from sales, R&D, engineering, QC, and manufacturing. The team held several conference calls with the customer to finalize the expectations on specifications, packaging, and time frame.

The commercial trials were carried out successfully and the first trial lots were delivered to the customer without incident.