

Partners in Excellence



Gelest Inc. Pilot Plant

By John Redfield



Pilot Plant Exterior View

Since first partnering with Gelest in 1998, Penn Valley has completed eighteen very diverse projects for them and we have become very familiar with their operations, processes and unique construction requirements.

In 2014, in response to an increased demand for specialty silane, silicone and metal-organic molecules that are used in a myriad of applications, Gelest contracted with Penn Valley to build a new research & development center in Morrisville, PA. Penn Valley facilitated numerous meetings with the owner and their design professionals to ensure a coordinated set of plans and specifications were developed. The new building enables Gelest to more quickly develop and produce a

wider range of products from inception to commercialization. The project consists of a 21,518 square foot facility that houses four production labs, two analytical labs, one applications lab, hazardous materials storage and breakdown rooms and the support staff areas that are required for the production of their products.

In an effort to create a master plan for future expansion of Gelest's business, Penn Valley worked on schematic designs and budgets for three phases of growth. At the completion of the master plan, Gelest and Penn Valley worked together to select a team of professionals that would be familiar with their specific design requirements needed for Phase 1, The Pilot Plant.



Aerial View of Tilt-up Wall Construction



Tilt-up Walls Set in Place



Lab Area with Clinker Tile Flooring

Penn Valley led the design process to make sure that Gelest's interests were served during the planning portion of the project. Design meetings were held over several months with the Owner, architect, MEP engineer, fire suppression consultant and a site engineer to ensure a coordinated set of plans and specifications were developed.

Penn Valley then worked to secure approvals and permits from outside agencies as necessary while navigating the project thru the Township approval process. After all building permits were secured, Penn Valley served as General Contractor for the site work and building construction.

During construction, weekly field meetings among Gelest staff, Penn Valley Constructors and subcontractors were held to review upcoming work, coordinate the trades, and discuss safety concerns. Owner meetings were held regularly to monitor contractor and material selections, product submittals, scheduling updates and applications for payment.

A unique aspect of Gelest's business is their use of hazardous materials during the production of their various products. The corrosive nature of some of the materials utilized required extra consideration when specifying structural and finish products for the building. The structural design of the building relied on load bearing concrete wall panels to eliminate steel columns and beams that would deteriorate over time in the harsh environment. The building was constructed using tilt-up concrete wall panels for all of the exterior walls and the majority of the interior partitions. Epoxy paint was used for lab area walls and exposed bar joist in addition to Kynar coated roof decking.

Special care was required for the design and installation of the HVAC system. Ventilation of the lab areas was critical, as was ensuring that the proper positive and negative air balances were achieved in each designated area. Materials for items such as piping, fittings and



Fume Extraction Equipment in Lab Area

hangers were carefully selected to ensure that they were not negatively affected by the sometimes corrosive interior environment.

For durability and ease of maintenance, Argelith clinker floor tile was selected for the lab area flooring. These fully vitrified tiles are manufactured specifically for a wet bed vibration installation, and are slip resistant, acid resistant, and stain resistant.

In the hazardous materials areas, measures were designed to contain any run off from accidental spillage or the discharge of the fire suppression system. Concrete curbs were placed at interior and exterior door openings. Internal concrete sump pits were placed in the center of the room to capture any sprinkler discharge. Piping was installed from the sump pits to an exterior underground containment tank to safely capture any overflow.

Another example of specialized construction is the concrete floor in the NMR room. Nuclear Magnetic Resonance spectroscopy (NMR) has become the preminent technique for determining the structure of organic compounds. Gelest uses the NMR machine during the development of new products. An isolated concrete slab was required to ensure that this sensitive piece of equipment can perform as expected.



Open Office Area Cubicles

Gelest Inc. Progress Drive Renovations

By David Drabic



Packaging and Shipping Room

As part of Gelest's continued growth, the need for additional warehousing and shipping areas was realized. In 2010, Gelest purchased a warehouse formerly owned by Bayer. In 2014 Gelest had architect Steven C. Tiberio design a new shipping and chemical storage area within the existing warehouse space. Penn Valley Constructors was asked to provide a cost estimate and construct the project.

The primary goal of this project was to address Gelest's specialized needs for storage of chemicals by classification (ordinary hazard, moderate hazard, and high hazard), drum breakdown, humidity controlled breakdown, and expanded packing/shipping areas.

Three existing storage spaces measuring 40' x 120' within the warehouse were renovated into the chemical breakdown and chemical storage areas. A 40' x 92' area within the warehouse was converted into two offices and the packing and shipping room.

Gelest had numerous regulations and specialized requirements that needed to be addressed with the design and construction including: spill containment within the storage and breakdown areas, specialized corrosive resistant FRP exhaust duct work and exhaust fans, corrosive resistant FRP ceiling grid in two storage cells, humidity control in three breakdown rooms, a refrigerated storage area, dust control & collection in the shipping area, additional fire proofing, fire doors and additional foam sprinkler protections.

A challenging part of this project was working within an active shipping/receiving warehouse and not impacting Gelest's operations during construction. A site specific safety access plan was implemented by Penn Valley in cooperation with Gelest. Subcontractors were required to sign in and out when on site. A "road map" was created by Penn Valley specifying defined access lanes and construction areas within the warehouse enacted to eliminate possible damage to stored materials and to limit interference with Gelest's warehouse activities. We are proud to say that there was no accidents or damage of any kind during construction.

The completed renovations enable Gelest to better serve their customers and have room to expand in the future.



Rooftop Exhaust

Gelest Inc. Tank Farm & Drum Storage

By David Drabic



Section of the Tank Farm Upon Completion

Gelest called on Penn Valley Constructors again in 2017 to continue the expansion of the Gelest facility: A 12,000 square foot drum storage and a 5,300 square foot tank farm designed by architect Steven C. Tiberio and structural engineers Leonard A. Busch & Associates.

Kevin King, Gelest Inc. Vice President, dealt with more than four government agencies during the design and construction process and with many overlapping government regulations. There are a few specialized containment features for both facilities including pitched slabs that flow to containment trenches or sump pumps and all slab joints have chemical resistant caulking backed by a chemical resistant TPER chemical stop.

Penn Valley completed both jobs in under a year including added fire protection requirements requested by local township code officials.



Drum Storage Area

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