



**Your Ceramic and
Manufacturing Experts**

Company Overview



Benefit From Our

EXPERIENCE

- Over 70 years' in the ceramic industry
- In-the-trenches perspective
- Mineral and materials testing
- Raw material evaluation & selection
- Product formulation & testing
- Ceramic engineering
- Plant and process design
- Construction, start-up, and relocation
- Lean manufacturing & Six Sigma
- Plant leadership & optimization
- Global experience

We bring over seven decades of hands-on R&D and plant management experience to small and mid-size manufacturing operations, providing practical guidance that helps improve material utilization, operations, and processes.

We understand many sectors - including ceramic proppants and frac sand, ceramic tile, refractories, and structural clay products - and work with materials from organic binders and bauxites to pozzolans and repurposed waste streams.

We specialize in material evaluation and formulation, plant design and construction, equipment sourcing, and plant optimization.

Our team members routinely jump on planes to join our clients in the trenches no matter where they are located.

The Manufacturing Leadership Book

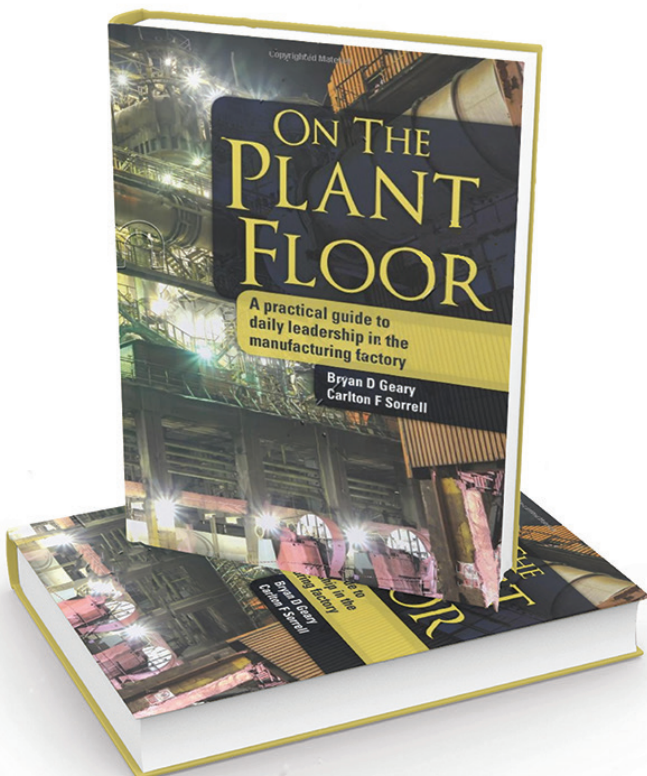
In 2012, OPF founders, Bryan Geary and Carl Sorrell, wrote **On the Plant Floor: A Practical Guide to Daily Leadership in the Manufacturing Factory** to help manufacturing professionals improve operations and profitability.

Available on Amazon, the book has received positive reviews from plant managers and executives around the world...

"Great read if you are new to management and leadership or just rethinking the way you have been handling things ... can be applied to many different types of manufacturing."

"...focused on real work experience of the authors to solve problems in a manufacturing factory ... a good book for a plant manager."

"...a lot of stuff that you may take for granted not realizing the importance."



Bryan Geary



President

Carl Sorrell



Vice President

Ryon Lasiter



Lab Manager

TRUSTED ADVISORS

Helping You Make Smarter Decisions

Are you looking to develop a mineral resource, searching for an alternative raw material,, seeking ways to grow revenue, reduce cost, or simply want to determine whether your material or product has greater value potential?

We can help find and prove that promise with physical testing and targeted marketing.

If your material has value as a raw material for ceramic manufacturing, we will help you find the right path to market and introduce your mineral or raw material to relevant ceramic producers.

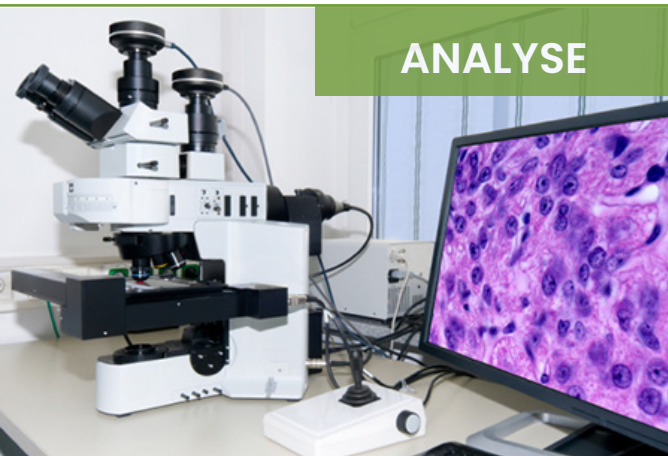
For example, we have:

- Shown a producer how to sell a waste material into a new market, increasing product margin by 8x.
- Formulated a low-return bauxite into a world class oil and gas proppant.
- Transformed a niche aluminosilicate product into a high value raw material for the ceramic market.
- Renovated and streamlined numerous mineral processing and ceramic manufacturing operations.

- **Are you new to the ceramic market?**
- **Could your material have higher value?**
- **Looking to increase market share?**
- **Trying to develop a mineral resource?**
- **Solving a mineral waste challenge?**
- **Searching for alternative raw materials?**

State Of The Art

LAB SERVICES



ANALYSE

Our labs are geared up to assess the suitability of your material for processing into a valuable product.

Let us guide you through deciding what tests to run, where to perform the tests at competitive prices, and how to make the right business decision based on the results you obtain.

Our experienced engineers and ceramics specialists will work to understand your needs and recommend relevant tests based on your materials and processes. We will manage sample handling, testing, and results analysis – ranging from a basic presentation to a more comprehensive interpretation report.

The bottom line will be an assessment of your material's suitability for commercial development and a recommended way forward, based on our 70+ years of ceramic engineering experience.



FORMULATE

Take advantage of the following analytical services.

provided In partnership with the National Brick Research Center – a nationally recognized testing facility specializing in ceramics and minerals:

- X-Ray Diffraction (XRD, for mineralogy)
- X-Ray Fluorescence (XRF, for elemental composition and oxide content)
- Loss on Ignition (LOI, for chemical analysis)
- Thermogravimetric Analysis (TGA, for VOCs and thermal stability)
- Differential Thermal Analysis with Evolved Gases
- Carbon and Sulfur Content
- TCLP Leaching (for waste disposal)
- Optical and Scanning Electron Microscopy
- Mass Balance, Specific Gravity, and Density
- Porosity and Mercury Intrusion Porosimetry (for pore size distribution)
- Particle Size Distribution
- BET Gas Adsorption (for specific surface area)



SINTER



Helping You Determine And Achieve

COMMERCIAL VIABILITY

Our team has built factories from the ground up, renovated and streamlined numerous facilities, and has experience running a good number of them.

That real-world, boots-on-the-ground experience can help you develop, design, and deliver a successful manufacturing operation.

We will help you determine and achieve commercial success in ways such as:

- Evaluating multiple locations for site selection
- Negotiating financial incentives from state and local agencies
- Designing production processes and process flow
- Sourcing and procuring equipment and materials
- Hiring and training new employees - from management to front line workers
- Qualifying and hiring contract personnel
- Overseeing factory start up
- Streamlining and improving operations
- Creating a culture of effective leadership

- **Market potential investigation**
- **Cost tolerance analysis**
- **Scale up from lab to pilot to plant**
- **Process and plant design**
- **Site selection and evaluation**
- **Build-out and commissioning**
- **Start-up and optimization**

Producing And Testing

AGGREGATES

Aggregates produced from sand, rock, and manmade materials are indispensable to our everyday life. They are among the most widely used materials on earth, finding applications in construction, concrete, asphalt, horticulture, and more.

The extremely high demand for aggregates and the depletion of traditional sand and rock deposits has led the industry to look for alternatives, including recycled concrete and the use of screened fines from crushing operations to replace marine quality sand.

We can help you determine whether your mineral stream can be used as - or turned into - viable aggregate.



Developing And Qualifying

OIL & GAS MATERIALS



Hydraulic fracturing is used extensively by the oil and gas industry to unlock commercially viable flowrates from historically unproducible rock.

The process involves cracking the targeted formation using hydraulic pressure then propping open the fractures to create flow paths for oil and gas.

The materials used to maintain this artificial permeability, known as proppants, are typically naturally occurring sand or some types of ceramic. The size, shape, and strength of the proppant has a major influence on the integrity and effectiveness of the propped fractures.

We can help you develop and test natural and man-made materials for their suitability as oilfield proppants.

TURNING MINERAL WASTE INTO VALUABLE CERAMIC

We have decades of experience analyzing, processing, and formulating materials to find pathways for turning industrial waste streams into value generating ceramic products.

If there's a commercial opportunity hidden in your waste stream, we'll help you find it.

We can take your existing analyses or perform the necessary tests to tell you which of the minerals associated with your waste stream or undeveloped deposit have the potential to contribute added value if processed appropriately.

Our process design and optimization expertise means we can help you or your client reduce waste and make more money.

CASE STUDY FROM WASHING WASTE TO LIGHTWEIGHT AGGREGATE

30,000

METRIC TONNES OF
WASTE PER YEAR

A client was running a washing operation that produced 30,000 MT of waste each year, creating on-site storage issues and operational interruptions, and costing them \$2.25 million in disposal fees.

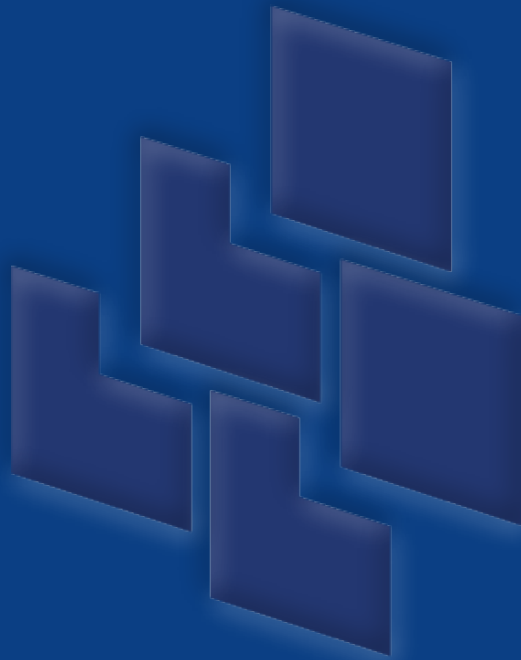
\$2.25M

IN AVOIDED
DISPOSAL COSTS

Based on lab analyses, physical testing, and test formulations, we concluded that the material was unsuitable for traditional ceramics but showed very good potential for making lightweight aggregate.

By turning this waste stream into a sought-after product, the client could eliminate operation headaches, avoid huge disposal costs, and generate a new revenue stream for the business.

Additional upside is being pursued by incorporating materials produced by local municipal and consumer waste facilities, creating a positive social impact for the company.



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