

PLIBRICO

The Mixer

3rd Quarter | 2019

HOW TO TELL IF YOU REALLY HAVE AN ABRASION PROBLEM

Understanding abrasion can be the key to extending the life of your refractory lining

Refractory material is designed to be very durable, withstand extreme service conditions and defy mechanical abuse in many different types of thermal-processing operations. However, severe conditions that cause abrasion in the form of high levels of mechanical scraping and airborne particulate matter can challenge refractories, shortening their service lives.

Abrasion resistance is one of the most critical and possibly the most misunderstood consideration when choosing a refractory solution. A clear understanding of what abrasion is and, perhaps more importantly, what it is not can prevent needless repair costs and lead to significant savings. This is especially important when evaluating refractory designs for a new application or when considering upgrades for an existing one.

What Abrasion Is

Abrasion is the destructive process that causes a material to wear away through mechanical scraping or scratching.

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ABRASION STATS

704 The ASTM 704 test is the most common measure of holistic abrasion resistance used to compare refractory solutions

5cc Products with excellent abrasion resistance consistently test at 5 cc of loss or less

1000g Size-graded SIC that is blasted by compressed air at 450 kPa during abrasion test



Watch how ASTM 704 is done right!

INSIDE ISSUE

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President's Corner

Welcome to the Q3-2019 Plibrico Mixer.

I am not sure where the summer went, but here in the Midwest, it sure left in a hurry, kicking up a cloud of snow on its way out. As far back as I can remember, this is the first year where we had ~4 inches of snow for Halloween, and as I look out the window, it's snowing again!

Looking back at my schedule, I see a lot of great company activity. After a slow start to the year, business has picked up over the tail end of Q2 and Q3.

Our construction operations have closed out several large jobs that have spanned

“ The real success of a safety program is engagement — so if you see something, say something. ”

several months and were executed extremely well. On the Redi-Shapes side, we continue with our trials of delta sections for the steel industry.

On the materials side, we continue to focus on improving our partner coverage in North America. As part of the realigning process we have parted ways with Guy Neilson out of MT, ID, and UT. And we welcomed back to the network as a partner, Western Refractories located in Colorado. Western's territory includes AZ, CO, WY, UT, and select counties in western NM. While we still have work to do, we are starting to gain traction and are making good progress.

Safety performance has become a concern, and I'm not going to sugar coat it: I'm disappointed. Over the past couple of months, we've had a couple of incidents that in my mind could and should have been avoided. While we were lucky no one was seriously hurt, I'm not comfortable with relying on luck. We need to always be alert and intentionally safe. Chris Smith has been

working on identifying root causes and will be rolling out enhancements to our safety program. The real success of the program is engagement — so if you see something, say something.

As we close in on Thanksgiving, I want to take a moment to say thank you. I truly appreciate all your efforts. It really is your dedication, experience and on-the-job passion that makes Plibrico successful.

Carrie and I wish you and your families a very safe and Happy Thanksgiving. BE SAFE.

— Brad Taylor, President & CEO
Plibrico Company, LLC



Highlights

NEW FACES

- Jeff Jones, Omaha, NE – Project Manager
- Matt Jarabek, Omaha, NE – Mechanical Service Technician
- Chris Hoel, Omaha, NE – Mechanical Service Technician
- Trisha Gianesin, Northbrook, IL – Human Resource Manager

CONGRATULATIONS

- Welcome to our new PliPartner Western Refractory Construction, Inc., a highly skilled and experienced refractory contractor located in Longmont, Colorado
- Congratulations to our Heat Treat Today, 40 Under 40 Class of 2019 winner Brandon Sheldon. This award is given to young up-and-coming talent in the North American Heat Treat Industry that are considered by the magazine to be enthusiastic, forward-thinking, and skilled professionals.



A big congratulations to Joe Feldhacker, a Project Manager (left) from our Omaha, NE location, and Lou Calderon, a Refractory CAD Designer (right) in Northbrook, IL. Both are recipients of the API 936 Refractory Personnel Certification, having passed the API 936 exam administered by the American Petroleum Institute. Both demonstrated advanced knowledge of installation, inspection, testing and repair of refractory linings.

Safer, More Productive Furnace Operation
Starts with Proper Refractory Installation by
Trained Professionals

12 Simple Steps to Trouble-free Dry-outs



Careful attention to detail during refractory installation is the key to a successful furnace dry-out. Nobody likes non-productive downtime, but close adherence to installation instructions, cure times, and dry-out schedules is the best way to avoid multiplying downtimes with an explosion during dry-out.

We have listed 12 preventive factors to manage for dry-out safety and success. Read about each and how to be the best installer you can be by [clicking here](#).

- 1 Hot spots and flame impingement
- 2 Temperature spikes are destructive

- 3 Thermocouple placement and monitoring
- 4 Air temperature vs. surface temperature
- 5 Field vs. precast dry-out schedule
- 6 Venting and air circulation
- 7 Avoid surface coating
- 8 Weep holes
- 9 Cold weather curing is risky
- 10 Cure time is critical
- 11 Water removal is time and material dependent
- 12 Refractory strength as a function of water content

Plibrico Product & Application Training



On August 27 & 28 the Plibrico Company had 18 people, from 8 different partner companies, join us for product and application training. The goal of the training was to increase attendee business success by providing a solid, "level two" understanding of refractory applications, failures, and solutions, within the aluminum, steel, and boiler industries. Sessions were held on both days and in the evening attendees enjoyed an outing that included a friendly competition of bowling and bocce ball. Attendees walked from the training with at least 3 great ideas that they could use in the field immediately.

Plibrico Department Update

ENGINEERING

After a softer August, the engineering department has seen quite an uptick in project work into September, and October looks to continue the trend to be a busy month for us. We are seeing strong trends in the Incinerator/Thermal Oxidizer segment. In addition, we have been busy with detailing refractory delta sections for several steel mill accounts, especially using two new materials developed by R&D this year; Plicast Super HyMOR 80C and Plicast HyMOR 85BF C. In September, we completed phase 2 of our long-term initiative for the department to keep paperless records. We have completed digitizing project for remaining legacy files. This will allow us to more easily search for information back to 1990.

MECHANICAL SERVICES

Highlights include bringing on 2 new technicians, Matt Jarabek and Chris Hoel. Both come to the Plibrico Company with a background in HVAC work. Schuyler Hewitt located in our new Kearney, NE location, continues to engage new customers and expand our reach in the area.

MANUFACTURING

The second quarter of 2019 was a little soft as compared to the first quarter. Tons manufactured and shipped followed suit and were also soft. Continuous improvement initiatives include:

- Continued implementing SOPS for plant wide operations
- Additional focus on safety, Oak Hill had a recordable in April of 2019
- All employees completed Safety training in the second quarter: Active shooter awareness, mosquito borne diseases, silica awareness.

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ALUMINUMUSA 2019 CONFERENCE SUCCESS!



Plibrico had a highly successful AluminumUSA where we showcased our latest refractory solutions

The Plibrico Company participated in AluminumUSA 2019 Conference, the aluminum industries premier technology event. AluminumUSA is the first in the US to cover the entire value chain from upstream (mining, smelting) via midstream (casting, rolling, extrusion) to downstream (finishing, fabrication). The event had more than 1,900 attendees and 286 exhibitors, a 27% and 24% increase respectively. Our industry experts were on-hand: Ed Christian, Norm Phelps, Aaron Ingalls, and John Finch,

who had some great face-to-face conversations with key individuals involved in the production and processing of aluminum. We also had some great participation from our PliPartners: Fibrecast, F.S. Sperry, Upstate Refractory and Empire Refractories. The Plibrico Company is looking forward to the new business this conference will bring as well as participating in the next conference scheduled for September 1 to 2, 2021 in Louisville, KY.



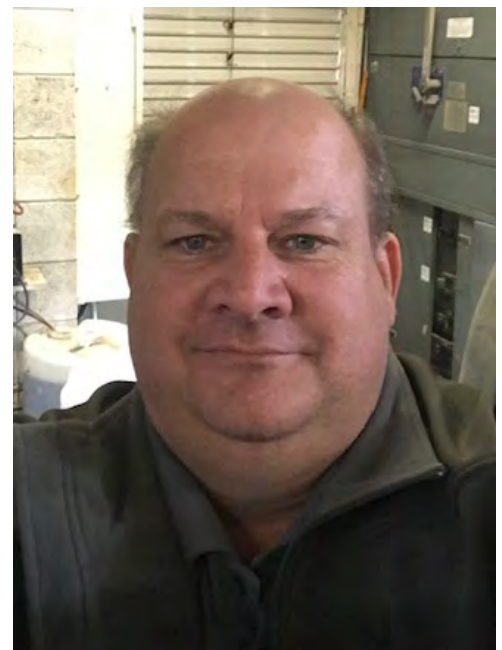
Getting to know you: Jeff Jones

Where do you work? "I work at the Omaha, Nebraska Refractory Service Operation."

Where do you live? "Wahoo, Nebraska, about 26 miles from the office."

What do you do in your free time? "I like the outdoors, and like to hunt, fish and camp. I also spend a lot of my free time helping with my son's Boy Scout troop, and supporting my daughter's volleyball and Hapkido training."

What do you like about your job? "I really enjoy the versatility of the job, everything from refractory to HVAC to industrial boilers, it's great. I also like that the Plibrico Company has a large wealth of industry experts that I can go to for information, guidance and answers."



Do you really have an abrasion problem?

Continued from pg. 1

Refractory linings are abraded by high-velocity airborne particulate, cleaning tools and fuel/process materials that pass through the unit and come into contact with the lining. The telltale sign of abrasion is a refractory lining that has steadily become thinner while its surface has become smoother. The surface may even shine as if it had just been polished, which is not surprising when we consider that polishing is another common form of abrasion.

What Abrasion is Not

Abrasion is considered a type of mechanical abuse, but it is

not the only type of mechanical abuse to which refractory linings are subjected. Equally common is impact, compression and tension. All types of mechanical abuse can cause thinning of the refractory lining, so it is important to conduct a detailed investigation into the destructive mechanism before drawing any conclusions. Refractory solutions designed to resist abrasion may not be helpful against damage caused by impact, compression or tension.

Conclusion

The thinning of a refractory

lining due to abrasion is a source of frustration for many thermal-processing operations and is one of the most common modes of failure encountered in the refractory world. But, by taking the time to understand the failure mechanism and learn about the options available, you can realize significant savings by avoiding needless costs in the future.

More Information

Learn more about how to tell if you really have an abrasion problem by reading the fill article at:

http://bit.ly/Plibrico_Abrasion

PLIBRICO IN THE NEWS

Catch up on the latest Plibrico news by visiting our expanded News section at www.plibrico.com.

RECENT NEWS

Protect Refractory Workers From Fall Hazards

[Read on ▶](#)

Plibrico Accelerates Growth with Opening of Mechanical Services Location in Kearney, Nebraska

[Read on ▶](#)

Plibrico Pledge to Upskill Employees Results in Improved Customer Outcomes

[Read on ▶](#)

Plibrico in *Plant Engineering Magazine*

Close adherence to installation instructions, cure times, and dryout schedules is the best way to avoid multiplying downtimes with an explosion during dryout.

[Read on ▶](#)



And in *Industrial Heating Magazine!*

Severe conditions that cause abrasion in the form of high levels of mechanical scraping and airborne particulate matter can challenge re-factories, shortening service lives.

[Read on ▶](#)



The Safety Spot: Bloodborne Pathogens

We all understand first aid procedures for bleeding control where amputations, cuts and lacerations may leave a coworker looking for emergency assistance, but do we give a minutes thought about our own protection when it comes to Bloodborne Diseases.

Commonly known as Bloodborne Pathogens (BBP), these are viruses or bacteria that are found in bodily fluids from an infected person that are highly contagious. Three of the most hazardous that causes severe illness or death are hepatitis (B, C) and AIDS (Acquired Immunodeficiency Syndrome). Sometime, the affected person has no idea that they are a carrier of these diseases and may not be able to warn of pending danger when assistance is needed. Routes of entry of BBP into the body are through open cuts or sores or can cross the



bodies protective barriers in the mucus membrane (MM) of the eyes, nose, mouth or other areas where this MM can be found. If you find yourself in an emergency situation, the first thing you must pick from the first aid boxes at the jobsite in a bleeding control emergency should be rubber gloves. Gloves should be stored where they are easily spotted and accessible when we open our kits. This BBP tip is not intended to discourage from assisting an injured coworker, but rather to give awareness of these diseases where we can protect ourselves in the time of emergency. Preventive measures are our only defense against these diseases, so each of us must know how to react to provide emergency care to an injured coworker to give them the care and compassion they require, but also protecting ourselves too. For more information click [Here](#).

Employee Spotlight: Brandon Sheldon



Brandon Sheldon, Project Manager in our Salem, Ohio office has just been included in Heat Treat Today magazine's "40 Under 40" Class of 2019. This award is given to young up-and-coming talent in the North American Heat Treat Industry that are considered by the magazine to be enthusiastic, forward-thinking, and skilled professionals. According to Heat Treat Today, this year's class is

breaking barriers, saying yes to challenges, resolving the impossible, and reinforcing the culture of hard work and customer service. Brandon, who has been in the industry for over 13 years, is very honored to win the award. Please join us in congratulating Brandon Sheldon on this well-deserved award! Learn more about Plibrico Brandon Sheldon - Heat Treat Today's "40 Under 40" [Click Here.](#)

Department Updates

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CONSTRUCTION

Plibrico Omaha – Jeff Jones has joined our company as a project manager. Jeff brings a unique background in R-Stamp mechanical work, refractory and even HVAC, a wonderful fit for our multi-skill offerings out of that location. Omaha is also putting the wraps on a project for a unique proprietary natural gas process. This project included fabrication of over 170 linear feet of duct work, high end refractory lining of Plicast 40 and Plicast LWI 24, and painting. Also included in this project were "T" sections and several expansion joints. Thanks to Dan in engineering and the Ohio shop for assisting in executing this project.

TECHNICAL SERVICES

On September 5, Revision 4 of the Quality Manual was officially released. This revision of the Quality Manual is consistent with ISO 9001, focusing on the Oak Hill Plant. This manual is supported by a host of Standard Operating Procedures, Test Methods, and Specifications to help drive continuous improvements in our quality system. Future revisions will incorporate the Construction Offices and Redi-Shapes into a further expanded Quality Manual.

The R&D Department is currently conducting 2 trials with new materials for Delta Sections. We have a new, cost conscious, 85% alumina mix that contains brown fused alumina, called Plicast HyMOR 85 BF, that we are using in a Delta trail. We are also conducting a second Delta trial with Plicast Super HyMOR 80 C. We expect great results from these two materials. The R&D Department has started work on a new generation of Exo-Set materials, targeting denser, stronger, more abrasion resistant versions of our chemically bonded castables and gun mixes.

SALES

The sales department ended the first half of the year slightly behind budget, but indications point to a stronger second half.

Recent highlights include:

- New Partner: Western Refractory Construction, Inc. signed a new distribution agreement. Please join me in welcoming them to the Plibrico family. With Western leading the way, we look forward to a new surge of growth in Colorado, Wyoming, Arizona, Utah, and in northwestern New Mexico.
- Customer Experience Enhancement: we launched a new simplified customer experience, backed by a defined internal process featuring a single point of contact, improved order accuracy, improved response time, better visibility, and order acknowledgements/confirmations.

ACCOUNTING, FINANCE, PURCHASING, AND IT

The Accounting and IT groups have been enhancing the functionality of the Navision system, including developing better reports. We recently got our first "win" with the branch administrators by allowing payroll entry weekly vs. daily. The Purchasing team have been successful at negotiating savings for key raw material suppliers, as well as freight carriers. We all are developing processes that focus on effective results, better reporting, and efficiency. Hopefully, the readers of the Mixer will be the benefactors of our internal services to the Company.



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