

Interview

Cool facts about heat treat salts



A conversation with Hubbard Hall's Jerry Dwyer

Jerry Dwyer CEF, is Hubbard Hall's market manager for product groups pertaining to heat treating, black oxide and phosphates. His background and experience has established him with knowledgeable insight in the world of heat treating and metal finishing. Dwyer specializes in the above processes and has over a thirty year history in the heat treat and metal finishing industry. Dwyer has a Bachelor's degree in chemistry and biology.

We recently caught up with him to ask a few questions about the heat treat market, and what trends he sees ahead for manufacturers using these applications.

Q: Can you tell us a little about your background and how you became involve in the heat treating market?

JD: I've been servicing the heat treating and metal finishing market for my entire 30+ year career. I've always been on the supply side offering customers chemistry for their businesses. Hubbard-Hall has both high heat and quench products for captive and job shop needs; our quench salts, oils and polymers are well known in the industry.

Q: Tell us what heat treating metals is all about?

JD: There's many different aspects to the heat treating space, but in a nutshell: a metal is worked and made into its desired form or state and then heat treated for its practical applications or intended use.

Q: You mentioned that your customers purchase quench oils, quench salts and polymers from

Hubbard-Hall. Why would they select one quench medium over the others?

JD: It all depends on what's being processed and the end use of the item being heat treated. For instance, quench salts are primarily used in an austempering process. Salt is ideally suited for austempering since it has the desired working temperature range, to where bainite is ultimately formed during the quench process. The end result will impart good hardness to the work along with a desired ductility. Quench oils and polymers are employed when a greater hardness is wanted with the sacrifice of some ductile characteristics to the work. Parts are quenched in oil at a lower operating temperature than salt, resulting in a more severe quench and achieving martensite as a result.

Q: Can you give us examples of parts that might be processed in a salt operation as opposed to a quench oil or polymer?

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JD: Typical parts that would be heat treated in a salt process would include springs, automotive clips, lawn mower blades, tools such as hex keys and torque wrenches, and the list goes on. Any part that would require some “give” under torque or tension, but needing good hardness as well.

Q: Are there any drawbacks to using salt as opposed to the other quench mediums available?

JD: The most common issue is the weight of the bags when customers are supplied salt in this type packaging. I’m always asked if the bags can be reduced in weight from their current 50 pounds; customers ask for smaller and lighter bags due to worker complaints and for liability reasons, as well. A skid of bags will weigh 2,000 pounds containing 40 bags; larger customers will sometime go through a truckload or more a month of salt. Many customers have now opted for our standard 500 pound drums in lieu of having to handle bags. There are drum hoppers and auger feed systems that make life easier when transferring salt to a tank. Reducing the weight of the 50 pound bag only results in more frequent handling. Also, approaching a hot tank of molten salt with a 50 pound bag is not a desirable task. We put our minds together at Hubbard-Hall about this bag issue and came to the conclusion: why is it necessary for anyone to lift a bag of salt?

Salt can be supplied in super sacks weighing up to 2,000 pounds. We now have equipment available that can deliver the salt with ease, and the only work required is for a forklift to set the super sack into position for delivery to the tank. This solves the desire of ever lighter bags and results in happier workers with less work related injuries.

Q: Have any of your customers taken advantage of the super sack option?

JD: Yes, as a matter of fact they have. And one comment a customer offered as a result from switching to super sacks is “we’ll never go back to lifting bags again,” with the operators on the salt line all nodding in agreement.

Q: Has salt always been used in heat treating and what are some current trends looking forward?

JD: Using salt as a quench medium has been around since the mid 1950s. It has progressed since then to a viable market with ever-widening possibilities and uses. Salt is hard to beat in terms of a quench medium and its capabilities. For austempering, no other medium or process can match salt. More and more companies are installing systems for greater control of the metallurgy on the work they produce.

Q: Tell us about Hubbard-Hall’s line of products and how facilities are using them in their processes; let’s start with the Neutral Salt series: A, B, BS and C.

JD: The Hubbard-Hall website gives full details of each of our Neutral Salt products and it’s easy to access. The Neutral Salt series of products though are used in the high heat process and specific to the type of metal and/or alloy being treated. Neutral Salt B, for example, is selected for the majority of austempering operations working with carbon steel. It’s a blend of chloride based chemistries and able to reach and maintain the elevated temperatures necessary for proper heat treating.

Q: Hubbard-Hall also has the Quick Temper series: 275, 300 and 430 for both quenching and tempering, but also for austempering,

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martempering and isothermal quenching. Which ones should facilities be using for their operation?

JD: The Quick Tempers, which are a blend of nitrate and nitrite chemistries, are all used primarily as a quench medium subsequent to the high heat process. The numbers associated with each Quick Temper product indicates its melting point. Some customers select the Quick Temp 275 if they're quenching at a lower temperature to achieve greater hardness of the work being processed. The Quick Temp 300 is the quench salt most often selected for austempering due to its optimal working temperature range. Again, our website gives full detail of each of these products so that customers can determine which product ideally fits their specific need.

Q: The other Hubbard-Hall product is the Quick Cure 420; how is that product used by customers?

JD: The Quick Cure 420 has been in use for decades as a salt medium for curing rubber products. Like all of our salt products, the Quick Cure 420 is a pure technical grade blend of salts that rubber manufacturing companies used on their extruded rubber products for curing.

Q: If a manufacturer asked you why they should switch to Hubbard-Hall products, what are a few reasons you'd give them?

JD: It goes beyond just supplying top grade products. Hubbard-Hall is a family-owned company that treats its customers as part of the family. Our accounts find Hubbard-Hall truly customer-oriented and very responsive to their requests and chemical needs. We pride ourselves on all aspects of satisfying our account base. From providing quality controlled chemistry to on time delivery, our customers are assured our best efforts to continually earn their trust. In fact, 35% of Hubbard-Hall's team members are customer interactive. Along with safety, customers are always our first priority.

Our people. Your problem solvers.

Expertise you can trust. 32% of Hubbard-Hall associates are in tech support, customer service or sales. This means that you get answers fast while the rest of our team gets your order delivered on time and in spec.

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