



Workmanship

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Workmanship is an important term that's often relied upon as the final arbiter in acceptance of our products. ASTM and other agency standards sometimes have workmanship clauses. One example is ASTM A 108, the standard specification for steel bar, carbon and alloy, cold finished. In ASTM A 108, Section 9 is titled, "Workmanship, Finish and Product Presentation." So what is this thing that we call workmanship, and how will we know it when we see it?

As I see it, there are four aspects or compass points of Workmanship: conformance to specification; production by means designated, intended or implied; absence of injurious defects; and absence of attributes not specifically described in purchase document. These are the four critical elements that determine if a product is "Work-

manlike," of "Good Workmanship" and thus "Acceptable" or "Good Delivery."

The four descriptors of workmanship, in this order, are the keys to assuring a successful commercial transaction. If your product does not conform to any one of these aspects of workmanship, acceptance of your product is in jeopardy.

Conformance to specification—In the first place, the product must conform to the specification. If the specification says "no lead paint" and the toy train has lead paint on it, it will not be acceptable workmanship, regardless of how else it looks, functions or meets all other requirements.

Meeting the specification is imperative. To assure good workmanship, you must make absolutely certain that you understand the specification as presented, and produce in strict accordance to its requirements.

If there are areas that are unclear, confused or that don't make sense, it's up to you, the supplier, to get these resolved. If you don't, your lack of conformance to the specification will be evidence of poor workmanship to your customer and cause for rejection of your products. Conformance to specification is the foundation of your workmanship. Without it, the product is rejectable.

Production by means designated, intended or implied—Just as



conformance to the written specification is the first and most important aspect of providing a workmanlike product, production by the means designated, intended or implied is the second. The specification should be clear about the intended means used to produce the product. But it might not be clear.

In some cases, the means used to produce—and more importantly, what the means to produce may imply about the finished products' merchantability and suitability for use—might not be known. However, it is incumbent on the supplier to assure that the means of provision is suitable for end use.

For example, in order to get elevated strength properties on steel materials for bolts, the bolts may be heat-treated by quench and tempering. Or, they may be cold-worked and stress-relieved to hit the minimum mechanical properties.

There were numerous lawsuits, television news specials and, ultimately, legislation creating the Fastener Quality Assurance Act. This was a result of some "sharp businessmen" providing bolts marked as Grade 8 (quench-and-

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temper, heat-treated) that were not heat-treated, but only cold-drawn.

It is incumbent on us as “workmanlike suppliers” to understand what may not be spelled out in the specification, but is implied and expected nonetheless.

Absence of injurious defects— While this may seem to be obvious, I am reminded of a handrail I photographed on the Great Wall of China at Badaling, northwest of Beijing. The handrail, which is obviously designed to be touched by people and provide for their safety, was fabricated from pipe



with surface defects that could cut and injure the unsuspecting user.

If something can cause harm to a person, or if it can interfere with fit, form or function, it is an injurious defect and its presence is proof that the material is not of “good workmanship.”

Absence of attributes not specifically described in purchase document—Unwanted contamination such as chips, heavy oil, sludge or even bird droppings on bundles of bars were the kinds of things that machine shop customers complained about when getting steel bars delivered from the mill.

Heavy oil, gunk, chips, burrs or metallic fines inside the machine shops’ precision parts are the kinds of “attributes not specifically

described in the purchase document.” Their presence signals that there may be a discussion over what constitutes “workmanship” with your customer regarding your precision machined components.

Understanding the end use, application and the customer’s real vision is as important as understanding and delivering all of the explicit requirements of the customer’s purchase documents. In the end, workmanship is based as much on the quality of your communication and understanding of your customer’s needs and wants as it is on your process for producing your products.

I guess that makes communication with your customer an important fifth aspect of workmanship.

“Communication with your customer is an important aspect of your company’s workmanship.”

Father’s Day – Revisited

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I can remember the first manufacturing job I had after graduating high school. I was a stockhouse and trestle laborer at a blast furnace in Warren, Ohio. My father thought it would be a good experience and maybe give me an incentive to work a little harder in college. Good thinking, Dad.

I must have been all of 140 pounds soaking wet and, believe me, in the heat of the steady afternoon shift, I was soaked with sweat. My job

was to open the bins to fill the larry car on the tracks below with various raw materials. The materials would then be dumped into a skip car, which carried them up to be dumped into the top of the furnace.

Turnings, iron ore, dolomite, sinter. These materials, often hot and steaming, were the food for the only thing I know of that has a bigger appetite than a teenage boy—the blast furnace. Opening and closing these bins were my

responsibilities. And if I didn’t get the bin closed in time? Well, guess who had to shovel up the spillage.

The smell of the sulfur fumes from the furnace was terrible. The heat was unbearable. And the physical exertion of opening and closing the bins, wedging the gates and shoveling spillage were beyond anything I had ever done.

I survived that summer, and many more thereafter, because I had great

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