

# EBAA IRON Connections™

TECHNICAL DATA FOR THE WATER & WASTEWATER PROFESSIONAL

GI - 7

## Product Traceability

The Merriam-Webster Online Dictionary defines traceability as “a: to follow the footprints, track, or trail of b: to follow or study out in detail or step by step... c: to discover by going backward over the evidence step by step ... d: to discover signs, evidence, or remains of”. At EBAA Iron traceability allows you as the end user or us as the manufacturer to go backward into the production process and discover the signs that reveal the casting properties to the base level. It involves clarity and accountability in our strict quality assurance procedures regarding analysis and inspection, product isolation, product marking and third party certification. This provides the end user with transparency revealing vital information documenting the physical and performance qualities of specific products for specific projects.

As a result you, as the end user or design engineer, have an audit trail that documents the product’s compliance with your specifications. Consequently, there is an added degree of safety. Safety because you know that the product will perform as expected and safety because of the assurance that you will not have to reopen that trench in the future because of a product failure.

## Quality Assurance

In order to give you an idea about how traceability works, a brief explanation of the casting and assembly process is required. From the incoming raw material to the finished castings ready for shipment, EBAA Iron products are tested, inspected, and verified. The three ductile iron foundries at EBAA are dedicated to our products and, because we produce only ductile iron, the iron that we produce is very consistent.

It starts with uniform scrap steel and other quality raw materials. Each shipment of scrap is scrutinized for unfamiliar or undesirable items that could have a detrimental effect on the quality of the iron. The scrap is comprised of low carbon steel scrap products from stamping operations. Articles such as structural steel, automobile scrap, or oily materials can introduce undesired elements into the iron and are rejected. The raw materials (such as pig iron and alloying elements) and internally generated scrap are placed in melting furnaces in exact proportions in accordance with a standard formulation to produce the base iron from which ductile iron is made.

Individual batches are taken from the furnace and treated with magnesium. This is the ingredient that changes the base iron into ductile iron by causing the graphite in the structure to change from flake to spheroidal form. That is when the clock starts ticking and the metal analysis begins. Because the effects of the magnesium treatment can fade with time, samples are drawn from the last portion of each treated batch. Three independent tests are then performed on these samples.

The first is a spectrographic analysis. This sample from every batch is placed in the spectrometer and a portion is vaporized. A light is shone through the vapor and a sophisticated array of sensors is able to precisely measure the amount of each of the elements that are present because

of wavelength intensities at the sensors. Again, because of the consistent nature of the production process, this check verifies the elemental percentages and alerts personnel to any changing trends in the material so that incremental adjustments, if needed, in the alloying materials and composition of the base iron can be made for the next batch.



Image 1.1

The second is a metallographic analysis. This sample from every batch is polished to a mirror smooth finish so that a microscopic examination of the grain structure can take place. As mentioned earlier, the graphite in ductile iron is present in the form of spheroids. This particular test verifies the presence and quantity of the properly shaped graphite.

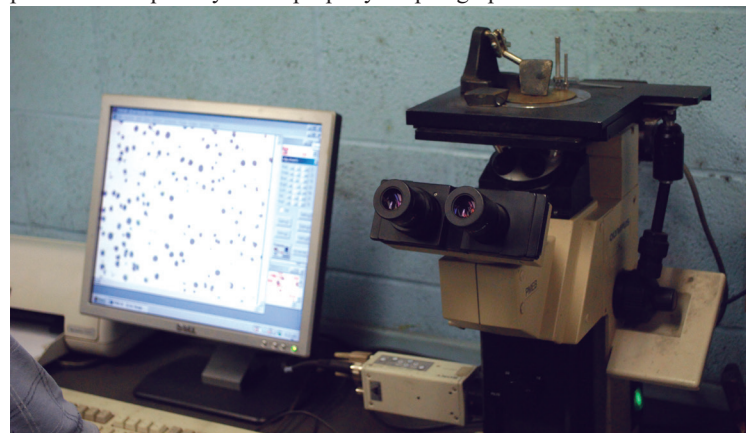


Image 1.2

The third is a tensile strength analysis. Test sampling occurs a minimum of once every three hours of iron production. The results of this testing verify that the iron meets the minimum 65-45-12 ASTM A536 alloy spec. requirement for ductile iron. This means the ductile iron has a minimum tensile strength of 65,000 psi, a minimum yield strength of 45,000 psi, and a minimum elongation of 12%. Enough material is separated for preparation of multiple tensile strength test bars from each batch so that duplicate/verification testing can be performed. The duplicate bars are held for a period of one year.

See Image 2.1





**Image 2.1**

At the output of the foundry, once a container of castings is filled, the container is marked with the date and time. The castings are then taken to a holding area until all of the quality control tests have been completed to confirm that all standards are met or exceeded. Small parts such as wedges, collar bolts, and actuation screws do not escape scrutiny. Samples of those items are gauged for proper fit, twist-off torques are checked to ensure compliance with performance specifications, and wedge hardness is confirmed. Additionally, throughout the entire finishing process, each casting is continuously inspected for visual flaws and measured or gauged to verify proper fit and dimensional accuracy in order to assure the products perform as required and expected.

To make sure that everything is as it should be we also submit to unannounced inspections by Underwriters Laboratories and Factory Mutual International. These 3rd party inspectors substantiate that quality assurance records are in order and authenticate the results with duplications of the tests mentioned above.

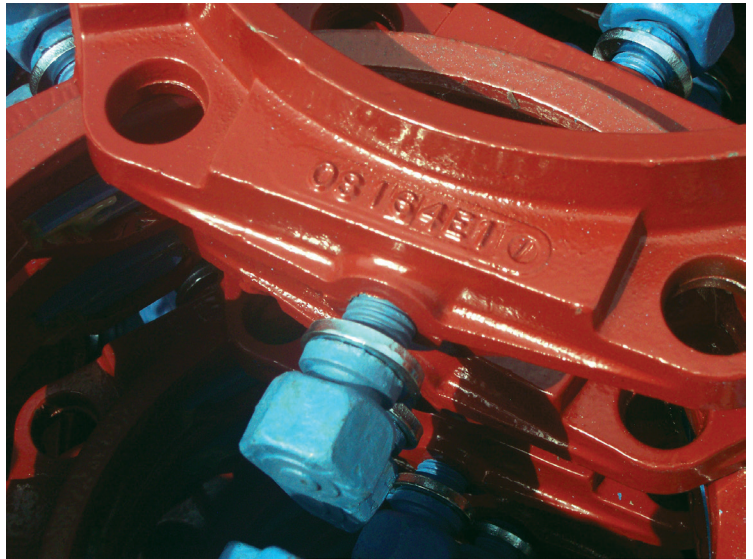
### Verification and Traceability

With so many copycat restraint products on the market today that are sourced from so many different foundries located in every corner of the world, how can you be sure that you have a MEGALUG® product produced by EBAA Iron, Inc.? Firstly, only EBAA IRON, INC. manufactures a MEGALUG and only a wedge action restraint device from EBAA IRON will have the name "MEGALUG" on its casting. Also, only EBAA IRON provides as standard the MEGA-BOND® color-coded coating system to its products for added visual identification of a genuine MEGALUG restraint product along with the added value of providing a coating with superior corrosion resistant characteristics compared to the more commonly used water-based paint many cheap imitators apply to their products. For further visual identification purposes, each pallet of EBAA product is stretch-wrapped and identified with blue and white tape bearing the EBAA Iron logo. Packaged goods are boxed in blue and white EBAA "logo" boxes for easy visual identification.



**Image 2.2**

Moreover, every casting is proudly marked with the "EBAA IRON" name and the "MADE IN THE USA" point of origin manufacturing markings. Along with those markings, a seven digit production code is integrally stamped or cast on each product identifying the specifics of the date of manufacture. With that code along with the product series and size, you can contact EBAA Iron and receive detailed reporting known as Material Traceability Records or MTRs. With the duplicate test bars it may be possible to replicate some of the original testing if needed. You will have the results of your request within 24 hours-usually within an hour. There is no waiting for months while someone tries to figure out what happened to the records for the foundry that made the product for the broker that took the order in that far off corner of the world.



**Image 2.3**

For example, in the picture shown above of a six-inch 2000PV, the date code is "08164E1". The first two numbers are the year of manufacture. The next set of three numbers is the numerical day of the year on which casting was made. The letter indicates the location of the foundry. Finally the last number is the shift number. Therefore this particular casting was made on the 164th day of 2008 (June 12) at the Eastland, TX Vertical Parting Molding (VPM) foundry during the first shift.

Finally we welcome visitors like you to our facilities so that this transparency is more than just words and pictures on a piece of paper. Visitors are able to see our production, quality assurance, and testing facilities. They are also able to see the dedication of our employees and the quality machinery required to produce the superior products that you expect.

### Conclusion

When you specify, request, and order EBAA Iron products your expectation of receiving top quality products will be validated with transparency. At EBAA Iron we strive to exceed your expectations and we will provide you the means to verify that our quality can be substantiated through real traceability.



This is one in a series of Connections reports addressing design and application subjects. If you would like additional copies of other reports or a listing of available reports contact your EBAA Iron representative or call EBAA Iron Sales at 800.433.1716 or fax 254.629.8931. EBAA's engineering group can be reached at 800.633.9190 or fax 254.629.2079. Copyright© 1995 Ebaa Iron Sales, Inc.

**ISSUE: 0620-B**