1. **Governing Specifications**

Examples:

* ASTM E23 - Notch Bar Impact Testing of Metallic Materials
1. **Technical Concerns**

Impact testing data is used for determining toughness of materials and weldments for design purposes and for quality control of materials. Proper measurement of mechanical properties is critical to the function of the material.

1. **Known Process Problems**
* Misalignment of specimens can lead to inaccurate test results.
* Specimen sizes, locations, and orientations must be carefully specified per the applicable specifications to insure acceptable and accurate results.
* Wrong notch radius.
* Poor temperature bath control.
* Excessive time from bath to test machine.
* HAZ specimens not actually in HAZ.
1. **Checklist Items**

**Part A: Contract Compliance Items.** An explanation should be provided for any “no” response and follow-up questions should be asked as appropriate. Also, the “REMARKS” column should be used to explain the supplier’s method of compliance or other pertinent observations. **All applicable contract specific items should be filled in prior to the visit to customize the checklist for each visit.**

**Part B: Additional Supplier Capability and Data Gathering Items.**  Additional “how” or data-gathering type questions should be asked as appropriate to gain better understanding of the supplier’s operation, and the answers documented.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Supplier:** |  | **Date:** |  | **QAR:** |  |

**PART A**

**CONTRACT COMPLIANCE ITEMS**

| **Line** | **Checklist Item** | **Yes** | **No** | **N/A** | **Remarks / Method of Compliance** |
| --- | --- | --- | --- | --- | --- |
| **A.1** | Does the supplier test to ASTM E 23 or have a separate written impact testing procedure? (If so, list the procedure.) |  |  |  |  |
| **A.2** | Has the test apparatus been verified (proof tested) using NIST standard test specimens in the past 12 months, and after any repair, adjustment, or relocation? (E23 A2.1.2) |  |  |  |  |
| **A.3** | Is the machine level and installed securely on a concrete floor or bolted to a foundation (E23 A1.1) |  |  |  |  |
|  | * Is the machine allowed to run through a free swing check prior to start of testing? (E23 A1.1)
 |  |  |  |  |
|  | * Is the machine checked for zero position (E23 8.1.1.2)
 |  |  |  |  |
|  | * Is the machine checked for friction and windage losses (E23 8.1.1.3)?
 |  |  |  |  |
| **A.4** | Are test specimens standard sizes or prepared per the product specification, drawing requirements, or other contract requirements? (E23 7.1.1) |  |  |  |  |
| **A.5** | Are proper numbers, locations and orientations of the specimens specified per the contract requirements? |  |  |  |  |
| **A.6** | Is each specimen clearly marked with a unique identifier, traceable to a specific heat of material and orientation/location as applicable? |  |  |  |  |
| **A.7** | Is the specimen surface finish correct? |  |  |  |  |
|  | * Is the orientation of the notch correct?
 |  |  |  |  |
|  | * Is the notch radius correct?
 |  |  |  |  |
|  | * Is the notch depth correct?
 |  |  |  |  |
|  | * Is the notch angle correct?
 |  |  |  |  |
|  | * Is the notch location correct? (E23 Figure 1)
 |  |  |  |  |
|  | * Has the notch been cut after heat treatment? (E23 7.2.1)
 |  |  |  |  |
| **A.8** | Is the specimen properly centered in the test machine using centering tongs? (E23 8.3.2) |  |  |  |  |
|  | * Is the specimen properly oriented ?(E23 Fig. 2)
 |  |  |  |  |
| **A.9** | Does the pendulum strike the specimen opposite the notch? |  |  |  |  |
| **A.10** | Is testing being conducted at the proper temperature, within +/- 2 degrees F? (E23 8.2.4) |  |  |  |  |
|  | * Is the bath agitated? (E23 8.2.4.1)
 |  |  |  |  |
|  | * Has the bath temperature measurement device been calibrated within the last 6 months? (E23 8.2.3)
 |  |  |  |  |
|  | * Is the specimen fully covered in the bath for at least 5 minutes (liquid) or 30 minutes (gas)? (E23 8.2.4.1 or 8.2.4.2)
 |  |  |  |  |
| **A.11** | Are the specimens transferred from cooling or heating medium to testing within 5 seconds? (E23 8.3.3) |  |  |  |  |
|  | * Are handling tongs (devices) cooled or heated as appropriate? (E23 8.2.4.1)
 |  |  |  |  |
| **A.12** | Are test results for specimens which jam the machine disregarded? (E23 8.3.3.2) |  |  |  |  |
| **A.13** | When machine jams is it rechecked for damage or misadjustment prior to continued use? (E23 8.3.3.2) |  |  |  |  |
| **A.14** | Subsequent to testing, is the indicator value recorded prior to locking the pendulum prior to the next test? (E23 8.3.3.3) |  |  |  |  |
| **A.15** | Are all test values obtained within 80 percent or less of the value of the maximum scale reading? (E23 A2.4.3.2) |  |  |  |  |
| **A.16** | Is the test report properly completed? |  |  |  |  |
|  | * Is specimen type recorded?
 |  |  |  |  |
|  | * Is test temperature recorded?
 |  |  |  |  |
|  | * Is the actual energy absorbed by the specimen in breaking recorded? (E23 10.2)
 |  |  |  |  |
| **A.17** | When specified, is the fractured specimen appearance identified as percent of fracture surface as shear, and as mils of lateral expansion? (E23 10.3) |  |  |  |  |

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| **PART B****ADDITIONAL SUPPLIER CAPABILITY AND DATA GATHERING ITEMS** |
| **Line** | **Item** | **Remarks** |
| **B.1** | Describe the material (alloy) – specification, form, type, condition, etc. |  |
| **B.2** | What is the contract number? |  |
| **B.3** | What project and equipment is this material used in? |  |
| **B.4** | What is the part and drawing number? |  |
| **B.5** | Does the vendor perform other types of mechanical, chemical, physical, or nondestructive testing? |  |
| **B.6** | What other specifications does the vendor work to? |  |
| **B.7** | List any specifications the supplier works with which have requirements or acceptance criteria more restrictive than the governing specification. |  |
| **B.8** | Describe the supplier’s other capabilities. |  |