

SFIA Code Compliance
Certification Program

Best Practices



Program Administrator:



Table of Contents

ICC-ES AC10 REQUIREMENTS

1. AC10 Section 2.1.1 and 2.1.3 - Quality System Documentation	2
2. AC10 Section 2.1.4 - Product Identification and Labeling	3
A. Member Marking	3
B. Labeling of Bundles - SFIA Program Requirements D.2	3
C. SFIA Certification Label	4
3. AC10 Section 2.1.5 - Traceability	4
4. AC10 Section 2.2	6
A. Ordering Materials	6
B. Receiving Incoming Material	6
C. Mill certifications/Test Reports	6
5. AC10 Sections 2.3 and 2.4; AC10 Sections 2.7.1, 2.7.2, and 2.7.3 - Quality Checks and Documentation	6
6. AC10 Section 2.5 - Non-Conforming Materials	6
7. AC10 Section 2.6.1 and 2.6.2	6
A. Equipment Calibration	6
B. Calibration Log	7
Additional Information	7
Primary and Secondary Contacts	7
Quality Control Manual	7
Inspection expectations	7
Sampling requirements and salt fog testing	7
Inspection Report and Notice of Deficiency (Variances or Action Items)	8
Notice of Noncompliance (NONC)	8
Compliance Certification	8
Ordering Labels	8
Revocation of Compliance Certification	9
Inspection Refusal	9
Appendix A – Mill Certificate (example)	10
Appendix B – Quality Control Sheets	11-12

Steel Framing Best Manufacturing Practices

As a partner with SFIA in the administration of the SFIA Code Compliance Certification Program, Intertek has worked with many manufacturers to address various issues of noncompliance with the Program Requirements. This document details the best practices and recommendations that have been the most successful. Implementation of most of these best practices is not mandatory, but highly encouraged in order to minimize the issues of noncompliance.

Developing effective quality control procedures takes time. Manufacturers should always be looking for ways to improve quality systems and procedures as part of the continuous improvement process. As the Administrator, the team at Intertek works with the manufacturers to identify and resolve noncompliance issues that are identified during required inspections. For manufacturers who are new to the program, our hope is that this document will provide some guidance based on experience.

The information in this document lists the specific areas from ICC-ES AC10 Section 2 that are part of the inspection process so that it is easier for manufacturers to follow. If you wish to discuss any of these suggestions, please contact us at 717-764-7700.

ICC-ES AC10 REQUIREMENTS

1. AC10 Section 2.1.1 and 2.1.3 - Quality System Documentation

It is a good habit of the manufacturers to review the SFIA certification program requirements on a regular basis to stay informed.

We also recommend that the quality system documents (quality control manual, checklists, forms, etc.) be reviewed frequently for potential improvements, effectiveness, and possible revisions. **At a minimum, the quality control manual is required to be reviewed annually.** Any changes to the quality control manual, or other documentation referenced or included in the quality control manual, should be recorded on the revision/review log. If any changes are made to the quality control manual, the revised manual should be submitted to Intertek.

When the annual reviews are performed, they should be noted in the Review/Revision Log as “annual review” under the description column along with the list of revisions that were required. If no changes were made, state “annual review - no changes required”.

Having the most recent version of the quality control manual that is in use at the facility is necessary in order for the inspector to prepare for the plant visit and will minimize the inspection process.

BEST PRACTICE: REVIEW THE SFIA CODE COMPLIANCE CERTIFICATION PROGRAM REQUIREMENTS REGULARLY.

BEST PRACTICE: UPDATE/REVISE THE QUALITY CONTROL SYSTEM AS NEEDED.

REQUIRED: THE QUALITY CONTROL MANUAL IS REQUIRED TO BE REVIEWED ANNUALLY, AT A MINIMUM.

2. AC10 Section 2.1.4 - Product Identification and Labeling

A. Member Marking

Required member markings should include all the information as noted in the SFIA Code Compliance Certification Program Guide, section D2.1 for Structural Members and D2.2 for Nonstructural members. An example can be found in the SFIA Technical Guide on Page 2. One recommended format is:

362S162-54 33ksi G60 Coil #12345 SFIA

Section D2.2 for Nonstructural members notes in item f “The protective coating type and weight, if other than as specified in AISI S220, Section A5.1” must be part of the marking on the individual member. AISI S220, Section A5.1 notes that “Nonstructural members utilized in cold-formed steel framed construction shall have a protective coating conforming to ASTM A653 G40 Minimum or shall have a protective coating with and equivalent corrosion resistance.” Therefore, all coatings other than G40 shall be marked on Nonstructural studs. For example, if the coating that is used is AZ50, the inkjet string should look like: 362S125-43 33ksi AZ50 Coil #12345 SFIA

If the coating is not marked or generic designators are used nonstructural products are assumed to be G40. In these cases, traceability information should clearly identify the coating type. This information is important to help avoid the potential for failures due to inaccurate information and additional testing to determine if the coating meets the Program Requirements. Additional testing and return visits for resampling due to incomplete or inaccurate information will incur additional charges to the manufacturer. To avoid this, mark the actual coating if other than G40 for nonstructural members.

BEST PRACTICE: MEMBER MARKINGS SHOULD CONTAIN ALL REQUIRED INFORMATION, INCLUDING ACCURATE COATING IDENTIFICATION. IN ADDITION, THE FACILITY SHOULD HAVE AVAILABLE DOCUMENTATION THAT CLEARLY IDENTIFIES THE COATING.

B. Labeling of Bundles - SFIA Program Requirements D.2

The information on the bulk label should include the rollformer’s identification (name, logo or initials), length, quantity, and rollformer’s member designator including member depth, flange size, and minimum bare metal thickness in mils or inches exclusive of protective coating. Identification of gauge is not an acceptable substitute for bare metal thickness. If gauge is used, the bare metal thickness in mils or inches must also be provided. See example bulk label below:

[*Required information; ♦OPTIONAL (recommended) information]

*ABC Manufacturing 76 NW 1 st Avenue York, PA 17401		
♦Customer: 123 Company	♦WO#: 12345	♦ (16 ga.)
*Item: 600S162-54	♦KSI: 33	♦Coating: G90
*Pieces: 1000	*Length: 15'	♦Date: 06/17/14

BEST PRACTICE: *REQUIRED INFORMATION INCLUDES: ROLLFORMER’S IDENTIFICATION (NAME, LOGO OR INITIALS), LENGTH, QUANTITY, AND ROLLFORMER’S MEMBER DESIGNATOR INCLUDING MEMBER DEPTH, FLANGE SIZE, AND MINIMUM BARE METAL THICKNESS IN MILS OR INCHES EXCLUSIVE OF PROTECTIVE COATING.

♦OPTIONAL INFORMATION (STRONGLY SUGGESTED) INCLUDES: WORK ORDER OR COIL NUMBER (for traceability); KSI, COATING, GAUGE, DATE OF PRODUCTION

C. SFIA Certification Label

The Program Requirements state that the certification label is to be applied at the time and place of manufacture. All enrolled products are eligible for sampling.

There are times when multiple products, including accessories, are bundled onto a skid, including certified and noncertified products. In cases where multiple products are included in one bundle, the noncertified products and accessories must not carry the SFIA certification label. It is important to place the certification label in such a way as to distinguish between what is certified and what is not.

BEST PRACTICE: THE USE OF THE CERTIFICATION LABEL IS MANDATORY AND MUST BE ATTACHED PRIOR TO SHIPPING. DO NOT LABEL ACCESSORIES OR OTHER NON-CERTIFIED PRODUCTS.

3. AC10 Section 2.1.5 - Traceability

Traceability is required of all certified products. Traceability may include mill certificates or test reports, purchase orders (PO's), and quality control check sheets from receipt of raw material to quality checks of finished products. This information shall clearly indicate, through a mill certificate, supplier certification (COA), or independent testing, that the properties of the steel used to make the finished products meet the requirements of the program, and that the finished product meets the physical properties and dimensional requirements of the associated standards and product drawings. Traceability documentation should be easily accessible and must be retained for two years.

BEST PRACTICE: ESTABLISH A SYSTEM TO TRACK ALL DOCUMENTS RELATED TO THE MANUFACTURE OF PRODUCTS FROM ORDERING MATERIAL, TO RECEIVING OF INCOMING MATERIAL, TO QUALITY CHECKS OF FINISHED PRODUCTS.

4. AC10 Section 2.2

A. Ordering Materials

Materials used for members shall be from sheet steel complying with the requirements of ASTM A1003. See Section A3 of AISI S240 for Structural and Section A4 of AISI S220 for Nonstructural.

BEST PRACTICE: ORDER STEEL IN COMPLIANCE WITH ASTM A1003.

B. Receiving Incoming Material

The procedure for receipt of incoming material is as important as how the material is ordered. If the ordering and receiving procedures are effective, the manufacture of cold-formed products is more likely to be compliant. If the ordering and receiving procedures are insufficient, products made from that material run the risk of not complying with the Program Requirements.

When in-coming material is received, there should be a process in place to confirm that the material complies with the Purchase Order, and that information from the steel supplier; mill certificates, supplier certification (COA), or independent testing results by an accredited lab, are reviewed for compliance. This documentation should include verification of the steel properties and be signed off on by receiving personnel. If the material does not come with mill certificates, supplier certification (COA) or test reports, in-house testing or third-party testing should be performed to verify the properties. Because of the inherent variations within a coil, samples taken from several areas of the coil will provide a better representation of the coil properties.

As part of the inspection process, the inspector will request copies of traceability paperwork, including documentation from a steel supplier, to confirm the properties of the steel selected for verification testing.

C. Mill certifications/Test Reports

It is important to understand what information needs to be confirmed when receiving material with a mill certificate or independent test reports. It is not enough to just check that paperwork is provided. The following information should be confirmed:

- Statement of certification/conformance - The documentation should clearly state that the mill or test lab "herby certifies" the steel or that the steel is in compliance with a specified standard.
- Standards used to verify properties and the actual test results - The documentation should clearly identify all standards used to test the various material properties including coating, bare metal thickness, tensile strength, yield strength, and elongation. The results of the testing should also be listed.
- Please note that bills of lading and shipping records are not mill certifications.
- Educate yourself and employees on how to review/read a mill certificate or lab report. Please refer to sample in [Appendix A](#).

BEST PRACTICE: LEARN HOW TO READ A MILL CERTIFICATE OR TEST REPORT AND CONFIRM THAT THE INFORMATION IS COMPLETE AND MATCHES THE PROGRAM REQUIREMENTS AND THE PURCHASE ORDER.

5. AC10 Sections 2.3 and 2.4; AC10 Sections 2.7.1, 2.7.2, and 2.7.3 - Quality Checks and Documentation

In-process and/or final quality control checks should be performed every 100 pieces for structural products and every 250 for nonstructural (drywall) products. For small runs, quality control checks should be on the first and last piece.

Check sheets for quality control inspections should include, at minimum, all dimensions as listed on Pages 28 and 29 of the Program Requirements, including the recognized tolerances and information that allows traceability to the steel used to produce the product. Quality checks should also include verification of inkjet markings and other properties that the manufacturer deems important to their manufacturing process. Refer to samples of quality control sheets in [Appendix B](#).

All operators should be trained on how to perform dimensional checks and how to properly use the equipment required to perform dimensional measurements. Measuring devices should be of a sensitivity as to accurately take measurements within the tolerances identified in the SFIA Code Compliance Certification Program, Section C2. Verification of punchout measurements should be reconfirmed after roll-former is up-to-speed.

Quality check sheets should be reviewed and approved/signed-off on by a supervisor, or other responsible personnel and should be filed with other quality documents for that product. Quality control documents should be retained for a minimum of two years.

BEST PRACTICE: QUALITY CHECKS SHOULD BE PERFORMED AND RECORDED FOR EVERY RUN, REVIEWED/APPROVED BY RESPONSIBLE PERSONNEL AND KEPT ON FILE WITH OTHER QUALITY DOCUMENTATION FOR THAT PRODUCT FOR A MINIMUM OF TWO YEARS.

6. AC10 Section 2.5 - Non-Conforming Materials

Procedures should be established to address nonconforming materials. This includes incoming material and finished products. Nonconforming material should be segregated in a specified area away from conforming material and disposition should be determined. There should be a form or documentation that follows nonconforming material from initial determination of nonconformance to disposition and be signed by responsible personnel.

BEST PRACTICE: ALL NONCONFORMING MATERIAL SHOULD HAVE A CLEAR PAPER TRAIL THAT CONFIRMS FINAL DISPOSITION.

7. AC10 Section 2.6.1 and 2.6.2

A. Equipment Calibration

Each piece of equipment used for quality checks should be calibrated and have a unique identification traceable to calibration records. Tape measures may be verified against a standard steel rule, traceable to national standards. We recommend that tape measure verification be performed at the beginning of each shift.

Measuring devices should be of a sensitivity as to accurately take measurements within the tolerances prescribed in the SFIA Code Compliance Certification Program, Section C2.

B. Calibration Log

A Calibration Log should be maintained and should list each piece of equipment used for quality checks. The Log should include the unique identification for each piece of equipment, the date it was last calibrated, and due date for the next calibration. We recommend that this information be on a sticker affixed to the equipment.

Calibration certificates should be filed and easily accessible. Calibration, or internal verification of measuring equipment, must be traceable to national standards.

BEST PRACTICE: ALL EQUIPMENT USED FOR TESTING AND MEASURING SHOULD BE CLEARLY IDENTIFIED, CALIBRATED, AND TRACEABLE TO NATIONAL STANDARDS AND CALIBRATION RECORDS.

Additional Information

- **Primary and Secondary Contacts** - Primary and secondary contacts should be individuals who are located at the facility and who are available to assist the inspector.
- **Quality Control Manual** - Each manufacturer is required to document the quality control system in a quality control manual and be compliant with ICC-ES-AC10. This manual must be submitted to the Administrator for review and approval prior to performing the initial inspection.
- **Inspection expectations** - The first inspection is announced, and the date is arranged with the primary inspection contact. Subsequent inspections are unannounced and are performed twice per year. The inspector will review the quality control procedures using the approved quality control manual and perform sampling for independent testing verification of finished products.
- **Sampling requirements and salt fog testing** - Samples of products listed in the program (structural, nonstructural, or equivalent nonstructural) will be sampled during each inspection. Three samples of structural products and a combination of three samples of nonstructural and/or equivalent nonstructural products will be selected. These samples will be cut to be at least 24" long and returned to the lab by the inspector for testing.

In addition to the three 24" samples of nonstructural products noted above, three additional 12" samples will be pulled for potential salt fog testing for each product selected. Salt fog testing is only required when a product is confirmed to have an equivalent coating recognized in the program or a nonstructural product, based on the appropriate coating test, fails to meet the associated requirements. It is important to be able to provide traceability documentation for the selected samples so that the properties can be confirmed and compared to the marking and labeling for that product.

- **Inspection Report and Notice of Deficiency (Variances or Action Items)** - Nonconformances with the quality procedures will generate a variance(s) or action item(s) in the final report which are summarized on the last page of the report on the Inspection Response Sheet.
 - **Resolution of Deficiencies (Variances or Action Items) - Variances and Action items** have a required response time of 30 days.
- **Notice of Noncompliance** - Failures in the property testing of selected samples will generate a Notice of Noncompliance (NONC) which will accompany the test report/Letter of Results (LOR). Three NONC's within a 12-month period will result in a revocation of compliance certification. Refer to Section A6.10 for other examples of issues that may lead to issuing a NONC. Please note, this list is not comprehensive, and will apply to class of product (structural or nonstructural).
 - **Resolution of Notices of Noncompliance** - NONC's have a required response time of 10 days
 - An **NONC response** typically includes determining root cause and providing an action plan that outlines a proposal to resolve the issue(s).

For testing failures most manufacturers will do research to determine the root cause of the failure. This generally includes reviewing the complete traceability documents (which may include mill certificate, purchase order, bill of lading, coil report, in-process & final checks, etc.) to determine whether or not the material used should have been in compliance. If it is found that the material used had the correct specifications the supplier may need to be notified of the test failure and the complete traceability documents are submitted as the “objective evidence”.

If the root cause is found to be an operator error (example: selecting an incorrect coil) then the action plan may include a training for the operators. If found to be equipment issues, the action plan may include repairs or replacement. There are many scenarios that could be found to be the root cause of the failure therefore the above information outlines only few possibilities.

Once you submit the root cause determination and the action plan, Intertek will review for approval and resampling.

- **Compliance Certification** - When a manufacturer has satisfactorily resolved all action items and/or NONC's from the initial inspection, the Administrator will issue a Notice of Compliance Certification and list that location on the website.
- **Ordering Labels** - Certification labels for structural and nonstructural products must be ordered from the printer. The order form will be sent along with the Notice of Compliance Certification. The manufacturer must submit a copy of the Notice of Compliance Certification along with the order form.

- **Revocation of Compliance Certification** - Section A6.12 in the Program Requirements lists the reasons for revoking a manufacturer's certification. Three NONC's (strikes) within a 12-month period is one example of a situation that will generate a revocation.
- **Inspection Refusal** - Program Requirements Section A6.10 states that a Notice of Noncompliance (NONC) will be issued due to failure to permit an inspector to enter the manufacturing facility and conduct an inspection within 15 minutes of arrival request. An invoice will be sent along with the NONC for the inspection fee for the refused inspection

APPENDIX A - MILL CERTIFICATE

METALLURGICAL TEST				Date Printed: 3/23/11 Page 1 of 1													
The Steel Supplier Testing Lab Information				Sold To:		Ship To:											
Order/Line	G276969-1	Product	COLD ROLL GALVANIZED-NSA G90		B/L #	645098	Ship Date	3/23/11									
E/O Number	9820602	Dimensions	.0428 MIN x 48.0000 MI (INCHES)		Vehicle #	LW495409											
Description	A1003-08 ST33H																
Bare metal thickness as specified in A1003				Properties													
With the following modifications:																	
Standard																	
Heat	212043	Coil ID	647162.2000	647164.1000	647164.2000	647166.1000	647166.2000	647168.1000									
Heat	212043	Coil ID	647168.2000														
Heat	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	S	V	Nb	N	Ti	B	Ca	Sb
212043	.03	.32	.010	.002	.03	.14	.05	.05		.00	.00	.001	.007	.001	.007	.002	.001
Coil ID	Dir	Test	Val.	UOM	T	Val.	UOM	Test	Val.	UOM	Test	Val.	UOM				
647162.2000	L	Long Yield	40.8	KSI	Long Tensile	53.2	KSI	Long Elong	33	%							
647164.1000	L	Long Yield	41.9	KSI	Long Tensile	53.9	KSI	Long Elong	28	%							
647164.2000	L	Long Yield	41.9	KSI	Long Tensile	53.9	KSI	Long Elong	28	%							
647166.1000	L	Long Yield	42.8	KSI	Long Tensile	54.7	KSI	Long Elong	33	%							
647166.2000	L	Long Yield	42.8	KSI	Long Tensile	54.7	KSI	Long Elong	33	%							
647168.1000	L	Long Yield	42.4	KSI	Long Tensile	54.4	KSI	Long Elong	33	%							
* 647168.2000 *	L	Long Yield	42.4	KSI	Long Tensile	54.4	KSI	Long Elong									
Statement of conformance								Signature									
<p>All goods are sold subject to the description, specifications and terms and conditions set forth on the face and reverse side, or otherwise provided with, Nucor Steel's order acknowledgement.</p> <p>Tensile specimens are tested in accordance with ASTM A-370 specification: standard rectangular test configuration (Figure 3) with 2 inch gauge length and a 24 offset yield method. Steel is aluminum killed and produced to a fine grain practice.</p> <p>This material has been produced in compliance with the chemistry and established rolling practices of the ordered specification. If material is ordered to a chemistry only, testing is not performed by producer.</p> <p>Materials certified to most current revision of ASTM specifications.</p> <p>We hereby certify the above is correct as contained in the records of the corporation.</p>																	
100% MELTED AND MANUFACTURED IN THE USA						Printed Name of Signature		John Smith									

APPENDIX B - QUALITY CONTROL SHEETS

Example of a Quality Control Check Sheet for Structural Products

STRUCTURAL STUDS AND TRACKS QUALITY CHECK SHEET						
						Initials: _____
Date: _____			Operator: _____			
Product ID: _____			Gauge: _____			
Coil Number: _____			Width: _____			
Record actual measurements from first and last piece or every 100 pieces.						
<u>STUDS</u>	Record 1st Measurement	<u>Next</u> Measurement	<u>Next</u> Measurement	<u>Next</u> Measurement	<u>Next</u> Measurement	<u>Next</u> Measurement
LENGTH: +/- 3/32"						
WEB WIDTH: +/- 1/32"						
FLANGE WIDTH: + 1/8", -1/16"						
RETURNS: + 1/8", - 1/32"						
FLARE/OVERBEND: +/- 1/16"						
BOW: 1/8" PER 10 FOOT						
CAMBER: 1/8" PER 10 FOOT						
WEB CROWN: +/- 1/16"						
TWIST: 1/32" PER FOOT 1/2" MAX						
HOLE SPACING: 24" +/- 1/4"						
HOLE CENTERING: +/- 1/16"						
HOLE POSITION from end of stud: ≥ 10"						
Confirm Inkjet String						
<u>TRACKS</u>						
LENGTH: +1/2, - 1/4"						
WEB WIDTH: +1/32", +1/8"						
FLANGE WIDTH: + 1/4", -1/16"						
FLARE/OVERBEND: +0", -3/32"						
BOW: 1/32" PER FOOT, 1/2" MAX						
CAMBER: 1/32" PER FOOT 1/2" MAX						
WEB CROWN: +/- 1/16"						
TWIST: 1/32" PER FOOT 1/2" MAX						
Confirm Inkjet String						
<p>Operators must check first and last piece of every run, or every 100 pieces for structural products.</p> <p>Supervisors must review and initial daily.</p>						

Example of a Quality Control Check Sheet for Nonstructural Products

NONSTRUCTURAL STUDS AND TRACKS QUALITY CHECK SHEET

Initials: _____

Date: _____

Operator: _____

Product ID: _____

Gauge: _____

Coil Number _____

Width: _____

Record actual measurements from first and last piece or every 250 pieces.

STUDS

	Record 1st Measurement	Next Measurement	Next Measurement	Next Measurement	Next Measurement	Next Measurement
--	---------------------------	---------------------	---------------------	---------------------	---------------------	---------------------

LENGTH: + 1/8", - 1/4"						
WEB WIDTH: +/- 1/32"						
FLANGE WIDTH: + 1/8", -1/16"						
RETURNS: + 1/8", - 1/32"						
FLARE/OVERBEND: +/- 1/16"						
BOW: 1/32" PER FOOT 1/2" MAX						
CAMBER: 1/32" PER FOOT 1/2" MAX						
WEB CROWN: +/- 1/8"						
TWIST: 1/32" PER FOOT 1/2" MAX						
HOLE SPACING: 18" +/- 1/4"						
HOLE CENTERING: +/- 1/8"						
HOLE POSITION from end of stud: ≥ 10"						
Confirm Inkjet String						

TRACKS

LENGTH: +1, - 1/4"						
WEB WIDTH: +1/8", -0						
FLANGE WIDTH: + 1/2", -1/16"						
FLARE/OVERBEND: +0", -3/16"						
BOW: 1/32" PER FOOT, 1/2" MAX						
CAMBER: 1/32" PER FOOT 1/2" MAX						
WEB CROWN: +/- 1/8"						
TWIST: 1/32" PER FOOT 1/2" MAX						
Confirm Inkjet String						

Operators must check first and last piece of every run, or every 250 pieces for nonstructural products.
Supervisors must review and initial daily.