LABORATORY SCOPE

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1.0 Statement of Objectives

To establish and maintain the quality system necessary to comply with ISO 9001:2015 Standard as well as Wieland Heyco Policies.

It is our goal to establish and maintain:

1) a uniform gage calibration/verification program
2) procedures for documentation of laboratory records, recording test data and distributing results
3) a training program to assure compliance with the current level of laboratory technology

We make a personal commitment to manufacture metal strip products that at all times meet, or exceed our customer's requirements. We believe this commitment to be an absolute requirement for Wieland Heyco to remain a leader in the metals industry. To accomplish this objective, each employee is encouraged to seek continuous improvement in processes, products and in service to every customer.

2.0 Organizational Structure

Wieland Heyco insures that only qualified lab technicians, who have the technical, educational, and laboratory experience necessary to qualify in their respective fields, can perform the required tests to insure customer product meets customer specifications. Each lab technician benefits from ongoing on-the-job training and also training offered by ASM International in Mechanical Testing.

See document "Lab Personnel" for laboratory personnel and their respective titles.

Wieland Heyco maintains records that include the training and proficiency of all laboratory technicians. If at any time an absence occurs, an equally qualified laboratory technician or the Mgr. Process Metallurgy & Quality will assume laboratory responsibilities.

3.0 Calibration/Verification

3.1 Purpose

To provide a standard policy for gage calibration/verification

Calibration data is kept in the Calibration Log located in the QA Office and electronically. Heyco maintains calibration certificates for three (3) years (current plus 2 years prior), unless otherwise specified by customer requirements. If the equipment or gage is found to be out of calibration, erratic, or past due, all material that may have been subject to inspection with the gage must be re-inspected, removed from service or an "Out of Service" sticker is placed on the equipment. The equipment is returned to service only after qualified personnel from either the manufacturer's organization or from the Approved Supplier's List services it. The gage is sent out to a qualified laboratory for repair and calibration. Calibration certificates are reviewed to determine the need to assess the validity of previous inspections. If need is determined, with a gage of known acceptable calibration. If the gage or equipment is found in error, any reading from it must be redone if possible and any SPC data that was generated must be excluded from the database. If material that was inspected using the suspect gage was shipped to any customer locations, appropriate notifications must be sent to the respective customers.

The QS Administrator is responsible for ensuring the calibration to be done at regular frequency. The vendors listed in the Summary Sheet (found at the end of this document) are qualified to perform calibration. These vendors will send a recall for calibration when they are due. The QS Administrator then schedules the calibration at a convenient time. When the gage or equipment is calibrated, the certificate of calibration is reviewed and logged in to the calibration log per the Calibration Procedure 411P-1.

A calibration verification sticker must be affixed to the gage or equipment after calibration that includes identification number, date calibrated/verified, initials and due date for next calibration/verification.

Wieland Heyco conducts Gage R & R studies as needed for micrometers and test equipment. These are reviewed to ensure R & R and verify that gages are still functional and in calibration between scheduled calibration dates. Wieland Heyco schedules calibration service for all new inspection equipment prior to use.

4.0 Material Testing and Results

It is the responsibility of the Quality Assurance Department to conduct in-house testing on all the samples submitted per Production Procedure 409P-1 and In-Process & Final Inspection Procedure 410P-2. All the tests must be performed per appropriate ASTM standards or customer specified standards. Gauge must also be checked and recorded to verify appropriate process step. All the Standards and all related information is kept on file and located in the QA Lab for detailed test procedures, preparation of tests samples, required calculations, reporting results and calibration requirements.

In-house testing on submitted samples is as follows:

Annealing –

1) Non-finish Gauge: Rockwell; Grain Size; Conductivity (if part of customer specification); Resistivity (if part of customer specification)
2) Finish Gauge: Tests performed per mill card/item file (AS400 LAB Program)

Rolling –

1) Finish Gauge: Tests performed per mill card/item file (AS400 LAB Program)

SBL –

1) Finish Gauge: Tests performed per mill card/item file (AS400 LAB Program)

When the tests are completed, the test results are recorded appropriately on the Mill Order Card and also logged into test results database using the AS400 Laboratory Session. If the test results conform to customer specification, the material is released to production for further processing or approved for shipment.

When materials applied from stock are being verified, the Lab Technician shall insure all test results required by the customer are entered into the Lab sample test result program. If any results are not recorded in the sample program, the Lab Technician shall perform those tests and enter the results into the Lab sample test result program.

If approved for shipment, the mill order card must be stamped using “Approved By” stamp and then approved by signing and dating the same. If the test results do not conform to customer specification, the procedure Control of Nonconforming Product 413P-1 must be followed.

Research to develop material and processes that may meet future application requirements is also done in the Lab.

5.0 Test and Measuring Equipment Maintenance

Records of test and measuring equipment, which include manufacturer's name, equipment name, model, and serial number, are maintained in the QA Department. These files also include a description of the purpose of the equipment. Quality Assurance is responsible for the maintenance and periodic check of each piece of laboratory equipment. Beyond the regular service checks or calibration/verification, emergency repair service is available when necessary. The Manufacturer's representative is contacted to schedule such a service.

6.0 Quality Assurance Employee Training

The Laboratory training policy is on-the-job in nature and administered by a qualified staff member. Lab technicians will receive training on all new equipment by the company representative installing the equipment. Training documentation of Quality Assurance employees is kept on file with the Process Owner for Training.

In case of absence of QA Technician and Mgr. Process Metallurgy & Quality, cross training is utilized enabling other available qualified personnel to run the basic tests necessary to operate the plant. Training effectiveness is evaluated as indicated in the Training Procedure 418P-1.

Laboratory training provided to Quality Assurance Technicians includes:

1) Tension Testing
2) Rockwell hardness Testing
3) Electro Etching Specimen for Grain Size Evaluation
4) Grain Size determination
5) Electrical Conductivity / Resistively Measurement
6) Bend test
7) Tool Wear test
8) Micro-hardness testing
9) Specimen Mounting for Subsurface Micro Examination
10) Grinding & Polishing of Mounted Specimen for Micro Examination

The employee will also receive training in various computer-driven applications used within the laboratory.

7.0 Housekeeping and Environmental Control

The laboratory is cleaned and maintained to normal Wieland Heyco standards regarding cleanliness and good housekeeping. Per ASTM E8: "Room temperature shall be considered to be 50F to 100F. The laboratory should aim for a temperature range of 68 – 75F". Access to and use of all test areas and equipment is controlled in a manner appropriate to their designated purpose.

8.0 Customer Complaints

When a customer complaint is received, a Customer Complaint Evaluation 414F-05 is initiated in the CADS database. If a sample or photos are received along with the complaint, qualified personnel evaluate the sample or photos and the results of this evaluation are communicated to the appropriate personnel who include Customer Service, Production, and Management. If a corrective action is required for the complaint then 414P-1 Corrective Action procedure is followed.

9.0 Record Retention

The Quality Assurance Department maintains the following quality records:

- Mill cards with test results
- Vendor certifications
- Calibration certifications
- R & R studies
- PPAP Packages
- Customer complaints evaluations
- Non-conforming material reports

Retention times for these records can be found in 416R-1 Quality Record Master List.

10.0 Internal Audit

Wieland Heyco utilizes internal audits to ensure adequacy and effectiveness of the Quality Management System and to highlight deficiencies and/or needed improvements. The procedure is outlined in Internal Quality Audit Procedure 417P-1. The Process Owner for 4.17 schedules the internal audits. Trained auditors adhering to the requirements specified conduct the audits to the ISO 9001:2015 Standard and are independent of the activity being audited. Planned audit frequency may be increased based upon the number of internal/external nonconformances or when customer complaints occur.

Management having responsibility for the audited area review, agree, and correct deficiencies highlighted by the audit within an agreed time period. Audit verification is performed to verify implementation and effectiveness of the corrective action taken. Management utilizes the results of internal audits to review the continued effectiveness of the Quality Management System.

11.0 Standards and Customer Specifications

The Quality Assurance Department maintains the ASTM Standards. These Standards are kept current through annual subscription. They are made available to those who need them as indicated in 405R-2 Document Distribution & Reference List. Customer Service maintains the customer specification files which are reviewed and approved as per 405P-2 External Document Control.

Summary Sheet

Test	Equipment	Calibrating Vendor	Standards/Procedure
Tension	Tinius Olsen 25ST	Tinius Olsen, Inc.	ASTM E8
Tension	Tinius Olsen Electomatic	Tinius Olsen, Inc.	ASTM E8
Tension	Tinius Olsen 5000	Tinius Olsen, Inc.	ASTM E8
Rockwell Hardness 15N;30N	Wilson Rockwell Hardness Tester	Tinius Olsen, Inc.	ASTM E18
Rockwell Hardness B;F;15T;30T	Wilson Rockwell Hardness Tester	Tinius Olsen, Inc.	ASTM E18
Electrical Conductivity / Resistivity	AEMC 6240 SMP 10 & SMP 350 Fischer Sigmascope	Industrial Process Measurement, INC Fischer Technology	410I-07 Conductivity/Resistivity Measurement of Metal Strip
Grain Size	Zeiss Optical Microscope	NA	ASTM E112
Bend	Bend Test Fixture	NA	Amp Spec. 100-36
Micro-Hardness	Tinius Olsen Micro Hardness Tester FM-14	Tinius Olsen, Inc.	ASTM E384
Surface Roughness	Mitutoyo SJ-210	N/A	ISO 468 & ISO 4287

Revision Table

REV	DESCRIPTION OF CHANGE	DATE	CHANGED BY
15	Revised section 7.0 Summary sheet. Revised Heyco Metals to Wieland Heyco	2/12/24	C. McCracken
14	Revised section 6.0 & Summary Sheet	8/29/22	V. Yashchenko
13	Revised sections 1.0, 2.0, 6.0, 10.0, Summary Sheet & Process Owner name & title	9/28/20	V. Yashchenko & W. Yoder

Training Required: (One MUST be checked by Process Owner.)

- ☐ **NO Training Required.**
- ☑ **Read ONLY.**
- ☐ **Formal Training Required – Please see training records.**

Approval:

Signature on File		2/14/24
Vadim Yashchenko	**Mgr. Process Metallurgy & Quality**	Date