

thyssenkrupp Materials NA

Copper and Brass Sales Division



<i>Document No.: 8.4.3-1-001</i>	<i>Rev: 0</i>	<i>Title: Supplier Quality Manual</i>
<i>Process Owner: Buy</i>		<i>Approval Date: 07/23/19</i>
<i>Created by: Paul Strouse</i>		<i>Review Date: 07/23/19</i>
<i>Approved by: Kevin Reid</i>		

Copper and Brass Sales Supplier Quality Manual

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Contents

Purpose	4
Safety	4
Code of Conduct.....	4
Compliance.....	4
Technical Data.....	6
Approval	6
Competence	6
Training Program.....	6
Interactions.....	6
Supplier Performance Monitoring.....	7
Onboarding Verification.....	7
Monthly Quality Review	7
Supplier Scorecard	7
Yearly Evaluations	7
Onsite Verification	8
Special, Customer and other Specific Requirements	8
Special Customer Requirements	8
Packaging/Labeling Requirements.....	8
Incoming Testing and Verification	8
Incoming Inspection	8
Traceability	8
Certification Requirements	8
Mill Test Report (“Mill Report or MTR”).....	8
Certification for Services.....	9
Statistical Method Requirements.....	10

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- QMS Requirements..... 10
 - Certifications..... 10
- Use of Customer Designated Suppliers..... 10
- Nonconforming Material 10
 - Process and Timing..... 10
 - Corrective Action 11
- Counterfeit Parts..... 11
- Process Change Notification and Approval 11
- Flow Down to Subcontracting..... 11
- Test Specimens 12
- Record Retention 12
- Right of Access..... 12
 - Audit 12
 - Inspection 12
- Appendix A 13
 - Packaging Requirements..... 13
 - Container Packaging Requirements 13
 - Coils (Foreign & Domestic) 13
 - Sheet & Plate (Foreign & Domestic) 13
 - Bars (Foreign & Domestic) 14
 - All products: 14
 - Stainless Bars:..... 15
 - Aluminum Bars:..... 15
 - Copper and Brass Bars: 15
 - Tubes (Foreign & Domestic)..... 15
 - All products: 15
 - Stainless Tubes: 15
 - Aluminum Tubes: 15

thyssenkrupp Materials NA

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Purpose

The intention of this manual is to communicate how thyssenkrupp Materials NA, Copper and Brass Sales Division approves, monitors and partners with their suppliers to be our customer's first choice. Suppliers must understand their contribution to Safety, Ethical Behavior and Conformity to Requirements. To the extent the terms of this Supplier Quality Manual conflict with any applicable General Terms and Conditions of Purchase the Supplier Quality Manual will take precedence.

Safety

At Copper and Brass Sales (CBS), Safety is our top priority. We expect our supply chain to have the same commitment. Our STOP process encourages employees or suppliers to STOP the actions of unsafe behavior if witnessed in any of our facilities. Our representatives are empowered to utilize our STOP process to address unsafe behavior even at supplier sites.

As a supplier to CBS, it is expected that your organization will calculate and track the Occupational Safety and Health Administration (OSHA) Total Recordable Incident Rate, regardless of size or location. That metric may be used by CBS to evaluate our partners during the initial onboarding as well as ongoing monitoring.

Materials and documentation supplied must conform to the OSHA Hazard Communication Standard (HCS), including hazard classification, labels and safety data sheets. As a supplier, it is expected that your employees are trained to the HCS standard as well. Supplier will promptly provide CBS, in the form requested by CBS, the identity and amount of all ingredients (and any changes in the ingredients) of the products.

Code of Conduct

At CBS, we expect our suppliers to comply with applicable national statute, the principles of the United Nations Global Compact, and with the thyssenkrupp Supplier Code of Conduct. Furthermore, we expect our suppliers to introduce suitable processes within their organizations that support compliance with applicable statutes and that drive continuous improvements with regard to the principles and requirements laid out in the thyssenkrupp Supplier Code of Conduct. Moreover, we expect our suppliers and their affiliates to ensure compliance with these principles and requirements. The current Supplier Code of Conduct and required Code of Conduct Declaration can be found [here](#) as part of our onboarding and monitoring processes, included evaluation.

Compliance

CBS expects our suppliers must adhere to all applicable International, National, State and/or Local Statutory & Regulatory Requirements. Commonly, material and services provided to CBS are subject to the following regulations, and as a supplier your duty is to comply with those that are required: Conflict Mineral Compliance; CATSA; C-TPAT; DFARS; ITAR; NAFTA; REACH; ROHS; U.S. Customs and any

thyssenkrupp Materials NA

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compliance requirements stated or referenced on a purchase order. Part of our onboarding and monitoring process includes research tools to identify possible issues.

CBS also expects its suppliers to fully review, accept and provide the material and services requested to the requirements on our purchase orders. A Supplier is expected to be compliant with all material and documentation requirements associated with the purchase order and any and all referenced documents, including this supplier manual.

Communication of Requirements

CBS uses a SAP ERP-based system to generate the Purchase Orders that are used to communicate requirements to its suppliers. Along with the information provided in the actual text of the Purchase Order, there are always additional requirements incorporated by reference. CBS makes every effort to ensure the adequacy of the communicated requirements. Requests for required clarifications or exceptions are the responsibility of the supplier's organization. Agreed upon changes will be incorporated into the purchase order.

CBS has a very diverse customer base, which requires us to consider its purchases in two separate categories.

- Catalog items are industry standards, not produced to a specific customer standard. Materials and services ordered to a nationally recognized commercial standards such as ASTM, AMS, MIL-STD or EN as example.
- Non-catalog items are produced to specific customer standards noted on our purchase orders. As such, there may be some requirements that are not applicable. Material and services to customer specific requirements are typically identified with an "X" at the start of the material number.

In the event referenced requirements conflict with any other documented requirements, CBS uses the following order of precedence to establish the applicability:

1. Purchase order line item requirements
 - a. Specifically identified requirements
 - b. Referenced requirements including drawings and standards
 - c. Referenced commercial standards
2. Purchase order general requirements
 - a. Order specific requirements
 - b. This quality manual
 - c. Our Terms and Conditions found [here](#).

CBS may require Supplier to participate in electronic data interchange (EDI) or similar data and document management programs for notification of material releases, shipping confirmation, Material Test Reports (MTR), Certificates of Conformance or Compliance (COC) and other information.

thyssenkrupp Materials NA

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Technical Data

Material and services identified on the purchase order will in most cases have the latest revision of the standard identified. If there is no revision identified, the Supplier is expected to produce the material to the revision active at the time of order. In some rare cases, CBS may not be aware of a new revision or its customers may request material to conform to outdated revisions. It is the Supplier's responsibility to verify the correct revision if outdated and have any purchase orders updated by CBS to reflect any changes.

Commercially available referenced requirements are the responsibility of the Supplier to obtain. Customer specific requirements will be supplied by the CBS purchasing department upon request.

Approval

CBS uses a Supplier onboarding process that may include questionnaires, product capability reviews, quality management system objective evidence reviews and onsite audits to evaluate risks associated with its supply chain. Based on those evaluations, a scope of approval will be established. This is ideally based on the quality certifications maintained by the Supplier.

CBS expects our Supplier to obtain the appropriate approvals for products, services, methods, processes and equipment when identified as Purchase Order requirements. These are typically related to our Non-Catalog inventory, but may be applied to Catalog inventory as needed. Material releases are defined in the Purchase Orders and are expected to be met. Agreed-upon changes will be documented on an updated Purchase Order.

Competence

Training Program

The Supplier shall have a documented program in place to assure that employees are competent in any work performed that impact the quality of product or service supplied to CBS. This includes, where appropriate, qualification activities, training, and/or experience obtained on the job.

Often referenced documentation, including national standards and customer specific requirements that are flowed down to the supply chain, require specific competency to be demonstrated. The Supplier's competency program should also address those details.

Interactions

CBS looks for its suppliers to be partners. Our goal is to be our customer's first choice in part by the use of our suppliers' materials and services. Part of our partnership evaluation reflects how well a supplier interacts with our organization. Some of our expectations are:

- Notification, as soon as it is known, there will be a change in delivery.
- Timely responses to quotes and purchase orders ideally less than one (1) business day
- Initial response to non-conformances within five (5) days, if not sooner.

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Copper and Brass Sales Division



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- Sharing of business opportunities best served by a distribution supply channel.
- Technical training of our employees
- Cost, quality and efficiency efforts, including Kaizen, Lean and other types of activities.

CBS requires that mutually agreed upon requirements and any subsequent changes are documented on our purchase order.

Supplier Performance Monitoring

CBS uses these main processes for performance monitoring for its key suppliers.

Onboarding Verification

The information supplied during the initial onboarding process is verified as needed. CBS will often perform a verification of certification or product capability.

Monthly Quality Review

All suppliers are evaluated on material/paperwork conformance and delivery performance using our vendor complaint management system. Corrective actions may be issued based on those reviews.

Supplier Scorecard

Key suppliers are evaluated based on internal cost to manage quality non-conformance and delivery timeliness, compared to the quantity supplied. CBS issues a monthly score card to our key suppliers trending the Cost of Poor Quality (COPQ)

Quality Non-Conformance

CBS takes into account the number of quality issues that affect our ability to satisfy our customers.

On Time Delivery

Our customers expect 100% on time delivery. As such we expect 100% on time delivery from our suppliers. We define OTD as four (4) days early up to two (2) calendar days late. Suppliers are evaluated on trends in OTD performance.

We also will work with suppliers to move and adjust due dates, timing, and/or releases as needed to ensure the most efficient delivery possible. As such, we may approve a revised delivery schedule, require shipment of any of the Products by a more expeditious method of transportation, or adjust any quantity requirement under the order accordingly.

Yearly Evaluations

CBS evaluates our Key Suppliers on a yearly bases. Shipping and quality performance as well as the following may be considered: Lead-time for Commodity Products; Short Lead-time Programs; Average Late days; Defect Resolution; Pricing; Marketing Support; Responsiveness; Exclusive Product Lines; New Product development and Joint Marketing.

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Onsite Verification

CBS and its customers may, with appropriate notice, request onsite validation of products and processes. In some cases, onsite validation is an integral and specified part of the product or service program. Those requirements will be communicated as required.

Special, Customer and other Specific Requirements

Special Customer Requirements

CBS requires our suppliers to meet any customer requirements that are part of the PO directly or through reference. These requirements may include, but are not limited to, approval and specific requirements for “Special Processes”, which are most typically Heat Treatment, Coating and/or Testing. Key characteristics may be defined by CBS or our customers, and any requirements related to Key Characteristics will be flowed to the suppliers via our Purchase Order.

Packaging/Labeling Requirements

Suppliers will properly pack, mark, and ship Products, and provide related documentation according to the requirements of the purchase order, carriers and the countries of origin and destination. If Products are manufactured in a country other than the country in which Products are delivered, suppliers will mark Products "Made in [country of origin]." Suppliers are responsible for ensuring that the Products are not damaged during manufacture or transportation to CBS, per agreed upon INCO terms. If arriving by truck, a flatbed is preferred for unloading. See Appendix A for the minimum packaging requirements.

Incoming Testing and Verification

Incoming Inspection

Parts and materials supplied to CBS are subject to inspection using our incoming inspection procedures. We may utilize test reports, outside laboratory testing, specifications, and dimensional verification as appropriate.

All appropriate paperwork, i.e. mill test reports, packing lists and statistical data (as required) must accompany each shipment and must be present at delivery.

Traceability

Supplier shall establish and maintain documented procedures for identification of individual product heat/lots. This identification must be recorded and be made available to CBS, its customers, or any appropriate regulatory, Aviation, Space and defense industries /agency upon request.

Certification Requirements

Mill Test Report (“Mill Report or MTR”)

If a MTR is required on the purchase order, paperwork must be legible and contain all pages of the test report and contain the minimum information below:

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- Name, signature/and or identification stamp and job title of the person approving the document (electronic signature is acceptable)
- Date of Issue
- Seller's Name and Address
- 'Sold To' and 'Ship To' name and address
- CBS Purchase Order Number, PO Line Number and Material Number
- Contain our Purchase Order requirements for Size, Alloy and Temper
- Lot Number as "Heat, Lot or Melt Number"
- List "Heat, Lot, Melt or Report Number" on all pages of the test report
- List all specifications and/or testing requirements as stated on our Purchase Order, i.e. ASTM, AMS, Test Method, Device, etc. This includes the specification's current revision level
- List the test results for all Chemical and Mechanical / Physical tests if requested
- List the Country of Melt and Manufacture. If material is being sold to CBS thru a third party (distributor), the third party must stamp the Mill Report showing transfer of ownership from the third party to CBS listing our purchase order number
- Must contain the name, signature/and or identification stamp, and job title of the person approving the document (electronic signature is acceptable)
- In addition to the above, the Mill Test Report needs to contain the following compliance statements. A Certificate of Conformance (CofC) statement, a 'NO WELD REPAIR' certification statement if applicable, Compliance statements including the revision list on our purchase order for: REACH, RoHS, and DFARS (if applicable).
- Must have a Radioactive Free statement i.e. "This material was not exposed to any radioactive source."
- Must have a Mercury Free statement.

Note: Incoming shipments not in compliance with the above are subject to rejection.

Certification for Services

The certification of services can be varied but at a minimum must include:

- Name, signature/and or identification stamp and job title of the person approving the document (electronic signature is acceptable)
- Date of Issue
- Seller's Name and Address
- 'Sold To' and 'Ship To' name and address
- CBS Purchase Order Number, PO Line Number and Material Number
- Contain our Purchase Order requirements for the Services Provided
- Lot Number as "Heat, Lot or Melt Number" or other traceable value on all pages of the test report

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- List all specifications and/or testing requirements as stated on our Purchase Order, i.e. ASTM, AMS, etc. This includes the specification's current revision level.
- A statement that the material conforms to the requirements of the purchase order

Note: Incoming shipments not in compliance with the above are subject to rejection and return to supplier.

Statistical Method Requirements

CBS requires its suppliers to follow the sampling and testing requirements of material specifications, or other referenced requirements, on its Purchase Orders. If sampling is used for verification and release of material, it must be based upon a recognized standard.

QMS Requirements

Certifications

We believe that suppliers who maintain quality certifications provide material and services at an overall lower cost. We actively urge our suppliers to achieve and maintain certification. Certification review is part of our onboarding and monitoring process. If at any time a supplier's certification is modified, they are required to notify us prior to release of any material or service. In the case that a supplier does not achieve or maintain certification, a documented ISO 9001 compliant quality management system is required and must be approved by CBS.

Use of Customer Designated Suppliers

When the use of customer-designated suppliers is a requirement of a purchase order, the supplier is responsible for the conformity of all externally provided processes, products, and services.

Nonconforming Material

Process and Timing

Products found by a supplier to be nonconforming to the requirements of the purchase order, either prior to or after shipment, shall be communicated to CBS for review and disposition using the Concession/Deviation Request Form found [here](#). Non-conformances discovered by the supplier after shipment must be communicated within 24 hours of discovery.

If defective or nonconforming Products are shipped to, identified, and rejected by CBS;

- The supplier is required to provide disposition to CBS within five (5) days of receiving appropriate information (Description, Photo, Sample etc.) unless otherwise negotiated.
- The quantities under the Order will be reduced unless there is a new Material Release from CBS to replace the Products with conforming products or services.
- Suppliers, as directed by CBS, shall accept return of the products at full invoice price, plus transportation charges. They may be requested to correct, at any time prior to shipment from a

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CBS facility or a customer facility, products or paperwork that fail to meet the requirements of the Order.

- Suppliers may be asked to facilitate source inspection activities at their facilities.

As part of their quality management system, suppliers shall establish and maintain a system for the control, traceability, identification, and segregation of nonconforming material.

Corrective Action

Promptly upon learning of any defective or nonconforming Products, Suppliers will develop, document and implement corrective actions in accordance with their corrective action process.

At request of CBS, a documented corrective action and related objective evidence may be requested using the 8D methodology. It is expected that containment is established in 24 hours and corrective action is identified and implemented within 30 days unless otherwise negotiated. The timeline for verification of effectiveness will be based on the cause, corrective action and implementation plan.

Counterfeit Parts

Suppliers shall have a program in place to prevent the delivery of counterfeit materials to CBS. This program shall include the selection of reliable sources for procured materials/services incorporated into CBS supplied products. Processes to support validity of certification, material traceability, and testing and/or inspection activities are required. Immediate notification of suspect material shipped to CBS is required. CBS reserves the right to review information and process upon reasonable request.

Process Change Notification and Approval

CBS separates our items into two categories – catalog and non-catalog items.

CBS requires notification prior to any change in product, processing methods, or manufacturing location for non-catalog items. This notification must provide a description of the proposed changes along with any applicable information which will aid us in determining if there are associated product risks. CBS must approve these changes prior to the product being shipped to our location(s). CBS does not require notification on catalogue items where the Purchase Order requirements and industry level requirements are met.

Flow Down to Subcontracting

The use of subcontractors requires that the Supplier will ensure the requirements of its PO with CBS and any referenced documents including this manual be part of its agreement with any subcontracting organization.

CBS supplies material into critical market segments where there is a risk to the safety of people. As CBS identifies end use applications on the Purchase Order, the supplier shall flow down this information,

thyssenkrupp Materials NA

Copper and Brass Sales Division



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where appropriate, to assure individuals are aware of their contributions regarding the intended product use. Appropriate controls/actions are required for these circumstances.

Test Specimens

When required on the purchase order, part of a validation process, or during a quality investigation, the supplier is required to provide samples as directed.

Record Retention

Records on inspections, tests, purchased materials, special processing, engineering changes, and other quality assurance activities, shall be maintained by the supplier for ten (10) years minimum unless otherwise directed by CBS customer requirements. Disposition of the records at the end of the retention period is at the discretion of the supplier unless otherwise communicated in the Purchase Order. Records shall remain legible and readily available for review by CBS, its customers, or any appropriate regulatory, Aviation, Space and defense industries / agency.

Right of Access

CBS, its customers, or any appropriate regulatory, Aviation, Space and Defense industries / agency, with appropriate notice, shall have the right of access to all applicable areas of all facilities at any level of the supply chain, including subcontractors, involved in the order and all applicable records.

Audit

Upon reasonable notice, with or without its direct or indirect customers (or a third party designee), CBS may audit the Supplier's production facilities, products and any other pertinent documents, data and other information related to the order at the facility.

Inspection

Upon reasonable notice to the Supplier, with or without its direct or indirect customers (or a third party designee), CBS may enter Supplier's facility at any time to inspect the facilities, products, materials, and any property related to the order. CBS inspection does not constitute acceptance of any work in process or finished goods, nor does it relieve Supplier of any of its responsibilities or warranties.

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Appendix A

Packaging Requirements

Wood Packaging Materials (WPM) in cargo shipments must comply with International Standards for Phytosanitary Measures (ISPM 15) and must be appropriately treated and marked in the country of export.

Container Packaging Requirements

1. Loads must be blocked and braced sideways and lengthways inside containers to prevent shifting.
2. 96-inch tall container should have 48-inch clear space over bundles to allow equipment to enter container.
3. Side clearance should be 6-inches to allow dragging bundles out without catching sides.
4. 40-foot containers need to be extra high to allow equipment in, or do not pack beyond halfway height.
5. Where possible, pack on sleds to allow pulling out load.
6. Either have slings to lift material out or dunnage so slings can be applied.
7. Wood must be certified treated for international shipments.
8. Containers must include desiccant & absorbent packs.

Coils (Foreign & Domestic)

1. Packaging sufficient to protect from transit damage, including internal condensation and water stain. Coils to be secured to full mill skids for forklift unload.
2. Coil skid should be significantly larger than the coil to prevent handling equipment from touching coil.
3. Top of packaging must protect coil from handling damage.
4. Banding must be suitable to keep coil package together during handling.
5. Banding must not damage coil edges.
6. Wood blocks must be between coils.
7. Copper & Copper Alloy coils under .040 inch thickness must be packaged on cardboard cores unless otherwise indicated in purchase order.

Sheet & Plate (Foreign & Domestic)

1. Packaging sufficient to protect from transit damage, including internal condensation and water stain. Sheet & Plate to be secured to full mill skids for forklift unload.
2. Skids – Minimum two (2)2 runners 4 X 4 lengthwise, with 1 X 4 boards crosswise.
3. Cardboard or metal corner protectors on all edges.
4. Cardboard or wood on top.
5. Loads must be blocked and braced sideways and lengthways inside containers to prevent shifting.

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Bars (Foreign & Domestic)

All products:

1. Packaging sufficient to protect from transit damage, including internal condensation and water stain.
2. For product in containers, require slings to lift material out, or dunnage so slings can be applied.
3. Loads must be blocked and braced sideways and lengthways inside containers to prevent shifting.
4. Large diameter bar to be strapped to boards, with dunnage underneath.

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Additional Requirements for:

Stainless Bars:

Minimum three (3) straps steel strapping, with cardboard or foam between straps and bars. No strapping to touch bars.

Aluminum Bars:

1. All Rod, Bar, and Wire Plastic or metal straps over wooden battens (Bare batten bundle pack).
2. Aluminum Architectural – Plastic shrink wrap. Fiber board or corrugated sheet wrapped in middle to protect fork damage (Belly Wrap).
3. Aluminum Cold Finished rod/bar – bare bundle with metal straps spaced to support the bundle over fiber board wrap, no wood battens, shrink wrap both ends.

Copper and Brass Bars:

1. Bar packed in wooden crates. (No mixed heat numbers)
2. Bundles to be wrapped in plastic (high density polyethylene) or paper.

Tubes (Foreign & Domestic)

All products:

1. Packaging sufficient to protect from transit damage including internal condensation and water stain.
2. Bundles to be wrapped in plastic or paper.
3. For product in containers, require slings to lift material out. Or dunnage so slings can be applied.
4. Loads must be blocked and braced sideways and lengthways inside containers to prevent shifting.

Additional Requirements for:

Stainless Tubes:

1. Minimum 3 straps steel strapping, with cardboard or foam between straps and bars. No strapping to touch bars.

Aluminum Tubes:

1. Plastic or metal straps over wooden battens (Bare batten bundle pack) or in boxes to protect.
2. Aluminum Hollows Plastic shrink wrap. Fiber board or corrugated sheet wrapped in middle to protect fork damage (Belly Wrap).

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2. Aluminum Hollows Plastic shrink wrap. Fiber board or corrugated sheet wrapped in middle to protect fork damage (Belly Wrap).

Revision History:

Revision Date	Description
07/23/19 Rev: 0	Original Creation