

**SUPPLIER REQUIREMENTS MANUAL**

Motorparts & Performance Solutions Groups

Any procedure changes within this manual will result in an update of the complete manual revision date and number.

This manual is a controlled document. No changes or revisions to be made unless submitted by Tenneco

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Acknowledgements

Tenneco acknowledges contributions from the following people in the preparation of this manual: -

* Bryan Aitken
* Bill Boleman
* Fred Brown
* Matt Ceccardi
* Koen Duchateau
* Bjoern Goeke
* Brenda Greca
* Michelle Handelman
* Jeff Locker
* Sophie Meis
* Arun Prasanna
* Kaushal Prayakarao
* Senthil (Raja) Ramaswamy
* Kevin Van Dam

**Preface**

Tenneco places the highest emphasis on the **performance**, **quality**, **reliability** and **integrity** of its products.

To achieve this goal, we count on the efforts and contributions of all our stakeholders, and our suppliers play a pivotal role. We expect our suppliers match Tenneco’s level of commitment to achieve the performance and quality levels our customers expect. Only together will we be successful in the market.

**Vision**

Driving advancements that help people get the most out of every vehicle, every ride, every race, and every journey.

**Acceptance of binding obligation**

The objective of this Requirements Manual is to provide you with clear requirements in a concise and succinct manner. While we attempt to make these requirements transparent and easily understood, it is recognized that due to the nature of your products, some exceptions may be required. In the latter cases, please document your concerns and recommendations, providing a sound rationale for your position and direct them to our purchasing group.

Please note, however, that raising concerns of proposing recommendations shall not relieve your responsibility to comply with all the provisions and obligations in this Requirements Manual. Please be further advised that no exceptions or changes to this Requirements Manual will be deemed to exist unless a Tenneco management team member executes a formal contract accepting such exceptions or changes. Absent a written agreement signed by a Tenneco management team member, all additional or conflicting terms proposed by you are hereby rejected.

We welcome suggestions and constructive comments related to the content of this Requirements Manual.

**Introduction**

* 1. **Scope**

This document is provided to define both our customary and general guidelines of how Tenneco conducts business. These binding global purchased material requirements outline our expectations to create what Tenneco believes is a strong, competitive, and value-added supply chain.

Tenneco’s success is dependent upon our ability to provide the highest value to our customers through quality, service, and cost. A close working relationship with our supply base is critical to the achievement of this objective. This manual will provide you with the necessary information that will be valuable to our mutual efforts of conducting business in a professional, ethical, efficient, and profitable manner. This updated manual supersedes all other supplier manuals previously provided to you by Tenneco and/or Federal Mogul Motor parts.

Should you have any questions, please contact respective Global Purchasing (GP) buyer.

Thank you for your continued interest and support.

In this requirement manual, the following verbal forms are used:

* “shall” indicates a requirement
* “should” indicates a recommendation
* “may” indicates a permission
* “can” indicates a possibility or a capability

Information marked as “NOTE” is for guidance in understanding or clarifying the associated requirement.

1. **Organization**

**Tenneco’s Quality Statement and Product Compliance and Quality Policy**

**2.1.** **Quality Statement**

We are committed to delivering Customer Satisfaction by fostering a zero-defect mindset with a commitment to meet requirements using continuous improvement with teamwork, engagement, and ownership to, GET IT RIGHT THE FIRST TIME, EVERY TIME.

* 1. **Product Compliance and Quality Policy**

Each business unit must establish governance, roles, and responsibilities to achieve the following for products sold by the Company:

* Foster a quality mindset with the objective of providing products and services with zero defects by applying continuous improvement strategies to deliver competitive advantage.
* Comply with relevant laws, regulations, and applicable requirements, including regulation of product materials and proper labeling.
* Continuously improve the quality management system to ensure product safety, prevent quality incidents and eliminate defects through the review of quality objectives and results.
* Ensure accurate reporting of data.
* Encourage teamwork, engagement, and ownership of quality responsibilities among all employees through standards, education, training, and effective communication; and
* Facilitate continuous feedback from our customers regarding the performance of our products and utilize their input to improve product and service quality.

Tenneco expects full support from our suppliers in reaching the objectives laid out in the above Quality Statement and Policy.

1. **Purchasing**
   1. **Organizational Philosophy**

Tenneco endeavors to supply its customers with the highest quality, most cost-competitive products available in the industry. In support of this objective, our organizational philosophy is to develop and maintain relationships with suppliers who best demonstrate their commitment to these goals through consistent scheduled delivery of defect-free products, at competitive prices.

Tenneco is committed to developing, manufacturing, and marketing innovative, reliable and cost effective systems and modules. To support this objective, Tenneco suppliers shall be technologically competent and financially capable of supporting our development needs for current and future products.

Tenneco suppliers shall become involved in new product development, to ensure we have robust designs and processes capable of meeting our goals. To be considered as a Tenneco supplier, companies shall be willing to share information on their financial situation with our purchasing department.

Sourcing decisions are based on competitive pricing, quality assurance, supply and delivery performance, service, and life cycle costing. This sourcing philosophy will include development of long-term relationships with suppliers to achieve productivity improvements, in order to reduce costs on a continuous basis.

* 1. **Operational Philosophy**

Tenneco operates in an environment focused on continuous improvement, variability reduction and zero defect philosophy. Customer satisfaction, employee satisfaction and economic value added (EVA) are some of the critical values. Suppliers are expected to have operating philosophies, which are compatible with these values.

Supplier agreements for high-volume, repetitive requirements are typically negotiated for a minimum period of one year and on a single-source basis. Established suppliers are encouraged to discuss the mutual benefits of longer-term supply agreements centered on continuous improvement and productivity sharing with Tenneco. Many such contracts are presently in effect.

Suppliers are expected to maintain quality systems and processes to provide 0 PPM / defect-free components eliminating the need for receiving inspection. Cost reduction through elimination of waste, inspection, inventory and reduced warranty claims, are primary objectives. Tenneco recommends suppliers practice “Lean” methods.

* 1. **Ethics**

In order to support sound procurement practices and maintain a reputation for honesty and fairness, Tenneco will go through supplier selection process to select suppliers who can provide products and services of the highest value. On the other hand, Tenneco team members are also expected to observe the highest ethical standards when handling Tenneco business, making contacts with the business community, and other matters, which would indirectly affect Tenneco's reputation for integrity.

It is Tenneco’s policy that personnel and suppliers shall not engage in any activities nor have any personal or financial interests outside Tenneco, which constitute a conflict of interest with Tenneco policies or which conflicts in any way with their assigned responsibilities.

It is Tenneco’s policy that personnel or suppliers shall never place themselves or Tenneco under obligation at any time by the acceptance/offering of gifts and gratuities of value. When it is necessary to decline such favors, it should be done courteously with a brief explanation of the standard Tenneco policy regarding this matter.

Since Tenneco’s worldwide operations must comply with all applicable laws, rules and regulations, and the policies and procedures that support them, suppliers are required to comply with the same including Tenneco’s Code of Conduct. Refer to Tenneco’s Code of Conduct for more information.

Suppliers shall document their process to ensure that purchased products, processes, and services conform to the current applicable statutory and regulatory requirements in the country of receipt, in the country of shipment, and the customer identified country of destination.

If a supplier feels that their position has been compromised by any individual within Tenneco, they are required to inform Tenneco leadership of their concern as soon as possible.

* 1. **Supplier Criteria**

The primary objective of Tenneco is to achieve "Best in Class" status in supply chain management and supplier performance. As Tenneco focuses on core manufacturing processes, our suppliers shall also be developing and perfecting their core competencies.

To develop & maintain a long-term relationship with Tenneco, suppliers shall:

* be globally competitive in quality, technology, service and cost.
* provide defect free products for all direct and indirect materials / resources.
* maintain a quality system, which meets the requirements as defined below in the supplier certification and qualification requirements matrix.
* provide the lowest total cost products driving year-over-year reductions through continuous improvement and Value Analysis/Value Engineering (VA/VE) initiatives.
* be capable of validating products for Tenneco specific applications.
* consistently deliver parts on time.
* be prepared to follow Tenneco into emerging market regions.
* be proactive and flexible in responding to changing customer demands.

The first step in on-boarding a supplier to join our supply base is for the supplier to complete an initial registration through your respective supplier portal. (Prism, TITAN, and/or, Ivalua portals)

The supplier inputs pertinent information directly into the system, which is routed to a Tenneco commodity buyer for review. The commodity buyer uses this registration to make a preliminary assessment of the supplier including Tenneco code of conduct form. If assessment is a favorable option, then the supplier will be contacted by the commodity buyer (CB). The second step in the approval process is an onsite assessment by Tenneco at the supplier's location. The supplier shall demonstrate compliance to this manual.

**Table 1. Supplier certification and qualification requirements**

| Supplier Type | Supplier Service | Certification & Qualification Requirements |
| --- | --- | --- |
| External Labs / Calibration Services / Gage Suppliers | Supplier who provides calibration services/equipment for test and inspection | Accredited to ISO/IEC 17025 or national equivalent by an accreditation body of the international laboratory accreditation cooperation mutual recognition arrangement or written end customer approval of the external laboratory.  When a qualified laboratory is not available for a given piece of equipment, the equipment manufacturer may perform calibration services.  Gages shall be certified by an accredited calibration supplier before use. The plant shall be responsible for the control of the type of supplier. |
| Chemical Suppliers - direct material | Supplier of chemicals that are direct inputs into the final product.  Examples - anodizing chemicals, plating chemicals, paint, etc. | Supplier shall be certified to current ISO 9001 and/or IATF 16949 certification.  Safety Data Sheets (SDS) shall be provided.  Initial assessment audit at supplier’s manufacturing location is mandatory.  Product qualification/approval at Tenneco site is required prior to mass procurement.  Supplier shipping to EU shall comply with REACH requirements. |
| Chemical Suppliers - others | Supplier of chemicals that are not used in the final product.  Examples - cleaning supplies, hydraulic oil, other chemicals used in the maintenance of equipment | Supplier shall be certified to current ISO 9001 and/or IATF 16949  Safety Data Sheets (SDS) shall be provided.  Supplier shipping chemicals to EU shall comply with REACH requirements. |
| Direct Material Supplier &  Service Supplier | Supplier of materials that are direct inputs into the final product. Examples include:   * suppliers of raw material * purchased components * suppliers of heat-treating * Painting supplier * Coating supplier * Plating supplier * Other finishing services * Sub assembly * Sequencing * Re-work suppliers * Sorting * Quality Inspection * Packaging of sold products * Products for resale | Supplier shall be certified to ISO9001:2015 and/or IATF16949:2016 certification.  Supplier shipping chemicals, parts & finished goods to EU shall comply with REACH requirements.  Initial assessment audit is mandatory at suppliers manufacturing location. |
| OE Special Process Suppliers | Heat treat: CQI-9  Plating: CQI-11  Coating: CQI-12  Welding: CQI-15  Soldering: CQI-17  Molding: CQI-23  Casting: CQI-27 | Supplier shall be certified ISO9001:2015 and/or IATF16949:2016.  Initial self-assessment audit is mandatory at suppliers manufacturing location.  Annual assessment shall be uploaded to TITAN or Ivalua.  Special Process Suppliers shall complete CQI self-assessment reviewed by Tenneco auditor during initial assessment and uploaded to TITAN & Ivalua **annually.** |
| Prototype & Pre-production Suppliers | Supplier who provides samples for prototype and pre-production testing. No production saleable parts are allowed from this supplier. | Supplier shall be certified to current ISO 9001 and/or IATF 16949  Prototype supplier that may become a regular supplier for serial production shall be audited and approved for ISO9001 and/or IATF16949 certifications.  Supplier shipping parts & finished goods supplier to EU shall comply with REACH requirements. |
| Distributors | Supplier who distributes, and/or purchases product that has been manufactured by another organization. The purchased product is a direct input into the final product. | Supplier shall be certified to ISO9001:2015 and/or MAQMSR.  Certification required either from distributor or from manufacturer.  Supplier initial assessment is required. |
| Warehouses | Supplier warehouse locations, distributes, and/or purchases product that has been manufactured by another organization. The purchased product is a direct input into the final product | Supplier shall be certified to ISO9001:2015 and/or MAQMSR.  Certification required either from distributor or from manufacturer.  Supplier initial assessment is required. |
| Dealerships | Supplier that provides OEM certified parts. This supplier shall only purchase parts from an OE organization | Supplier shall be certified to ISO9001:2015 and/or MAQMSR.  Any additional CSR’s from customer shall be provided in addition to the print requirements. |
| Indirect Maintenance, Repair, and Operating Supplies | Suppliers of all materials and/or services that are required to run daily business activities that effect product integrity. | Supplier shall be certified to current ISO 9001 and/or IATF 16949. |
| Direct Packaging   * printed * corrugated * cardboard boxes * dunnage * returnable\* | Supplier who provides e.g. blister cards, or other non-returnable packaging included in sale of the final product. Examples include product boxes and folding cartons.  A supplier who provides items for packaging for transporting the final product such as plastic bags, cardboard separators, labels, internal dunnage, ink, Inserts/dividers, wooden pallets, shrink wrap, etc.  A supplier who provides returnable packaging for the final product. | Supplier should be certified to ISO9001:2015 and/or IATF16949:2016 certification.  Self-assessment from supplier is recommended.  Heat-treated wooden pallets: require phytosanitary compliance (ISPM-15).  \*Initial assessment audit is not mandatory for packaging suppliers with ISO certificate. |
| Indirect Packaging | A supplier who provides items for packaging for transporting the final product such as plastic bags, cardboard separators, labels, internal dunnage, ink, Inserts/dividers, wooden pallets, shrink wrap, WIP racks, etc. | Supplier should be certified to current ISO 9001 and/or IATF 16949  Heat-treated wooden pallets: Require phytosanitary compliance (ISPM-15) and all CSR’s. |
| Tooling Suppliers | A supplier providing tooling for the manufacture of direct materials into the final product, and which has an immediate impact upon final product characteristics; including specialty tool and die shops. | Suppliers shall be ISO9001:2015 certified.  Tooling purchases shall comply with local site tooling approval process. |
| Freight/Transportation Companies | A supplier who provides transportation of product. | Supplier shall be certified to current ISO 9001 and/or IATF 16949  Supplier shall be qualified in line with global transportation procedures. |
| Automotive product related software or automotive products embedded with software | A supplier who manufactures or sells Automotive product related software or embedded software. | Supplier shall be certified to ISO9001:2015 and/or IATF16949:2016 certification.  Initial Self-Assessment Audit is mandatory at Suppliers manufacturing location along with software capability assessment. |

* 1. **Scheduling Agreements**

Scheduling agreements / Purchase Orders (SA’s/PO’s) (sometimes called “blanket purchase orders”) are typically issued to a supplier by global purchasing (GP). Each Tenneco plant will issue forecasts and releases for each part number(s) used at that plant. Scheduling agreements are updated as parts are added, or removed from, the supplier’s offerings due to new programs, resourcing, programs ending, etc.

* 1. **Shipping Releases**

Shipping releases are issued to cover specific quantities of parts due on specific dates at a given Tenneco plant, suppliers are required to use either Tenneco’s web-based supplier collaboration tool or traditional EDI.

* 1. **Service Orders**

Orders issued to cover special processing of materials by the supplier are referred to as SERVICE ORDERS. Service Orders may be one-time buys or blanket contracts. Reference 4.0 for additional information on Service Parts Requirements.

* 1. **Fabrication / Raw Material Authorizations**

Unless otherwise agreed by buyer in writing, the firm period of Buyer’s production release is defined as two (2) weeks’ finished goods, two (2) weeks’ work-in-progress and two (2) weeks’ raw material. Buyer shall not be liable for any inventory in excess of the quantities specified in the firm period of buyer’s production releases, as specified above. Buyer may return over shipments to supplier at supplier’s expense for all packing, handling, sorting, and transportation. Buyer from time to time and with reasonable notice may change or temporarily suspend shipping schedules specified in such shipping releases. Additional requirements established on the service agreements or material release orders may apply. Seller shall maintain, at their expense and risk, at least two weeks of safety stock (or such additional safety stock as specified elsewhere) of materials, components and finished products at the most current design level to ensure timely delivery in buyer’s requested quantities. One week of safety stock will be calculated by the buyer.

Supplier’s finished good inventory shall be maintained at a level to ensure Tenneco plants production lines are not affected. An escalation process must be established to notify the Tenneco plants if inventory levels go below a critical level. For export suppliers utilizing a regional warehouse, this escalation process should include the critical level for an internal escalation (manufacturing site notification) and level for an external escalation (Tenneco plant notification).

NOTE: Materials that are directed-buy by Tenneco which deviate from the process established herein shall receive Tenneco’s approval through the process change notification (PCN) process.

* 1. **Contingency Planning**

Tenneco requires suppliers to establish a standard method of assessing and mitigating risk in functions and plants to ensure that validated contingency plans are developed. The contingency plans shall ensure:

* + 1. Assessing risk to the continuation of business caused by key machine breakdown, external influences or natural disasters.

1. Development and implementation of mitigation plans to avoid foreseeable risk factors.
2. Design of robust & validated contingency plans in the event that risk cannot be mitigated to acceptable levels.
   1. **Business Review Meetings**

In order to ensure that the collective resources of Tenneco and its suppliers are effectively and strategically planned and utilized, Tenneco will invite suppliers to participate in business review meetings. Tenneco will share information on the current state and direction of our business, discuss specific supplier performance and communicate all other known plans and/or factors. This will allow our suppliers to best plan and utilize resources to supply Tenneco with the highest quality, least cost products and services.

* 1. **Supplier Agreements**

Supply agreements for repetitive, higher volume requirements are normally awarded for a minimum period of one year. Long-term agreements (LTA) (2 - 5 years) are frequently negotiated with established suppliers to support enhanced value-added opportunities for both Tenneco and its suppliers.

* 1. **Prices**

In order to effectively administer cost control programs and our pricing policy, it is necessary for Tenneco to clearly understand the inflationary pressures faced by suppliers.

Suppliers are expected to offer suggestions for ways that price increases may be avoided. These might include substituted products, alternative materials and process improvements. The policy of Tenneco is to favor cost effective suppliers by rewarding them with increased levels of business participation whenever possible. Any process or material changes shall comply with the Tenneco process change notification (PCN), refer to PPAP approval process.

If price is omitted on an order, supplier’s price will be the lowest prevailing market price.

* 1. **Payments, Terms & Conditions**

Payment terms are as indicated in the applicable purchasing documents. Payable date will be based on the date of receipt of the goods, not on invoice date.

All purchasing documents (including supply agreements, scheduling agreements, and purchase orders) issued by Tenneco incorporate the general terms and conditions and other documents, policies and terms accessible at <https://dsp.driv.com> as amended from time to time, including (i) this manual, and (ii) buyer’s general terms and conditions of purchase.

1. **Supplier Performance and Engineering Requirements** 
   1. **Quality System Requirements**

Tenneco requires that all of our OE direct suppliers develop, implement, improve and maintain a quality management system certified to IATF 16949:2016 – this is in alignment with the current IATF 16949:2016 (Clause 8.4.2.3) requirement and specified by our customers part of the customer specific requirements (CSRs), which states *suppliers of automotive products and services shall develop, implement and improve a quality management system certified to ISO 900l with an ultimate objective of becoming certified to IATF 16949:2016*. Failure to obtain a full IATF certification may jeopardize future business with Tenneco and its plants.

Suppliers are required to upload their current quality certificate into their respective C-folder. Suppliers who use Ivalua will upload documents into the Ivalua system and TITAN users will use the “C-folder” in the Tenneco TITAN database and/or send a copy to their Tenneco Commodity buyer to assist with the upload.

Periodic updates to the plan are expected. Upon certification, the plan must be replaced with the certificate.

Any supplier that has its quality certification withdrawn by the issuing certification body, or, the supplier by its own action, cancels their quality certification, must notify their Tenneco buyer and the Tenneco manufacturing locations within five (5) working days.

NOTE**:** When an Tenneco supplier either: (a) provides less than $150,000 annual sales and may not have adequate resources to develop a system according to IATF16949:2016 or ISO 9001:2015 or (b) has automotive sales that are less than 5% of its total business revenue, Tenneco may waive the IATF16949:2016 or ISO 9001:2015 requirements. In considering such request, Tenneco may also consider the type of product supplied, quality system, manufacturing and delivery systems capability, actual performance and any risk to Tenneco prior to granting any waiver. If such request is granted, the supplier will still go through an onsite Tenneco assessment to ensure their quality management system conforms to Tenneco’s requirements. To ensure ongoing conformance, a yearly assessment will be completed by supplier development (SD) team.

* 1. **Engineering Design Rules and CAD Requirements**

At the start of each project, the supplier shall comply with Tenneco design rules and CAD standards. If questions arise regarding these rules, suppliers are required to contact the Tenneco project design engineers.

* 1. **Advanced Product Quality Planning (APQP)**

Upon notification of supplier selection, it is the responsibility of the supplier’s organization to provide support / resources for advanced quality planning (APQP) activity in accordance with the AIAG Guidelines.

The supplier shall use the Tenneco APQP (OE), NPI (AM) tracking template to communicate the status of the APQP Process.

Pass through part characteristics (PTC’s) should be reflected in the supplier control plan/FMEA and identified as “Pass Through” with additional controls in place (i.e. poka-yokes, gages, etc.,) to ensure final customer is protected.

* 1. **Feasibility Requirements**

When a new product is required, the supplier must evaluate the possibility of introducing it according to the specifications, and engineering requirements on the drawings, including environmental and any other applicable regulatory requirements. The team feasibility review is the supplier's acknowledgement that the print or part provided has been thoroughly reviewed for manufacturability of design, quantity, and tolerance. Parts reviewed and determined "not feasible" should come with recommendations as to how the supplier would change the part to make it "feasible". The feasibility questions must be answered and attached as part of the quote package to Titan or Ivalua per request via email. Any feasibility concerns must be identified, documented, and uploaded to the supplier’s response via required location.

These questions are the supplier's opportunity to confirm that Tenneco has provided a manufacturable print for quote and/or production. A technical review form may be required to ensure supplier is prepared for on-going production.

* 1. **Packaging Planning**

Appropriate packaging to protect and preserve the quality of the product is to be considered during feasibility evaluation. Suppliers shall use appropriate packaging, to assure that all products will arrive at Tenneco plants free of any damage or contamination and can be transported, stored and used efficiently. The packaging system needs to be approved by the Tenneco packaging team as specified in the packaging plan.

* 1. **OE Launch Containment Requirements**

Launch Containment is a mandatory process deemed relevant to the Tenneco receiving facility that begins when the supplier has been awarded the part. Parts produced at sample phase shall be:

* 100% inspected to print requirements
* notify Tenneco receiving plant supplier quality team of any non-conformances
* labeled as sample phase parts
* shipped to the Tenneco facility – including sample parts shipped during pre-launch.
  + 1. *OE Launch Containment Process*

All suppliers deemed relevant to the Tenneco receiving facility are required to develop an internal containment plan to ensure that Tenneco facilities receive 100% defect free product. The internal containment plan shall ensure that all products are 100% compliant to print requirements and/or fit, form, and function and are properly identified prior to shipping to the Tenneco facility. Any exception must be submitted in writing by the supplier and approved by the Tenneco facility Quality Manager or designate.

Containment shall also confirm capability to significant and/or critical characteristics (SC’s/CC’s) and PTC’s as identified in the supplier's control plan. Other unique characteristics required may be added at the discretion of Tenneco facilities.

The Supplier shall submit the containment plan with inspection criteria in the designated c-folder in TITAN and/or Ivalua prior to PPAP submission.

OE Suppliers shall document and maintain containment results in alignment with the approved control plan in the form of an I-Chart. I-Charts must be sent daily until safe launch is complete. For launch containment form, please contact your Tenneco Buyer.

The OE containment time period will begin with the first part shipped after PPAP. End user customer specific requirements regarding containment must be followed. Containment will continue a minimum of 30 days after initial shipment and no less than 10 defect free shipments after SOP or containment will be extended until PCAs are completed and no defects are found in containment (at discretion of Tenneco facility). For launch containment labelling guidelines, please contact your Tenneco Buyer.

NOTE: Tenneco customer/OE may increase the timeframe for containment based on severity of issue and/or other valid reasons.

* + 1. *OE Launch Containment Exit Criteria*

The supplier may exit the containment process when the supplier has satisfied the containment period with no issues identified by the containment process or by the Tenneco receiving plant. The supplier shall contact the Tenneco receiving plant to request to exit containment. The supplier can only exit with written approval from the Tenneco receiving plant.

If a problem is identified during the containment process by the Tenneco receiving plant, the containment process shall remain in effect for an additional 30 days (at a minimum) without a defect after implementation of the corrective action or through the original containment period, whichever is longer. Problems identified must go through a corrective action process.

NOTE: Tenneco facilities Quality Manager/designate may also require individual part certification. Shipment of nonconforming material can result in controlled chipping per Tenneco facility request.

* 1. **Capacity Verification**

This process applies for existing tooled parts and new non-tooled parts.

The capacity verification shall verify that the results of the supplier's actual manufacturing process meet the requirements for on-going quality and quoted tooling capacity.

The Capacity Verification Process includes the following phases:

* + 1. *Capacity Planning*

To be submitted by the supplier at the time the Tenneco’s Application/Commodity Buyer receives quote.

* + 1. *Capacity Evaluation*

This is being done by the supplier and needs to be submitted to the Tenneco’s application/commodity buyer. Tenneco reserves the right to be present on-site during these trial runs to witness and evaluate results. Demonstrated OEEs must be equal or greater than required OEE based on the weekly/annual demand.

* + 1. *Capacity Verification*

This is done by the supplier at quote stage and before the PPAP approval and needs to be sent to the Tenneco’s application/commodity buyer. Tenneco reserves the right to be present on-site during this run as well as to require this 3rd phase (capacity verification) before PPAP approval, previously agreed on between Tenneco’s application/commodity buyer and the supplier.

During capacity evaluation and/or capacity verification phases, the following items will be reviewed (in addition to other items as may be designated by Tenneco):

* Shop Floor documentation (FMEA, Control Plan, IPC’s, Work Instructions, Visual aids)
* Documentation - (feasibility, capacity study, run-at-rate.)
* Manufacturing process and results
* Part quality requirements and results
* Sub-supplier development activities & capacity verification
* Packaging

A Tenneco launch team will evaluate all new part numbers. Risk level of the supplier, the process, and/or part (low, medium, or high risk) will determine monitoring level required. If any of the capacity verification phases is to be Tenneco monitored, it shall be conducted on-site by Tenneco SQE/SDE. The supplier will be notified of the need to perform a Tenneco monitored, (or supplier monitored), at any of the phases as early in the APQP process as possible.

Additionally, Tenneco customer requirements may mandate that the supplier perform an audited capacity verification (using customer form or Tenneco form based on the customer form availability).

During capacity verification phase, production tools must be in place and process shall run at full production speed, utilizing regular production conditions, direct and indirect personnel and support systems, excluding over time as a factor. The capacity verification form with all the information has to be available to Tenneco’s SQE/SDE one week before the run (event).

* 1. **Production Part Approval Process (PPAP)**

PPAP acceptance is mandatory for production parts and service suppliers to Tenneco. PPAP shall be submitted in accordance to the PPAP requirements from the current AIAG Core Tools manual. Each supplying location shall submit and obtain PPAP approval for each part number prior to shipment to Tenneco.

Any change to the process / part after PPAP approval shall follow the Tenneco process / part change notification (PCN) for process or engineering change management (ECM) for part.

NOTE: End user customer specific requirements for PPAP submissions take precedence to these stated requirements, as directed by the GP buyer.

* + 1. *OE PPAP Submission*

The OE supplier shall complete and submit appropriate PPAP documentation in the Tenneco interactive tender alliance network (TITAN) or Ivalua by email. Documents are to be placed in the individual assigned C-folders (collaboration folders). Composite or “.zip” are not accepted. All PPAPs shall be submitted in english. Supplier may request use of a local language in a PPAP if the business does not involve the export of products. Parts cannot be shipped or recevied without an approved PPAP.

Guidelines on Tenneco expectations are located in the Tenneco PPAP guidelines and requirements for the PPAP. Tennecos standard PPAP & APQP process supplier guidelines and requirements located in the TITAN system. All OE suppliers are required to submit an annual PPAP to current print revision level and submitted to Tenneco receiving plant. It will be the suppliers responsibility to manage and submit PPAP to annual timing. Late submissions will require a Level 5 PPAP.

NOTE: Training documents explaining the path to the C-folders, and how to upload documents, are available on Tenneco TITAN <https://dsp.driv.com>. Suppliers shall save their documents with the appropriate file name and date, (example: control-plan-2010-07-22.xls).

The PPAP request defines the PPAP submission level. Any level PPAP other than level 3 requires written concurrence by the Tenneco plant quality manager/designate (at the receiving facility). Blanket statements of conformance are unacceptable for any test results and will be cause for PPAP rejection. Applicable documents must be maintained by the supplier regardless of submission requirements. These documents are to be made available to Tenneco upon request. Situations where the supply chain includes a warehouse distributor, the part manufacturer is required to submit a PPAP package to Tenneco for approval. Warehouse distributors are not to initiate shipments to any Tenneco location without PPAP approval from Tenneco.

All changes to required documents (control plan, FMEA, etc.) shall be resubmitted to the Tenneco plant PPAP originator. Bulk material suppliers should contact Tenneco buyer for specific requirement.

NOTE: PPAP approved steel mill raw material sources must remain the same unless approved through the PCN process.

All suppliers supplying parts for the OEM's who support the IMDS database must register at the website: <https://www.mdsystem.com>

If required to register with the IMDS database a confirmation of approval is required as soon as off tool parts are available. This is required to be completed prior to PPAP and confirmation is to be uploaded into the PPAP C-folder. This letter shall clearly state the part numbers for which the data was entered, date of entry, and the ID node number.

NOTE: Suppliers shall provide IMDS information for items with previously approved PPAP’s. This is in support of OEM’s IMDS requirements for existing products.

Tenneco requires special controls for pass through characteristics (PTCs) and/or pass through parts such as error proofing, mistake proofing, 100% inspection in station or subsequent operations to ensure compliance.

Measurement equipment and methods shall be aligned between shipping and receiving plants where aplicable prior to PPAP.

Only under special circumstances, PPAP element(s) may be waived by Tenneco only in writing. All elements required to be submitted should be routed to appropriate Tenneco facility.

* + 1. *PPAP Submission – Sample Part*

The OE supplier deemed relevant to the Tenneco receiving facility shall provide, either, a minimum of 6 samples and/or 3 samples per cavity for multi-cavity / fixture processes unless otherwise directed by Tenneco. These parts are to be randomly selected from a serial production run and used in the dimensional results documentation of the PPAP submission.

This production run shall be from one hour to eight hours of production, and with the specific production quantity to total a minimum of 300 consecutive parts, unless otherwise specified by the authorized Tenneco representative. Tenneco may require the supplier to run samples from all shifts scheduled to run production.

These sample parts shall be shipped to the Tenneco PPAP approving plant and must be clearly identified as PPAP samples. This label shall have part number, production date & program name. Supplier must retain and maintain master PPAP samples on-site.

Suppliers are required to submit all the documentation to a PPAP level 3.

* + 1. *Design Records*

Suppliers shall obtain Tenneco design records (prints, specifications, technical documents) through Tenneco TITAN/Ivalua systems. These documents are reviewed for the supplier’s ability to meet contractual requirements and are used for PPAP submission.

NOTE: Revisions made to Tenneco drawings will initiate a new PPAP request for current revision. Suppliers are required to perform on-going capability analysis on designated special characteristics (SCs). Cpk target for SC’s is 1.67 minimum.

* + 1. *Special Characteristics*

Tenneco will identify and document special characteristics (SCs) as an output of the design process. The supplier is required to comply with these characteristics by noting them on process control documents; including drawings, FMEA, control plans, and operator instructions. These characteristics shall be identified with Tenneco symbol or the supplier’s equivalent on these documents.

A training program about measurement, evaluation, and failure effects of these characteristics must be developed/maintained for all employees involved and approved / verified by the Tenneco receiving plant.

* + 1. *Engineering Change Documents*

Written approval from Tenneco engineering & quality is required for changes that are not incorporated into the design records.

* + - 1. *Engineering Approval*

Any deviations from original approved print requires Tenneco engineering approval in writing. Suppliers should follow the deviation process. Capability studies are required for requested deviations with a 125 pc including a 6 pc layout study from items listed on the deviation.

* + 1. *OE Design Failure Mode Effects Analysis (DFMEA)*

If the supplier is design responsible, a DFMEA is to be developed and reviewed annually (at a minimum) in accordance with the latest version of the AIAG FMEA Manual.

If the supplier is design responsible (when there is a design step where the severity rating is between 5 - 8 and an occurrence rating between 4 – 10), this step shall be highlighted in the PFMEA for team focus / risk mitigation.

Also, if severity is between 9 or 10, this design step shall be highlighted in the PFMEA for team focus and appropriate process control development to meet capability requirements.

If Tenneco is design responsible, a review of the PFMEA severity rating by Tenneco product engineering is to be completed in lieu of a DFMEA.

The DFMEA severities will be reviewed with the supplier when Tenneco is design responsible.

* + 1. *Process Flow Diagram*

Tenneco requires suppliers to have a process flow diagram that clearly defines the manufacturing process steps / sequences.

If critical, high-impact, special, key, and or significant characteristics are noted in the process step, the supplier shall note these characteristics in the applicable process steps within the process flow.

**I**f pass through characteristics (PTCs) are identified on the print, it shall be identified in the process as PTC.

* + 1. *Process Failure Mode Effects Analysis (PFMEA)*

Where Tenneco or its customers are design responsible, the assignment of severity values on the supplier’s PFMEA may require an approval by a Tenneco product engineering representative. If severity level is greater than 8, error-proofing techniques, (Poka-Yoke) are required unless expressly signed off by Tenneco engineering & plant quality in writing.

Special controls are required when Severity = 5 - 8 & Occurrence = 4 - 10. Please refer to requirements in above section.

Tenneco requires Poka-Yoke over detection methods.

At a minimum, the PFMEA is required to be reviewed annually in accordance with the AIAG FMEA manual.

Product characteristics and process parameters identified by the PFMEA as “special” will be the key for the development of the control plan. The supplier shall indicate review of high RPNs and note in the corrective action plan for risk mitigation.

Pass through characteristics (PTCs) shall be identified with “PTC” on PFMEA to ensure applicable risks are identified. PTCs must be ranked with a Severity of a 5 at a minimum / aligned with the DFMEA severity.

A clear link between the DFMEA, PFMEA, process flow, control plan, and standard work must be shown by the supplier. Numeric process references shall be consistent throughout all documents.

* + 1. *Dimensional Results*

The supplier shall provide evidence that dimensional verification required by the design record and the control plan have been completed and results indicate compliance with requirements.

The supplier shall indicate the date of the design record, change level; any authorized engineering change documents included. It is mandatory that suppliers shall inspect and supply initial samples provided from production tooling and set up. In the case of multi cavity tools, a dimensional layout of 3 parts from each cavity / fixture is required, with one sample identified as “master sample”.

Supplier shall provide the balloon drawing of each dimension and all notes and correlations to the dimensional report. All notes need to be addressed in the dimensional report and each part must be numbered with the number associated with the applicable dimensional report.

* + 1. *Materials/Performance Test Results*

Evidence of compliance shall be submitted per AIAG guidelines or international standards, unless otherwise specified.

*Material Results*: The supplier shall perform tests for all parts and product materials when chemical, physical, or metallurgical requirements are specified by the design record or control plan.

*Performance Test Results*: The supplier shall perform tests for all parts or product materials when performance or functional requirements are specified by the design record. For supplier performance testing, an accredited lab shall be used.

* + 1. *Capability Studies*

Tenneco requires OE suppliers deemed relevant to the Tenneco receiving facility to perform process studies on product characteristics or process parameters to verify process capability and to provide additional input for process control to ensure compliance to selected print specifications. Measurement system must be confirmed to be acceptable for that feature from Tenneco receiving plant and MSA manual.

Select part characteristics for which process capability is to be demonstrated include the selected characteristics on the print, control plan (CP) and characteristics which may prevent the shipment of non-conforming product regardless of the location in the supply chain. For the testing of all critical characteristics (CCs)/significant characteristics (SCs) and PTC’s, select pieces from a significant run by taking 1 part for every 5 parts ran until 125 parts are sampled (subgroups of 25), unless otherwise specified by Tenneco PPAP originator.

Before starting the manufacturing process, suppliers shall conduct the preliminary capability studies.

*Acceptance Criteria for Initial Study:*

The supplier shall use the following acceptance criteria for evaluating initial process study results for processes that appear stable.

Results Interpretation

Index >1.67 The process currently meets the acceptance criteria.

1.33 ≤ Index ≤ 1.67 The process may be acceptable. Contact the authorized Tenneco representative for a review of study results. Can approve interim but needs improvement.

Index < 1.33 The process does not currently meet the acceptance criteria

NOTE: Meeting the initial process study capability acceptance criteria is one of a number of customer requirements that may lead to an approved PPAP submission.

The parts shall be from a stable and controlled process and include the full range of expected variation of the manufacturing process (e.g., the actual manufacturing environment, including all tools, cavities, all shifts, expected operating patterns and variation in the environmental conditions). Post launch containment on-going production process capabilities must meet a minimum 1.67 (Cpk ≥ 1.67) when required.

Process capability results shall be submitted with the PPAP. Evidence of compliance with AIAG guidelines is required, unless otherwise specified.

Tenneco may request a copy of any analysis performed for any ongoing production capabilities.

* + 1. *Measurement System Analysis (MSA)*

Measurement system analysis (MSA) studies are required for gauges, measuring and test equipment identified on the control plan. Gauge studies shall comply with AIAG guidelines and end-user customer specific requirements (CSRs).

* + - 1. *Variable Gage R&R*

Supplier shall report gauge R&R as both a percent of study variation and a percent of tolerance.

Variable gauge studies should utilize 30 parts (at a minimum), 3 operators and 3 trials. The gauge R&R should use the full range of part-to-part variation from the process representing all expected sources of manufacturing variation, while providing enough resolution around the upper and lower specification limit with parts validated on CMM or equivalent variable gaging.

Acceptance criteria based on R & R studies are:

< 10 % of tolerance ---------------------------accepted

10 - 30 % of tolerance -----------------------------may be acceptable, contact Tenneco representative.

> 30 % of tolerance ---------------------------unacceptable

NDC (number of distinct categories) ---5 minimum

(It is the supplier’s responsibility to provide necessary equipment to carry out engineering tests specified on drawings, unless agreed otherwise in writing by Tenneco engineering and quality).

* + - 1. *Attribute Gage R&R*

Attribute gage R&R shall consist of 50 pieces (min) unless it is a significant characteristic (SC) or a critical characteristic (CC) on the print or the process capability is below the acceptance criteria. In these cases, or in the case that customer specific requirements (CSRs)dictate otherwise, 125 pieces are required.

Gage shall reject all parts that are outside the specification limits. All Kappa values shall be greater than 0.75.

*Parts for attribute gage R&Rs Study*

* 25% of the parts should be near the lower specification limit (on both sides of the specification).
* 25% of the parts should be near the upper specification limit (on both sides of the specification).
* 30% of the parts should represent the expected process variation.
* 10% of the parts should be outside the upper gauge specification limit and beyond the 25% of the parts near the specification as described above.
* 10% of the parts should be outside the lower gauge specification limit and beyond the 25% of the parts near the specification as described above.

Depending on the characteristic, the above parts should be independently measured with a CMM or equivalent variable gauging so that the physical measurement of each part is known.

NOTE: When measuring a true attribute that cannot be measured with a variable gage, to pre-determine which samples are good or non-conforming use fit / form / function with the Tenneco receiving plant.

* + - 1. *Measurement System Gage Correlation (MSC)*

Establishing a relationship between Tenneco and the supplier by comparing 2 or more measuring instruments required by guidelines below.

The MSC requires 10 parts minimum to be numbered and measured on all instruments to be correlated

* Strategically select the parts used for the MSC study: parts should have values that are evenly distributed and span the full tolerance range
* The measurement systems being assessed shall be properly calibrated using standard operating practice prior to the MSC
* The measurement systems being assessed shall also pass gauge R&Rs
* Randomizing the order of measurement of the parts during the MSC is a best practice.

Utilize type 1 study to verify the correlation level between the instruments. Tenneco recommends the use of Minitab to perform calculations and analysis.

For additional details, please refer to the current version AIAG SPC manual.

* + 1. *Qualified Laboratory Documentation*

External laboratories used for testing/calibration shall be qualified to ISO/TS-17025 and International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA) or equivalent. In-metro certification.

* + 1. *Control Plan (CP)*

The supplier shall develop the control plan using the input from the PFMEA showing all critical/special characteristics (CCs/SCs), high-impact characteristics (HICs), engineering specification tests and process parameters connected to the product. All control plans must be completed in compliance to the AIAG guidelines (latest revision), unless otherwise specified by Tenneco representative. Tenneco shall review the control plan prior to PPAP submission. It is mandatory that a copy of the control plan is sent with the final PPAP submission documentation and is reviewed by the Tenneco receiving facility.

The Tenneco annual part revalidation requirement shall be documented in the supplier’s control plan. Suppliers shall annually perform process/ product audits and shall be documented in the supplier’s control plan.

Control plans for “part families” are acceptable when part families are used; specific part numbers associated with a part family shall be identified.

* + 1. *Part Submission Warrant (PSW)*

Part submission warrant (PSW) shall be complete (without leaving any blank spaces). A PSW submitted without appropriate approval signature, phone number, and date of submission will be cause for rejection. If the product deviates from the print it shall be noted in the comment section of the PSW.

* + 1. *Appearance Approval*

Tenneco shall notify suppliers of any appearance approval items outside of any notes on the print.

* + 1. *Master Samples*

The master sample shall be retained per AIAG guidelines defined in the latest revision of the PPAP manual.

* + 1. *Checking Aids*

Where checking aids (mylars, product specific gauges, etc.) are used, the supplier shall certify that all aspects of these aids comply with product and print requirements. The supplier shall establish appropriate preventive maintenance for these checking aids for the life of the part. The checking aids must be controlled.

* + 1. *OE Customer Specific Requirements (Tenneco & End-User)*

Tenneco defines its specific requirements through this manual. In addition, Tenneco requires compliance to end-user customer specific requirements. For end-user customer specific requirements, please refer to AIAG global oversight for OEM customer specific requirements.

NOTE: For those customers not listed on the AIAG global oversight please go directly to the specific customer’s website.

* + 1. *OE Process Audit Requirements*

Tenneco requires an annual special process / product audit where Tenneco products are manufactured or processed with a method requiring a special audit (OE only).

NOTE: Review the AIAG / VDA 6.3 list of special process audits. The special process assessment templates should be retrieved from the AIAG website.

Suppliers are responsible to complete all “Special Process & CQI Audits” that pertain to their process on an annual basis. These assessments shall be uploaded into the supplier portal.

An additional annual contamination assessment is required by Tenneco where deemed relevant to the Tenneco receiving facility. This must be updated if significant changes occur that may affect contamination. This assessment shall be uploaded to the supplier portal.

Suppliers shall manage their sub-suppliers to ensure special process audits (CQI & Contamination) are completed and available upon request.

For directed-buy suppliers, compliance with OEM CSR’s and special process audits should be self-monitored and available for Tenneco review.

* + 1. *PPAP Approval*

Tenneco receiving plant or other designated location will review PPAP samples and documentation and will approve if acceptable where applicable. Requirements of international material data system (IMDS), REACH, RoHS2 shall be included with the PPAP submission where applicable.

If Tenneco / Tenneco’s customer owned tooling is involved, Tenneco requires a tooling purchase order (TPO) signed by the supplier. This purchase order and Vendor Tooling Registration (VTR) form shall be submitted prior to PPAP approval.

* + - 1. *Notification of PPAP Status to Suppliers*

A copy of the PSW or electronic acceptance in the TITAN will be sent to the supplier indication status. If the PPAP submission is rejected, the supplier shall re-submit the element(s) that are non-conforming submitted in the original PPAP package.

The supplier is not authorized to ship production parts until Tenneco issues a written PPAP approval or other authorization to proceed (deviation).

* + - 1. *Approvals*

PPAP can be fully approved only if:

* The parts comply with the fit, form function according to Tenneco latest communicated design and specifications.
* The tooling vendor registration (TVR) form is completed and submitted along with PPAP package.
* All documents are included with the requested PPAP and meet requirements.
* Tenneco reserves the right to validate the PPAP on site at supplier location.
  + - 1. *Interim Approvals*

Permits shipment of material for production requirements on a limited time or piece quantity basis. Fit, form and function impact shall be evaluated.

Interim approval may be granted when the organization has:

* Evaluated the risk of the product in question and determined no impact to the end user.
* Prepare an action plan approved by Tenneco.PPAP re-submission is required to obtain a status of "approved." As long as the part is interim approved, no supplier tooling shall be paid.
  + - 1. *Rejected status*

When a PPAP is rejected:

* Production part delivery is NOTallowed.
* Tenneco cost fee may be applied.
* Prepare an action plan, reviewed and approved by Tenneco to target re-submission date.
  + 1. *OE Quality /Annual Parts Validation Requirements*

Tenneco requires that suppliers deemed relevant to the Tenneco receiving facility to complete annual revalidation to print/specification requirements of all Tenneco purchased parts on the anniversary of the PPAP approval date, and each subsequent year thereafter. The annual part revalidation shall continue as long as the supplier is providing Tenneco parts for on-going production.

NOTE: Tenneco reserves the right to evaluate need for validation of products required for service production.

When a characteristic is designated as “significant” on the design record the supplier is required to conduct capability studies and include it along with the annual layout.

Annual validation results shall be uploaded to the TITAN or Ivalua via email (<https://dsp.driv.com>).

* + 1. *PPAP Deviation Process*

Tenneco requires adherence to Tenneco’s formal deviation procedure when the following situations arise:

* Tenneco production schedules require shipment of new/revised materials prior to Production Part Approval Process (PPAP); or
* Supplier discovers any type of non-conformance in a lot/batch of product, which is urgently needed to meet the Tenneco production schedule.

In either situation, the supplier shall obtain prior written approval from Tenneco before making shipments. The acceptance of a deviation request will be dependent on the nature and extent of the non-conformance and will not be effective unless authorized in writing to the supplier by Tenneco engineering, quality, etc., and/or customer as needed.

When a deviation request is required, the supplier shall notify the Tenneco Buyer of the situation with detail as follows:

* What is the stated requirement you are not able to meet?
* What is the deviation request for? How many parts are affected? What is the length of time the deviation is required?

The buyer shall enter the deviation request into the Tenneco system and request approval from Tenneco engineering / quality and the affected Tenneco manufacturing site.

Tenneco Buyer shall write the deviation request and shall forward to appropriate team members and the affected Tenneco Facility (ies) for approval. When approval is received, the Tenneco buyer shall notify the supplier that the deviation has been approved. A copy of the approved deviation notice is to be provided to the supplier.

The supplier shall include a copy of the approved deviation notice with the shipment of parts to the Tenneco facility (ies). The deviation number shall be clearly marked (can be hand written) on all shipping papers and containers.

NOTE: The deviation number shall be placed so there is no disruption to the barcode. Failure to follow this procedure will result in a material rejection report (MRR) and reflect on the supplier's quality performance score.

If the deviation request is denied the Tenneco buyer will notify the supplier and coordinate resolution activities.

* 1. **Process Change Authorization**

Tenneco reserves the right to approve or deny a request made by the supplier to change a process or product.

Due to Tenneco’s customer specific requirements (CSRs), the timing for the PCN process is a minimum of 90 days to receive customer's approval for the changes. This timing can be much longer depending on the customer's requirements and/or if there is a “blackout period" for any changes. Most changes cannot be made until customer approval is received.

*A change requiring this approval includes but not limited to:*

A change to the supplier's process after approved PPAP significant enough to require a change to the process flow, material, sub supplier (including sub supplier’s material) or a change in the method of processing, i.e., manual to automated processes, addition of an alternate processing method, change of material supplier, equipment move, line change, etc.

Tenneco commodity buyer (not the receiving plant) shall be notified of and approve in writing any design and/or process changes prior to implementation. To inform Tenneco, the supplier shall use the Tenneco process change notification (PCN) worksheet. This worksheet shall include details of the change, sufficient detail for analysis by Tenneco.

Changes made to the process or product without this prior authorization shall result in the supplier’s financial responsibility for time spent for analysis, replacement or destruction of product built with parts with unauthorized changes via the supplier corrective action report (SCAR) process, and any costs incurred by Tenneco due to customer charge back proceedings. In addition, this can result in the supplier being placed on controlled shipping (level I or II) or placed in a supplier improvement plan (SIP), which may result in the supplier being unable to participate in new business bids.

Tenneco global supply chain management (GSCM) buyer shall advise the supplier if the process change notification (PCN) worksheet has been approved. The supplier shall be required to submit a new PPAP (level 3) into the supplier portal. Parts with changes are **NOT** to be shipped prior to PPAP approval.

* 1. **Supplier Performance Requirements**

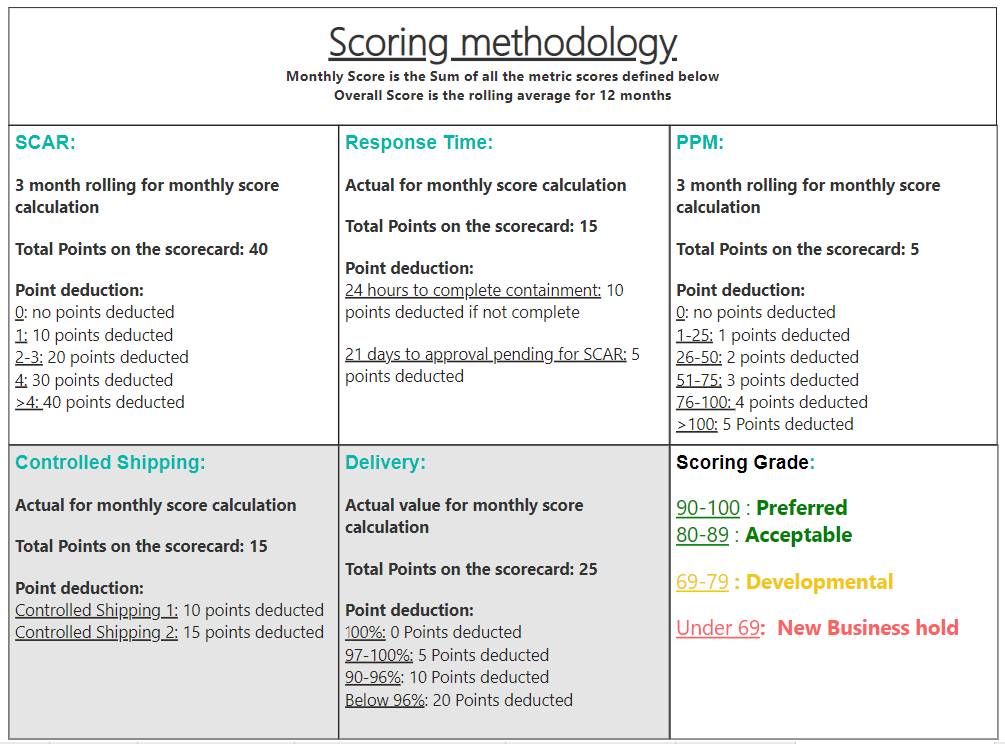
Supplier performance is monitored and reported monthly with the supplier score-card. Suppliers will receive their SSC via email and/or Ivalua. Suppliers which do not fulfill the TENNECO SSC requirements are required to take immediate action to drive performance back to Tenneco requirements.

Failure to meet Tenneco’s requirements may lead to new business hold (NBH) or further actions.

* + 1. *Quality & Delivery Performance*

Supplier quality performance is measured, weighted, and evaluated as per the Tenneco supplier performance rating system as follows:

* PPM (Parts Per Million) 5%
* Number of SCAR’s (Supplier Corrective Action Report) and or reoccurrence 40%
* 8D timing requirements for all steps. 15%
* On-Time Delivery 25%
* Controlled Shipping 15%

**Table 2. Tenneco Performance Scorecard: Scoring Methodology**

The philosophy of Tenneco is to achieve ZERO DEFECTS and we expect the same approach from our suppliers.

If supplier exceeds the Tenneco level of escalation (PPM, SCAR, 8D, etc.,) Tenneco reserves the right to take actions with the aim of improving the quality/delivery performance of the supplier. Tenneco expects the supplier to work on a year-over-year quality improvement based on supplier scorecard performance data.

Tenneco requires 100% on-time delivery performance from OE suppliers. Changes to delivery schedule unless presented in writing from a Tenneco representative are not valid. Nonconformance of delivery requirement may cause the creation of a SCAR. If this occurs, the supplier will be required to submit corrective action.

Delivery discrepancies such as (but not limited to):

* Labeling: Any part container not labeled properly per Tenneco specifications
* Supplier packaging: Any part container that is not correct per Tenneco Packaging Guidelines or does not match the planned case PPAP approved pack quantity.
* Shipping documentation: Any shipment that does not have correct documentation per Tenneco requirements. (i.e. Country of origin)
* Early / late delivery
* Over delivery / short ship
* Damaged packaging that effects product integrity.

The supplier shall be responsible for all costs incurred resulting from the delivery nonconformance.

It is the responsibility of the supplier to make sure that all delivery non-conformances are reported accurately and closed. These documents affect the individual supplier performance score-card. If the supplier disagrees, they shall contact the issuing Tenneco Plant to resolve.

The supplier has financial responsibility for nonconforming materials and their effects, which may include warranty issues and/or cost recoveries for sorting, re-work, scrap, premium transportation, etc.

The supplier corrective action report (SCAR) application enables interactive communication and documentation of corrective actions with the supplier.

* + 1. *Service Parts Delivery Performance (OE only)*

Supplier shall support a minimum of 15 years of service part requirements after serial production is completed. This period can be extended for specific programs depending on customer specific requirements (CSRs).

Supplier shall ship to plant release requirements during the service part lifetime utilizing appropriate containers.

Supplier shall maintain equivalent serial production pricing for a period of 5 years minimum, after serial production is completed.

* 1. **Continuous Improvements (CI) (Lean, six sigma, TQM etc.,)**

Continuous improvement is essential to successfully compete in today's business environment. All suppliers shall continuously improve in quality, service, timing, delivery and cost to benefit Tenneco and the supplier’s own organization. Tenneco SQ/SD shall support the CI activities and share best practices in visits. Continuous improvement shall extend to all product characteristics with the highest priority on special characteristics. (Those characteristics that will have the most significant effect on the finished product produced).

Suppliers are required to have a defined “Business Operating System”, or BOS process, this is a formalized process of reviewing the key metrics that provide indicators of the performance of the facility. Metrics could include safety, quality, delivery, engineering document linkage compliance, gage repeatability and reproducibility performance, process capability, process change management, effectiveness of problem solving, site productivity, defective parts per million, overall equipment efficiency and delivery.

Improvements made where the original targets have not been met are by definition corrective actions, not continuous improvement.

* 1. **Material Rejection**

If nonconforming material is identified at a Tenneco site, the supplier will be notified of the non-conformance in a timely manner. Suppliers have the opportunity to mitigate and dispute the validity of the non-conformance using data and a review with the formal corrective action process. All validated non-conformances will affect the supplier's overall performance rating.

When a non-conforming part is identified, the Tenneco plant will issue a supplier corrective action report (SCAR) in the SCAR database to the supplier, other Tenneco locations that receive this same part must be notified by the supplier. The supplier shall follow the SCAR process steps to ensure correct responses to the non-conformance. Regions that do not have the SCAR database system in place, will follow a manual process. The SCAR system in located in the Tenneco Supplier Portal, <https://dsp.driv.com>, and/or Ivalua, please notify the respective Tenneco buyer if access is required.

* + 1. *Disposition of Suspect or Nonconforming Material*

In the event of shipment of suspect or non-conforming product to a Tenneco customer, caused by the supplier’s product, the supplier will be debited for all of Tenneco’s costs (including associated customer charges). Suppliers are expected to be involved with customer required sorting and an on-site review as appropriate.

If supplier sorting proves to be ineffective (i.e., Tenneco continues to receive defective material from sorted shipments), the supplier may be placed on controlled shipping status through a formal process.

* 1. **Corrective Action**

Tenneco expects suppliers to implement successful, interim and permanent corrective actions for non-conformances identified.

* + 1. *Corrective Action Reporting*

The supplier’s corrective action form must reference the SCAR # and cover the following areas:

*Team Members*: Use the team approach, include name and title along with leader’s name / email address / phone number. Team members must be cross-functional and include production personnel.

* *Problem Description*:
* What is the problem- stated in the terms of the requirements i.e. (specifications, prints, etc...?)
* Why is it a problem?
* How does it affect the customer? What is the impact?
* Where and when detected?
* How many defects found?
* Did you create a Quality Alert?
* *Containment:*
* Were sort instructions created?
* Was material at all locations considered?
* How many defective parts sorted?
* How many defects found?
* What is the containment action?
* How are parts being sorted?
* What is the method of identification?
* *Root Cause Analysis***:**
* Did you utilize the Fishbone diagram?
* Did you utilize the 5W or 3L5W? (occurrence, detection, systemic)

NOTE: Tenneco does not accept “Operator Error, training, or terminated” as a root cause.

* *Corrective Action(s):*
* Define and implement the corrective actions.
* Include date of implementation.
* Verification**:**
* Validate corrective action: can you turn the issue on and off?
* How was it validated? Include data.
* *Prevention***:**
  + Provide evidence of evaluation of “like and similar” processes / products. Perform a read across to like processes.

NOTE: If you do not have a corrective action form that covers these areas, use the Tenneco 8D and 3L5W documents.

* + 1. *Corrective Action Timing*

Timeline requirement (upon notification of the SCAR):

* Containment action must be developed, implemented, and reported to the Tenneco facility within 24 hours.
* Possible root cause(s) with timely planned corrective action(s) and responsibilities must be completed and submitted to Tenneco within 5 days, unless otherwise agreed upon, with concurrence by the Tenneco facility representative.
* Robust corrective actions should be targeted for verification/closure within 21 days and affected process documentation (process flow, PFMEA, control plan, and operating instructions) needs to be reviewed/updated. A 30-day verification is mandatory to validate the PCAs.

NOTE: Corrective actions submitted by supplier are approved by the supplier’s facility quality manager or designate.

A corrective action that cannot be verified and closed within the 21-day window requires concurrence from the issuing Tenneco plant(s) quality manager.

* 1. **Supplier Improvement**

Tenneco suppliers who fail to meet the quality and/or delivery requirements may be brought in for a main offender meeting or placed into supplier improvement program (SIP).

* + 1. *Main Offender Meeting*

Suppliers shall be invited into corporate offices by the purchasing team to present their improvement plan at the Main Offender Meeting when they meet any of the criterial listed below. The plan shall present actions to improve performance within 3 months. Suppliers may move directly to SIP based on impact to the Tenneco sites.

* Four SCAR’s per rolling three months by receiving location.
* SCAR response not meeting timing requirements.
* SQ, Plant & Buyer Recommendation – Production disruption, on-going quality issues, or any other performance issue.
* Supplier receives a developmental rating on the Supplier Score Card.

If performance does not improve in the required three-month time frame and/or a reject is found at a Tenneco facility the supplier will be placed into SIP.

Once the supplier has closed out all action items and have met the exit criteria for three month rolling zero SCAR/PPM an on-site assessment will be scheduled. Upon verification of the results and a passing assessment score, supplier development (SD) team member will notify the supplier that the exit criteria have been met, and the supplier will be released from MOM. Supplier development will notify the Tenneco team of completion of the MOM. All charges pertaining to the SCAR must be paid to the agreed monies prior to exiting the program.

The supplier performance shall be reviewed monthly.

* + 1. *Supplier Improvement Process (SIP)*

Tenneco suppliers who fail to meet the quality and/or delivery requirements during MOM monitoring are subject to a Supplier Improvement Program (SIP).

Suppliers on SIP may be placed on New Business Hold. The following process will be followed:

* + - 1. *Initial Visit*

SIP nominees will receive a letter notifying them of the decision to place them on the SIP. Suppliers will then be contacted by supplier development (SD) team and an on-site visit will be scheduled.

Preliminary visits at the supplier will include an overview of the SIP, a review of issues, an on-site audit of the supplier’s processes, and a discussion of containment activities as appropriate.

Suppliers are required to report out on-site to Tenneco management, as required per supplier development (SD) team direction. These meetings are scheduled monthly but may change depending on the supplier’s performance. Required to attend from the supplier, (depending on company size), senior management representatives from operations, sales, quality, and engineering.

A preliminary schedule for subsequent visits to Tenneco will be developed by the supplier development (SD) team.

* + - 1. *Follow-up Visit to Review Improvement*

A review of the system 8D is required at each follow up visit. Improvements made (with validation), should be presented, including action registers (with timing).

* + - 1. *Exit Criteria*

Once the supplier has closed out all action items and have met the exit criteria for three month rolling zero SCAR/PPM an on-site assessment will be scheduled. Upon verification of the results and a passing assessment score, supplier development (SD) team member will notify the supplier that the exit criteria has been met, and the supplier will be released from SIP. Supplier development will notify the Tenneco team of completion of the SIP. All charges pertaining to the SCAR must be paid to the agreed monies prior to exiting the program.

* 1. **Controlled Shipping (CS)**

Controlled Shipping is a requirement of Tenneco. This process requires a supplier to put in place a 100% inspection process to sort for nonconforming material, while implementing a root-cause problem solving process. This redundant inspection is required to take place concurrent with any existing in-process monitoring / inspection.

Two levels of controlled shipping exist, Level I and Level II.

NOTE: Based on evaluation by senior level Tenneco personnel, a supplier may be placed directly on Level II.

Defective pass through parts and/or pass through characteristics (PTCs) may be placed on automatic CSI or CSII, depending on criticality.

* + 1. *Controlled Shipping Level 1 (CSI)*

The inspection process is required to be performed by the supplier’s employees at the supplier’s location. The supplier will be notified via phone/ email by supplier development (SD) team member that they have been placed on controlled shipping Level I (CSI) status. This conversation will be followed by a written notification including the need for:

* 100% inspection
* a containment plan
* effective corrective action
* The exit criteria

Suppliers are required to provide written confirmation of receipt of this notification, including containment activities, within 24 hours (response form will be provided). While on CSI, suppliers may be restricted from bidding on or granted new business.

Suppliers placed on CSI containment shall:

* Immediately establish a separate containment activity area at their location.
* Start the 100% sort activities and record results. At minimum, suppliers shall record the number of pieces sorted and the number of nonconforming parts identified and send to Tenneco receiving plant daily.
* Contain all suspect material in the supply chain (at supplier’s location,
* In-transit, at Tenneco, or Tenneco customer).
* Identify parts, material and/or containers with the Tenneco provided CSI. These labels must be printed in color coordinated with Tenneco receiving plant. These labels must be attached near the shipping labels, and SCAR number identifications must be added as required.
* Conduct a daily review of the results of the sort activities and verify the corrective actions are effective or plan required changes.
* Communicate results of the sort to Tenneco daily using the I-chart or via email if I-chart is not available, provide key quality documents such as DFMEA's, PFMEA's, control plans, and statistical controls upon request for Tenneco review.
* Meet the exit criteria as defined in the notification letter.
* Provide supporting documentation on performance improvements and corrective actions taken.
* Formally request exit from controlled shipping I.

If the exit criteria are not met in agreed upon timing, supplier may be placed on controlled shipping Level II.

* + 1. *Controlled Shipping Level 2 (CSII)*

Includes the same process as controlled shipping - Level I (CSI) including an added inspection process by a third party representing Tenneco interests. The third party shall be approved by Tenneco and will be paid for by the supplier.

The supplier shall be notified via phone/email by Tenneco supplier development (SD) team member that they have been placed on controlled shipping Level II (CSII) status. This conversation will be followed by a written notification including the need for:

* + 100% inspection,
  + A containment plan
  + Effective corrective action
  + Plans for an initial meeting at the supplier’s location.

Suppliers are required to provide written confirmation of receipt of this notification, including containment activities, within 24 hours (response form will be provided).

Suppliers placed on CSII containment shall comply with all requirements of CSI.

* Identify parts, material and/or containers with the Tenneco provided CSII identification. These labels must be printed in color, attached near the shipping labels, and SCAR number identifications added as required.
* Provide appropriate personnel to participate in the initial meeting. At a minimum, the supplier’s plant manager/director and the quality manager/director are required to attend.
* Contact and issue a purchase order to an approved independent (third party) sorting firm. The affected Tenneco facility must approve the sorting source. The supplier is responsible for providing all necessary sort instructions, tooling/gages and locations for re-inspection activities. Supplier is responsible for all costs associated with this re-inspection.
* Provide parts found to be acceptable from CSI to third party for agreed upon re-inspection (parts subjected to CSI sort must be re-inspected by third party).
* Submit data to Tenneco daily as agreed upon at initial meeting using the attached I-Chart or via email if I-chart is not available.
* Meet the defined exit criteria determined in the initial SIP meeting with the SD team.
* Request exit from controlled shipping II and coordinate required on- site audit by Tenneco personnel.

Suppliers that fail to meet CS II requirements / timelines may be subject to the Tenneco revocation process or put on new business hold (NBH).

* + 1. *Revocation Process*

Suppliers that do not adequately respond to controlled shipping requirements of Tenneco or fail to meet the exit criteria defined may cause suppliers to be removed from the Tenneco approved supplier list and product may be resourced.

* 1. **OE Customer Directed Supplier Mediation**

“Customer directed suppliers” are required to follow the criteria established in the manual. If a supplier is a “Customer directed supplier/ Customer directed buy” and is a chronic poor performer, the Tenneco buyer and Tenneco supplier development may establish a mediation process with customer involvement through the Tenneco customer business unit (CBU) manager. The purpose of this process is to attain issue resolution through Tenneco customer involvement with the supplier’s performance review. The supplier will be required to participate in this process and Tenneco will communicate the suppliers’ poor performance to the customer/OE.

* 1. **Cost Recovery**

Charges associated with quality or delivery issues may be debited upon input into the Tenneco quality and accounting systems.

Charges associated with nonconforming products and/or delivery issues may include but are not limited to the following:

* Material rejection form charges – costs associated with the creation of the SCAR when non-conforming material or a delivery issue with charge back is identified.
* Incidental charges associated with the non-conformance, such as sorting, rework, WIP, finished goods, customer returns and investigation resources.

NOTE: Rejections of product from Customer Directed Suppliers may require charges in alignment with Customer policies which may be different from those of Tenneco extraordinary costs such as Tenneco incurred premium freight to expedite shipments, the economic impact to Tenneco customer or costs associated with rebuilds, special runs, etc.

* Additional costs for Tenneco assembly line downtime to cover unabsorbed overhead or capacity loss.

NOTE: Process providers (platers, heat-treaters, etc.) will be charged costs associated with non-conforming material.

Settlement of extraordinary costs shall be addressed on a case-by-case basis. Such charges may include, but are not limited to, the following:

**Table 3. Supplier Chargeback Cost Table**

|  |  |  |
| --- | --- | --- |
| **Supplier Charge Back Cost Table** | | |
| **Cost Type** | **Fee (USD)** | **Description / Notes** |
| Administrative Fee | $300.00 | Per incident |
| Failure to follow Shipping Requirements (i.e. Transportation Management System TMS, ASN, etc.) | $250.00 | Per Shipment |
| Receiving Inspection Fee | $50.00 | Per shipment for the inspection of supplier product for re-certification or if certified process is interrupted due to non-conforming material (minimum 1 hour charge) Per hour |
| Line Down Fee | $50.00 | Per employee Per hour directly affected. |
| Change Over Fee | $75.00 | Per hour per employee directly affected. |
| Sorting Fee (including material handling) | $50.00 | Per hour per employee directly affected. If supplier or supplier paid contractor does the sorting, (subject to plant Quality manager prior approval) fee may be waived. |
| Investigation Fee | $75.00 | Per hour per employee directly affected. |
| RE-PPAP Fee | $1,000.00 | Per part number and submission |
| Onsite visit  (SIP, Major Quality issues) | All costs incurred during support are subject to recovery. | Per employee; not valid for international trips, actual cost will be calculated. |

* 1. **Supplier Quality System Assessment**

Tenneco retains the right to perform supplier quality audits of suppliers regardless of certification status.

Tenneco will use the Tenneco supplier assessment when performing a quality system assessment on suppliers of production materials. The Tenneco supplier assessment may be used with other tools to support sourcing decisions for new or existing suppliers.

OE CSR assessment may also be completed by Tenneco (i.e. GM-BIQ, VW-VDA 6.3, etc.) as relevant to a specific part / program.

* 1. **Record Retention**

Unless otherwise specified suppliers are required to retain documentation, relating to the purchased item as follows.

Document Retention Period:

* Purchase Orders: 15 Years
* Tenneco Site Drawings: 15 Years
* PPAP level 3 Documents\* 15 years
* Production Data / Quality Records 15 years

This period can be extended for specific programs depending on customer specific requirements (e.g.PSW, Control Plan, SPC, PFMEA etc.) as requested by Tenneco or as specified on purchasing documents (e.g. RFQ, PPAP waiver).

* 1. **Training**

Reference current ISO 9001 and/or IATF 16949 Standards.

* 1. **Field Issues**

If Buyer, Buyer’s customer, or any governmental or other regulatory authority determines that potential design or other defects in the products may cause a failure of the products (or systems into which the products are incorporated) in the field, seller will immediately cooperate with buyer, its customer and any such authority, as applicable to:

* contain the defect
* determine root cause
* develop and validate a corrective action plan
* Implement the corrective action plan (if applicable).

Costs associated with such actions will be allocated based on relative fault. At Tenneco’s option, Tenneco may debit the Supplier for up to 50% of the actual costs (i.e. costs associated with providing replacement parts and any related labor expenses incurred by Tenneco or its customers) relating to a field issue if Tenneco has made a good faith determination that the Supplier is likely to be liable for the total costs of the field action, taking into account all relevant data available at the time and no agreement has been reached on the allocation of costs within 90 days after the commencement of negotiations. Neither Tenneco nor Supplier will be deemed to have admitted that the amount of any debit taken pursuant to this section is the amount for which Tenneco or Supplier may be liable with respect to the field issue. Additionally, neither party will be deemed to have waived any right it may have against the other party relating to the alleged defect.

The Buyer or the Supplier, as appropriate, will inform the other about any nonconformity of the Goods as soon as reasonably practicable after it has been discovered and confirm the nonconformity in a Written Notice if requested by the other. The Buyer and the Supplier will cooperate fully with each other to identify the cause of the nonconformity and to develop a plan for the prompt remediation of it.

1. **Tooling & Equipment**
   1. **Tooling & Equipment Policy**

Tooling purchased by Tenneco or by a Tenneco customer for use at a supplier facility shall be used exclusively for production of Tenneco requirements as authorized by Tenneco’s purchasing documents. Products produced from such tooling may not be sold or furnished to other parties without the express, written authorization of Tenneco, which may be withheld in Tenneco’s sole discretion.

Each article of part tooling shall be clearly marked (stamped, stenciled, or permanently tagged) identifying the item as "Property of Tenneco” or if applicable "Property of (Tenneco customer)" and the part number, which it produces. Alternate identification (i.e., color coding, etc.) must be approved in writing by an authorized Tenneco representative.

The supplier shall provide buyer with complete detail of any Tenneco tooling and its costs, to be attached to Seller’s invoice, before payment.

Tenneco will reimburse suppliers for only unique, dedicated production tools, and may request additional evidence of supplier's actual cost for such tooling prior to final payment. Specific photographic evidence must be supplied. Tenneco will pay the supplier only the actual cost of such tools, not to exceed the amount specified in Tenneco’s purchasing documents.

Tenneco will not pay for any tooling necessary for the production of sample products unless otherwise stated on the face of the applicable purchasing documents.

NOTE: Suppliers with questions regarding End User Customer Specific (Ford, GM, Chrysler, etc.) tooling identification requirements should contact the Tenneco Buyer.

Unless specifically negotiated, Tenneco will not reimburse suppliers for Capital Equipment or tooling that is shared (used in production of products for other customers), or not returned to Tenneco upon demand. Likewise, unless specifically agreed, Tenneco will not reimburse suppliers for nonrecurring engineering (NRE) costs.

Tenneco purchased tooling is the property of Tenneco and held by suppliers pursuant to the terms and conditions of purchase, for such period as required to satisfy the supplier’s obligations (including service parts requirements).

The supplier may not move Tenneco tooling to alternate locations without Tenneco’s advance written approval. Tenneco reserves the right to demand surrender or destruction of any Tenneco owned tooling at any time, and the supplier will immediately comply with Tenneco’s instructions.

Tenneco reserves the right to conduct audits of Tenneco owned tooling at the suppliers’ premises.

* 1. **Changes / Maintenance to Tenneco Owned Tooling**

Tooling must be maintained in satisfactory working condition, capable of production that meets all governing drawings and specifications, and at the capitalized planning volumes/rates. Suppliers may not change/modify tooling owned by Tenneco without advance notification and approval in writing of such changes. Tooling must be fully covered by insurance against damage, loss, or theft and free from all liens and encumbrances at all times without expense to Tenneco.

* 1. **Payment / Terms / Conditions to Tenneco Owned Tooling**

Ownership of Tenneco tooling is granted to Tenneco. Payment for tooling will not be authorized unless a Vendor Tooling Registration Form is completed. If TITAN is available in your region, this form shall be attached to the A6 folder in TITAN and/or Ivalua (<http://dsp.driv.com>). If TITAN / Ivalua is not available, contact the Tenneco plant for instructions.

This form contains various information such as product, tooling parts identification, location, and % ownership. Suppliers, when requested, shall furnish complete photographs, tooling drawings, including all details, inserts, consumables, etc. to Tenneco as part of the PPAP approval. Payment Terms are as indicated on the order. Payable date will be based on the date of receipt of the goods, not on invoice date. Please see Section 4 for PPAP required Tooling Purchase Order signed by the supplier.

NOTE: Written notification to the respective Tenneco plant is required to trigger receipt date.

Invoices for tooling must show exact physical location by City, State or Province, and Country where tools will be used in production. Payment terms are as indicated in the applicable purchasing documents.

1. **Logistics**
   1. **Tenneco Logistics & Export Policy**

All suppliers are required to fully comply with Tenneco’s policies as defined in this manual and associated purchasing documents. Each region has specific requirements. It is the suppliers’ responsibility to obtain and follow these requirements. Regional requirements can be obtained from the respective local Tenneco Logistics Manager. For assistance obtaining a local directory, reference Section 2.

Tenneco has enacted policies and procedures to fully comply with national and international export requirements, including the requirements set forth by International Traffic in Arms Regulations (ITAR) and Export Administration Regulations (EAR).

Tenneco requires its suppliers to fully comply with all export controls. Please see the Global Supplier Manual Sheetfor applicable website information.

The selected transportation modes shall be appropriate for the movement of the product, as well as compliant with national and international transportation and safety regulations. Tenneco has preferred carriers for land, air and ocean transport; reference freight routings in the Regional sections. Tenneco utilizes transportation management software (TMS) to manage freight paid for by Tenneco.  Suppliers making shipments where any part of the transportation costs are paid by Tenneco are required to use FOM (Freight Order Management), the TMS supplier interface, to plan, schedule and execute Tenneco shipments. Tenneco will decide when to onboard suppliers and will train and assist suppliers through the process of getting set up and using on FOM.  Once a supplier is on-boarded, all shipments to Tenneco must be made through FOM.  Failure to follow the process of shipping through FOM may result in a fine of USD $250 per shipment.

During transport, product must be secured in such a manner that shipments arrive intact and in good condition. Tenneco reserves the right to refuse loads if the shipment is deemed unsafe to offload or store. Examples of unsafe conditions may include, but are not limited to, rotted trailer floorboards, water damage, unstable stacks of pallets and general poor trailer, container or load conditions.

Documentation for each shipment is the responsibility of the supplier and must be complete, timely and legible. The supplier is to provide all necessary customs and legal documents as required by each country.

Requirements for documents such as bill of lading, packing list, and manifests must be obtained from the local Tenneco logistics manager.

* 1. **Logistics & Materials Protocol**

Tenneco Inbound Material and Logistics Protocol is a standard template of generic operational agreement on detailed logistics & material arrangement between supplier and Tenneco at local facility level. It covers areas like scheduling, transport, loading, packaging, communication, goods-in-transit, cross stocking, inventory commitment, documentation & labels, customs, etc.

For additional clarity see Inbound Material Logistics Process Flow.

For new suppliers, this document is initiated during project nomination process and it needs to be completed and signed off between supplier and Tenneco plants before PPAP approval. For existing suppliers, the protocol is required before any new business is launched or must be updated before any additional parts are launched.

If supplier delivers to multiple Tenneco locations or if goods are shipped from various supplier facilities, then each origin-destination relation requires a separate protocol. Multiple purchased items within an origin- destination relation (or new business adding into existing one) can be incorporated into one single protocol if they are subjected to similar logistics & materials arrangement.

The protocol needs to be updated whenever there are significant changes in supply-chain and delivery arrangements. Complete protocols are located in supplier C-folders in TITAN or Ivalua (<https://dsp.driv.com>)

* 1. **Basic Packing List Requirements**

Each shipment shall be accompanied by a packing slip that clearly and legibly displays:

* Sold to address, ship to address, ship from address & ship date
* Tenneco purchase order number, or release number, Tenneco purchase order line item number.
* Tenneco part number and revision level letter, Tenneco part description (per Tenneco drawing), quantity (units as specified by the purchase order), number of containers, skids, etc.
* Weight of the shipment (gross and net).
* Manufacturer’s lot number or heat number (when applicable), chemical/physical analysis (when applicable).
* Carrier used.

Electronic packing slips, provided by an electronic document number, may be acceptable in some locations. Contact your local Tenneco logistics manager to determine if this service is available. Shipping documents must be provided in a separate envelope.

* 1. **Basic Bill of Lading Requirements**

The bill of lading must be included with each shipment and reference:

* Ship date
* Unique BOL #
* Freight terms
* Incoterms
* Consignee reference
* NMFC # class if applicable (ex. US OTR trucking)
* Special Instructions (call for appointment, do not stack, lift gate required, etc.)
* Carrier tracking # / Pro #
* Container / trailer #
* Seal #
* HAZMAT (Y/N)
* Bill to address (freight billing)
* Ship to address
* Ship from address
* Weight
* Freight pieces
* description of product Carrier
* Any other regional requirements, such as country of origin.
  + 1. *Seal Requirements*

Shipping containers (FCL) and full truck loads (FTL)

* + Seal must meet the ISO/PAS 17712 certification requirements
  + Seal must be affixed prior to shipment leaving facility
  + Seal number must be documented on the Bill of Lading

Requirements for IPSM-15 shall be laid out for any shipment on a wood pallet, not just the two specific cases called out on page 15.

* + 1. *Guidelines for global importation of solid wood packaging ISPM 15 - guidelines for regulating wood packaging material in international trade*

The Animal and Plant Inspection Service (APHIS) oversees the implementation of requirements when importing wood packaging material. ISPM 15 guidelines require the use of either heat treatment or fumigation and the marking of materials. Wood Packaging Material (WPM) includes pallets, dunnage, crating, packing blocks, drums, cases, load boards, pallet collars and skids. Certified WPM must be marked, and date stamped (valid for one year).

Approved methods of treatment

* Heat Treatment: Material is heated to a minimum core temperature of 56 ºC for 30 min.
* Fumigation: Material may be fumigated using Methyl Bromide at the rates listed below. (This method is NOT approved by Federal-Mogul’s Global Customs Department and Federal-Mogul’s Environmental Health and Safety Department)

NOTE: The requirement to comply with SOLAS VMG regulations for all ocean shipments needs to be included.

* + 1. *Implementation of new SOLAS Regulations*

The increasing number of maritime incidents that were the result of incorrect cargo weights led to new SOLAS (Safety of Life at Sea) regulations. The regulation, called Verified Gross Mass, became legally binding on July 1, 2016, and applies to all containers loaded for export on or after that date, from any port in the world. The International Maritime Organization (IMO), a United Nations agency, governs SOLAS regulations and compliance is obligatory.

The SOLAS regulations are intended to reduce the loss of containers from vessels and to improve the safety of workers and equipment in the supply chain.

The key requirements of the SOLAS Regulations are:

* Prior to a laden container being stowed on to a vessel the VGM (Verified Gross Mass) of the container and all contents must have been verified and sent to the carrier (VOCC).
* The VGM is defined as: Tare weight of the container + product weight + weight of all dunnage.
* The shipper is responsible for providing the VGM.
* The shipper is defined as the party named on the underlying (VOCC) carriers’ OBL or SWB/ECB.
* The underlying carrier (VOCC) is not permitted to load a container without a confirmed declaration from the shipper of the VGM of that container.
  + 1. *Methods for Obtaining VGM*

The regulations provide for two methods that the shipper may obtain the VGM:

* Method 1. Weigh the whole container and its contents.
* Method 2. Weigh all product + weight of all dunnage + tare weight of the container.

All weighing equipment shall be certified to meet the accuracy standards and requirements of the state/province/country in which it is used.

The shipper is required to communicate the VGM to the carrier. This may be a shipping instruction to the carrier on the standard shipping documents or a separate communication such as a weight certificate or EDI message. The VGM verification must include the method used to determine the VGM (method 1 or method 2), and the signature of the duly authorized and named representative of the shipper. Typed, all capital letters on a hard copy document, or an electronic signature on EDI may replace the signature.

NOTE: The following websites may also be of assistance:

Guidelines regarding the verified gross mass of a container carrying cargo:

[**www.worldshipping.org/industry-issues/safety/cargo-weight**](http://www.worldshipping.org/industry-issues/safety/cargo-weight)

Guidelines for improving safety and implementing the SOLAS container weight verification requirements:

[**www.worldshipping.org/industry-issues/safety/cargo-weight**](http://www.worldshipping.org/industry-issues/safety/cargo-weight)

The IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units (CTU) and CTU Code informative materials can be found at:

[**www.worldshipping.org/industry-issues/safety/containers**](http://www.worldshipping.org/industry-issues/safety/containers)

SMDG, including the EDI implementation guidelines:

[**www.smdg.org**](http://www.smdg.org)

Local guidelines & authorities:

[**https://www.worldshipping.org/industry-issues/safety/global-container-weightverification-rule-effective-july-1-2016**](https://www.worldshipping.org/industry-issues/safety/global-container-weightverification-rule-effective-july-1-2016)

NOTE: Tenneco uses third party freight payment in some regions. Please ensure that the freight invoices are sent to the appropriate address.

* 1. **Advanced Shipping Notices (ASNs)**

Tenneco offers EDI and Tenneco’s web-based supplier collaboration tool as options for the communication of requirements, forecasts and releases, as well as ASN submittal.

As a Supplier, you are responsible for submitting your Advanced Shipping Notice (ASN) back to the Tenneco facility.

Tenneco requires your ASN submittal at the time of shipment.

* An ASN is required for EVERY shipment to Tenneco
* Only include items from one purchasing document per ASN (scheduling agreement and purchase order parts cannot be supplied on the same ASN)
* PPAP sample parts must be submitted on their own ASN
* Failure to submit a valid ASN will result in a past due shipment.
* ASN numbers must be the same as the Bill of Lading and limited to 10 alpha-numeric characters.

1. **Packaging**
   1. **Supplier Responsibilities**

To ensure damage-free shipments, it is the supplier’s responsibility to work with Tenneco’s receiving plant to design and develop packaging and internal dunnage to withstand the given transportation mode. Tenneco may, but is not required to assist with the design, but accepts no responsibility for nonperformance. Once the packaging method has been accepted, the supplier may not change without prior written approval from Tenneco.

Tenneco’s receiving department may reject items that are not properly packaged or not in suitable containers to protect them against stacking, corrosion, breakage, marring, contamination, disbandment, or disarrangement.

* 1. **Traceability**

Supplier shall ensure shipments clearly indicate which production lot the individual products belong to. If it is not possible to directly label each individual part, the lot designation shall be shown on the packaging or tags.

Supplier must further ensure that different types of products are delivered in individual shipping units in order to ensure product identification and traceability is maintained. Each pallet shall contain only one single type of product out of one production lot (e.g. only one type of product and only one lot per pallet).

An OE shipment (container or truck load) may contain several products but should consist of one (1) production lot per product only. A number of two (2) lots per shipment are acceptable as a maximum. As an exception this maximum number may be exceeded whenever a maximum of two (2) lots is technically not feasible, e.g. due to production lot sizes. For aftermarket suppliers multiple part numbers may be on one (1) skid or container if marked MIXED PRODUCT on label.

Suppliers shall ensure traceability of raw materials, to the semi-finished and finished products within the production process. Suppliers shall maintain all inspection reports for all inspections from material receipt up to dispatch of products, in accordance with the record retention guidelines. In case of actual or suspected nonconformity, traceability must guarantee identification of clear start and stop points for product received.

* 1. **Ergonomics**

To ensure worker safety and loss prevention, package design shall consider all human interaction during initial quoting process. For parts packaged in larger containers that require material handling equipment, drop doors may be required. Drop door height shall be approximately 50% of packaging wall height.

* 1. **Expendable Packaging Considerations**

Though returnable packaging is preferred, some instances may require expendable packaging. In these cases, all expendable packaging must be readily recyclable or economically and legally disposed of in accordance with local legislation. Tenneco also encourages the use of post-consumer, recycled content in its packing materials.

* 1. **Pack Quantity**

Standard pack quantities shall be defined during initial quoting process taking into consideration industry ergonomic standards. It is Tenneco's responsibility to determine the packaged quantities and to communicate this standard pack quantity to the respective plant personnel for verification. Mixing of part lots or part numbers within containers **is prohibited**.

* 1. **Additional Protection With-in Containers**

For some parts, interior dunnage or bagging may be required to prevent part damage resulting from contact or contamination. Tenneco packaging team will direct suppliers of any additional requirements.

* 1. **Labeling and Identification**

Labeling shall meet all current AIAG/VDA 6.3 guidelines. Suppliers shall identify all incoming material with a non-handwritten bar-coded identification label. Regional shipping part identification requirements shall apply for all geographic areas. See Regions Appendix for specifics. Provision shall be made on the package system for the container identification and its contents. Regional requirements for hazardous material shipments must also be adhered to. Specific identification requirements and label locations must be agreed upon with the receiving Tenneco location. Pallets shall be secured per Tenneco requirements per the Tenneco packaging team.

1. **Environmental Health & Safety**
   1. **EH&S Commitment**

As people are our most important asset, Tenneco is committed to health and safety as a primary focus. Tenneco expects all suppliers to Tenneco Worldwide locations conduct business in the same manner and that goods and services provided to these locations be delivered in a safe, ergonomic and environmentally friendly condition.

Tenneco encourages its supply base to align with the Environmental and Sustainability codes located within the AIAG Standards and demonstrate progress towards fulfilling the requirements of current ISO 14001.

* 1. **Supplier Visits**

Suppliers are encouraged to visit Tenneco Manufacturing and test areas. This requires approval in advance of the visit to facilitate the participation of the appropriate level of Tenneco personnel. Visitors entering any test or manufacturing areas (beyond front offices) may be required to wear eye, foot, and hearing protection and may be required to sign further documentation such as a visitor form.

Tenneco sites usually maintain a supply of protection devices for visitors. Levels of protection should be discussed with the appropriate Tenneco personnel in advance of the visit.

Suppliers going into the plant must be on the alert at all times and obey all warning signs and plant visitor rules.

Tenneco facilities and offices are smoke free environments. Smoking is prohibited except in designated areas.

* 1. **Tenneco Facility Security**

Tenneco maintains security systems to protect assets and limit the entry of unauthorized personnel. Once at the facility, all visitors will be required to sign in, be assigned appropriate visitor identification, and sign out at the end of the visit.

Visitors will be accompanied by the responsible Tenneco representative. Taking pictures or video recording of Tenneco operations or facilities without authorization is strictly forbidden.

No Tenneco printed or electronic files, blueprints, PFMEA’s, Control Plans, or other documents may be removed from the premises or copied without permission.

* 1. **Supplier Data Security**

Suppliers shall comply with all intellectual property requirements addressed in the Tenneco Terms and Conditions of this manual in Section 3.0. Suppliers are required to complete the Supplier Data Security Self-Assessment and upload it into the Tenneco TITAN C- folder or Ivalua. A copy of the self-assessment shall be sent to the Tenneco Buyer, or Tenneco Supplier Development representative.

1. **Corporate Responsibility for the Automotive Supply Chain**
   1. **Corporate Social Responsibility**

Tenneco’s compliance and ethics expectations are set forth in Tenneco’s Code of Conduct (available online, here: <https://www.tenneco.com/governance/code_of_conduct/>), Tenneco’s Requirements Manual, training materials, and other communications that Tenneco provides to its employees and suppliers. We expect our suppliers to share in our commitment to Corporate Social Responsibility.

* 1. **Global Working Conditions Guidance Statements**

Tenneco has embraced the following working condition guidelines into our facilities on a global basis. These conditions are evidenced by our Human Resources policies and procedures. Tenneco anticipates that members of our supply chain will join us in sharing these values among your own resources.

Tenneco opposes the use of child labor and expects our suppliers to support this value. The age of employment should be in accordance with local labor law.

Tenneco expects our suppliers to oppose any form of forced or compulsory labor and ensure that their workers can communicate openly with management regarding working conditions without fear of reprisal, intimidation, or harassment, and Tenneco requires suppliers to implement zero tolerance policy of harassment or discrimination, in any form, against employees.

Tenneco supports a safe and healthy working environment for all workers that meets or exceeds applicable standards for occupational safety and health and expects the same from our suppliers.

Tenneco suppliers shall comply with local laws and regulations regarding compensation, benefits, and the number of hours worked. All local and governmental / regional regulations shall be adhered to.

Tenneco suppliers must protect their workers against any corporal punishments.

Tenneco suppliers should explore the [AIAG website,](http://www.aiag.org/) complete the Global Working Conditions [(GWC](http://www.aiag.org/staticcontent/committees/download_files/download.cfm?fname=GWC_SelfAssess.doc)) self- assessment, and send it to the respective Tenneco buyer. Each direct material supplier should maintain a training program concerning Tenneco’s commitment against forced labor and improper working conditions. Tenneco expects its suppliers to conduct internal audits and self-assessments as a condition of contracting with Tenneco and take appropriate and necessary action to address and resolve any issues. Our statement on Preventing Human Slavery and Trafficking is available at: <https://www.tenneco.com/governance/code_of_conduct/>.

* 1. **Conflict Minerals**

Tenneco is committed to sourcing components and materials from companies that share our values around human rights, ethics, and environmental responsibility. Tenneco is required to perform due diligence on the sourcing and file annual reports on the use of tantalum, tin, tungsten, and gold originating in the Democratic Republic of the Congo (DRC) and certain adjoining countries. This is necessary if the conflict minerals are necessary to the functionality or production of a product. Suppliers must conduct similar due diligence on the sources and chains of custody and make their findings available to Tenneco. All suppliers to Tenneco, for all raw materials, component parts and finished goods, are strongly encouraged to establish a process to comply with the legislation and related rule and to manage customer requests regarding conflict minerals.

From time to time, Suppliers will cooperate with Tenneco and submit information as requested. At its own cost, Supplier will subscribe to the database used by Tenneco or provide its information on the RMI Conflict Minerals Reporting Template (CMRT) <http://www.responsiblemineralsinitiative.org/conflict-minerals-reporting-template/>. To facilitate timely reporting by Tenneco, supplier data will be required annually prior to May based on the timeline set by Tenneco. Questions regarding conflict minerals should be directed to [conflictminerals@driv.com](mailto:conflictminerals@driv.com).

* 1. **REACH Regulation**

If the product is manufactured in or imported into the European Union, the product must follow applicable requirements under regulation (EC) 1907/2006 concerning the registration, evaluation, authorization and restriction of chemicals (“REACH Regulation”). The definitions of the REACH Regulation are applicable.

*The Supplier shall:*

* Show proof of compliance with REACH regulations, including registration, authorization and other applicable supplier requirements. Supplier registration must provide buyer’s use for the products purchased.
* Provide for all substances and preparations, as far as legally required, safety reports and safety data sheets. For all substances or preparations that meet the criteria of Art. 31 para. 1, 3 REACH regulation, the safety data sheets must be made available in a format that is in accordance with Annex II of the REACH regulation.
* Provide for Substances and Preparations, for which no safety data sheet is required, the information referred to in Art. 32 REACH regulation.
* Complete form “B-QEHS-GT-003 Rev 1.0”
* Provide for substances in Articles, the information referred to in Art. 33 REACH regulation.
* Absorb all costs of registration, testing, and maintenance of registration in connection with REACH regulation.
* Inform Tenneco immediately if:
  1. There are changes to the registration or authorizations of substances for substances, preparations, or articles purchased by buyer.
  2. Any of the Substances, Preparations, or Articles purchased by buyer meet the criteria referred to in Art. 57 REACH regulation or are on the candidate list for eventual inclusion in Annex XIV of the REACH regulation.
  3. The supplier intends not to pre-register a phase-in substance.
  4. The supplier has failed to pre-register a phase-in substance in time.
  5. A registration has been rejected by the European Chemicals Agency (ECHA).
  6. An authorization has been rejected by the ECHA.

The requirements in this section are dynamic and subject to change with or without notice.

Candidate list of substances of very high concern for authorization: <https://echa.europa.eu/candidate-list-table>

For more information, please visit <https://echa.europa.eu/regulations/reach/legislation>, contact the relevant Tenneco buyer or contact [productcompliance@driv.com](mailto: productcompliance@driv.com).

* 1. **RoHS3**

If the product is manufactured in or imported to the European Union, the product shall follow applicable requirements for the RoHS directives. RoHS (**R**estriction **o**f **H**azardous **S**ubstances) originated in the European Union and originally restricted six hazardous substances. The second directive, published in 2011, added two more substances and the third directive from 2015 adds four additional substances. The following directives shall be followed: 2002/95/EC, 2011/65/EU, and 2015/863EU.

*The Supplier shall:*

* Show proof of compliance with current RoHS regulation or exemptions, or declaration of chemical composition of hazardous substances.
* Provide for all substances and preparations, as far as legally required, Safety reports and safety data sheets.
* Provide for substances and preparations, for which no safety data sheet is required, the required chemical disclosure of hazardous substances.
* Absorb all costs of registration, testing, and maintenance of registration in connection with RoHS regulation.
* Inform Tenneco immediately if:
  1. There are changes to the compliance status of substances, preparations, or articles purchased by Tenneco.
  2. Any of the substances, preparations, or articles purchased by buyer meet the criteria referred to in RoHS2 legislation or are on the candidate list for eventual inclusion in the RoHS3 legislation.

The requirements in this section are dynamic and subject to change with or without notice.

For more information, please visit <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02011L0065-20190722>, contact the relevant Tenneco buyer or contact [productcompliance@driv.com](mailto: productcompliance@driv.com).

* 1. **Speaking Up**

If you have an honest concern that someone is not following this Manual or the law in connection with Tenneco business, we want to know. By working together, we are stronger. We value you it when you contact us to know about these concerns. You can contact your Tenneco buyer, management, or our hotline at [www.tennecohotline.ethicspoint.com.](http://www.tennecohotline.ethicspoint.com)

**Appendix 1 – Definitions and Abbreviations**

| Abbreviation | Definition |
| --- | --- |
| AIAG | Automotive Industry Action Group |
| AM | Aftermarket |
| ASN | Advanced Shipping Note |
| APQP | Advanced Product Quality Planning |
| ASTM | American Society for Testing and Materials |
| AS400 | Advanced System 400 |
| BOS | Business Operating System |
| CAD | Computer Aided Design |
| CBU | Customer Business Unit |
| CC/SC | Critical Characteristic / Significant Characteristic / Special Characteristic |
| Chemical Raw Materials | Group of raw materials to be used as direct materials (i.e., production materials) |
| CI | Continuous Improvement, Lean, Six Sigma, TQM, etc. |
| CQI | Continuous Quality Improvements – AIAG Special Process Assessments |
| CMM | Coordinate Measuring Machine |
| CMRT | Conflict Minerals Reporting Template |
| CP | Control Plan |
| Cp, CpK | Measures of process capability, See AIAG SPC Core Tools Manual for further details |
| CSR | Corporate Social Responsibility |
| CSRs | Customer Specific Requirements |
| CS-I / CS-II | Controlled Shipping levels 1 and 2 |
| DFMEA | Design Failure Mode and Effects Analysis |
| Distributor | Does not manufacture product, purchases from, or provides a service to, 3rd party manufacturers |
| ECM | Engineering Change Management |
| EDI | Electronic Data Interchange |
| EVL | End of Life Vehicles - <https://www.gov.uk/guidance/elv> |
| Gage R&R | (Variable/Attribute) – Repeatability & Reproducibility |
| GP | Global Purchasing |
| GWC | Global Working Conditions |
| G8D | Global Eight Disciplines of Problem Solving |
| HIC | High Impact Characteristic(s) |
| IATF | International Automotive Task Force |
| I-Chart | Inspection Chart |
| ILAC MRA | International Laboratory Accreditation Cooperation Mutual Recognition Arrangement |
| IMDS | International Material Data System |
| IPC | Initial Process Control |
| ISO | International Organization for Standardization |
| LCR | Least Contracted Requirement (Daily/Weekly) |
| LTA | Long-Term Agreement(s) |
| MAQMSR | Minimum Automotive Quality Management System (IATF) |
| MCR | Maximum Capacity Requirement (Daily/Weekly) |
| MSA | Measurement System Analysis |
| MSC | Measurement system Correlations Studies |
| NMFC | The National Motor Freight Traffic Association |
| NPI | New Product Introduction |
| OE / OEM | Original Equipment / Original Equipment Manufacturer |
| Packing Unit | Sub-unit of the shipping unit, which wraps the material or holds it together |
| PCA | Permanent Corrective Action |
| PCN | Process Change Note |
| Perishable Tools | Replaceable tools such as: Drill Bits, Cutting Tips (inserts), Grinding Wheels, Linishing Belts, etc. |
| PFMEA | Process Failure Mode Effects Analysis |
| Poke-Yoke | Mechanism that helps avoid mistakes or elimination and/or detection of errors |
| PPAP | Production Part Approval Process |
| PPM | Parts Per Million (Defective) |
| PSW | Part Submission Warrant |
| PTC | Pass Through Characteristic |
| [Prop65](https://oehha.ca.gov/proposition-65/about-proposition-65#:~:text=Proposition%2065%20requires%20businesses%20to%2care%20released%20into%20the%20environment.) | Proposition 65 - Chemicals known to cause cancer – [List of Chemicals](https://oehha.ca.gov/proposition-65/proposition-65-list) |
| QMS | Quality Management System |
| Raw Materials | Used in this Manual as a collective term for chemical raw materials and reinforcements |
| RCA | Root Cause Analysis |
| REACH | Registration, Evaluation, Authorization and Restriction of Chemicals (the regulation (EC) No. 1907/2006) |
| RoHS | Restriction of Hazardous Substances |
| SA | Scheduling Agreement(s) |
| SCAR | Supplier Corrective Action Request |
| SCC | Supplier Score Card |
| SCIP | Substances of Concern In articles as such or in complex objects (Products) – EU Waste Directive  Directive |
| SDE | Supplier Development Engineer / Specialist |
| SDS / MSDS | Safety Data Sheet / Material Safety Data Sheet |
| SIP | Supplier Improvement Process |
| SVHCs | Substances of Very High Concern |
| SPC | Statistical Process Control |
| SQE | Supplier Quality Engineer |
| Tenneco | Refers to all business units including – Clean Air, Motorparts, Performance Solutions, Powertrain & Ohlins |
| TITAN | Tenneco Interactive Tendering Alliance Network |
| TPO | Tooling Purchase Order |
| TSCA | The Toxic Substances Control Act of 1976 - U.S. Environmental Protection Agency (EPA) |
| TVR | Tooling Vendor Registration (form) |
| VA/VE | Value Analysis / Value Engineering |
| VDA 6.3 | German Automotive Industry standard for process- based audits of manufacturing processes |
| VDA 5.0 | Questionnaire for checking Information Security Assessment and Information Security Management |
| Warehouse (External) | Same company as manufacturing location but located in different region / state. No value-added activity. |
| 3L5Y | Three Legged Five Why – RCA problem solving tools |