

# Global Supply Chain Management Manual

## Important Note:

Each supplier wishing to do business with Tenneco is required to meet the guidelines indicated in this Global Supply Chain Management Manual, as well as the respective region for which business transpires.

Regional users, also consult:  
"Region Specific Information and Requirements"

## Global Supplier Manual Index

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# Global Supply Chain Management Manual



Section 1.0	Introduction	Revision Date	Revision Letter
Section 1.1 Supplier Letter		02-01-09	E

Dear Supplier,

The following document is known as the Tenneco Global Supply Chain Management manual.

This electronic document is provided to define both our customary and general guidelines of how Tenneco conducts our business. These 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 customers through price, quantity, quality, and service. A close working relationship with our supplier base is critical to the achievement of this objective. I hope that this manual will provide you with the necessary information that will be valuable to our mutual efforts of conducting business in a professional, efficient, and profitable manner.

This updated manual supersedes all supplier information manuals previously provided to you by Tenneco.

Should you have any questions, please contact your respective commodity buyer.  
Thank you for your continued interest and support.

Sincerely,

Michael Charlton  
VP, Global Supply Chain Management and Manufacturing  
Tenneco Inc.



## Global Supply Chain Management Manual

Section 2.0	Organization	Revision Date	Revision Letter
<b>2.1 History</b>	<p>Tenneco (NYSE: TEN) is one of the world's largest automotive suppliers. With revenues of \$5.9 billion, the company designs and manufactures ride control and emission control products and systems for original equipment manufacturers and aftermarket distributors and retailers.</p> <p><b>Global Footprint</b></p> <ul style="list-style-type: none"> <li>• Approximately 21,000 employees, serving customers in more than 100 countries</li> <li>• Roughly 80 manufacturing plants and 14 engineering and technical centers worldwide</li> </ul> <p><b>Brands</b></p> <p>Tenneco markets products under some of the most well-known automotive brands in the world including Monroe®, Walker®, Gillet® and Clevite® Elastomers.</p> <p><b>Customers</b></p> <p>A global manufacturing and distribution network serves original equipment manufacturers worldwide including Toyota, Honda, Nissan, Mazda, Isuzu, Mitsubishi, Suzuki, General Motors, Ford Motor Co., Volkswagen, Daimler, Chrysler and PSA Peugeot Citroen, BMW and Shanghai Automotive. In the aftermarket, we serve more than 500 distributors and retailers.</p> <p><b>Additional information can be found at <a href="http://www.tenneco.com">www.tenneco.com</a>.</b></p>	05-31-10	Rev. C
<b>2.2 Quality Policy / Mission Statement</b>	<p>Tenneco's mission is to delight customers with technology driven, global manufacturer and marketer of value differentiated ride control, emission control, and elastomer products and systems.</p> <p>We will strengthen our leading position through a shared value culture of employee involvement, where an intense focus on continued improvement delivers shareholder value in everything we do.</p>	12-22-05	B
<b>2.3 Vision Statement</b>	Pioneering global ideas for cleaner, quieter and safer transportation.	12-22-05	B
<b>2.4 Headquarter Locations</b>	<p><b>Worldwide Headquarters</b>  Tenneco 500 North Field Drive  Lake Forest, IL 60045, USA  Phone: 847-482-5000</p> <p><b>North American Original Equipment Headquarters</b>  Tenneco One International Drive  Monroe, MI 48161, USA  Phone: 734-243-8000</p>	12-22-05	B



	<p><b>North American Aftermarket Equipment Headquarters</b>  Tenneco 500 North Field Drive  Lake Forest, IL 60045, USA  Phone: 847-482-5000</p>		
<p><b>2.5 Worldwide Locations</b></p>	<p><b>European Headquarters</b>  Tenneco Europe  Av. du Bourgetlaan, 50  B 1130 Brussels  Brussels, Belgium  Phone: 32-2-706-9000  <a href="#">Contact Tenneco Europe.</a></p> <p><b>Asian / Pacific Rim Headquarters</b>  Tenneco 1326-1378 South Road  Clovelly Park 5042,  Adelaide, South Australia  Phone: 61-8-8374-5222  <a href="#">Contact Tenneco Asia.</a></p> <p><b>South America Headquarters</b>  Tenneco South America  Bartolomé Cruz 1528 1°P  (B1638BHL) Vicente López  Buenos Aires  República Argentina  Phone: 54-11-5550 1700  <a href="#">Contact Tenneco South America.</a></p> <p>Additional location information can be found at <a href="http://www.tenneco.com">www.tenneco.com</a>.</p>	12-22-05	B





Section 3.0	Purchasing	Revision Date	Revision Letter
<b>3.1 Organizational Philosophy</b>	<p>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 relationships with suppliers who best demonstrate their commitment to these goals through consistent scheduled delivery of defect-free products, at competitive prices.</p> <p>Tenneco is committed to developing, manufacturing, and marketing innovative, reliable and cost effective systems and modules. To support this objective, Tenneco Suppliers must be technologically competent and financially capable of supporting our development needs for current and future products.</p> <p>Tenneco will encourage its suppliers to become involved in new product development, to ensure we have robust designs and processes capable of meeting our goals. In order to be considered as a Tenneco supplier, companies must be willing to share information on their financial condition with our Purchasing Department.</p> <p>Sourcing decisions will be based on competitive pricing, quality assurance, supply, 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.</p>	12-22-05	B
<b>3.2 Operational Philosophy</b>	<p>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 critical values. Suppliers are expected to have operating philosophies which are compatible with these values.</p> <p>Supply 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.</p> <p>Suppliers are expected to maintain a quality system providing defect-free components eliminating the need for receiving inspection. Cost reduction through elimination of waste, inspection, inventory and reduced warranty claims, are primary objectives.</p>	12-22-05	B
<b>3.3 Ethics</b>	<p>In order to support sound procurement practices and maintain a reputation for honesty and fairness, Tenneco will select suppliers who can provide products and services of the highest value. Employees are expected to observe the highest ethical standards when handling Tenneco business, making contacts with the business community, and</p>	12-22-05	B



	<p>other matters, which would indirectly affect the Company's reputation for integrity.</p> <p>It is T e n n e c o policy that personnel and Suppliers must not engage in any activities nor have any personal or financial interests outside the Company, which constitute a conflict of interest with Company policies or which conflicts in any way with their assigned responsibilities.</p> <p>I t i s T e n n e c o ' s p o l i c y t h a t p e r themselves or the Company under obligation at any time by the acceptance/offer 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 Company policy regarding this matter.</p> <p>Reference the <a href="#">Tenneco Statement of Business Principles</a>.</p> <p>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.</p>		
<p><b>3.4 Supplier Criteria</b></p>	<p>A primary objective of Tenneco is to achieve the "Best in Class" status in supply base management and supplier performance. As Tenneco focuses on core manufacturing processes, our suppliers must also be developing and perfecting their core competencies. To maintain a long term relationship with Tenneco, Suppliers must:</p> <ul style="list-style-type: none"> <li>• Be globally competitive in quality, technology, service and cost.</li> <li>• Provide defect free products for all direct and indirect materials / resources.</li> <li>• Maintain a quality system, which meets the requirements of the regionally recognized standard. Meet/exceed "best in class" standards through product and process innovations that support performance improvements, lower warranty rates and provide best value.</li> <li>• Meet/exceed "best in class" standards through product and process innovations that support performance improvements, lower warranty rates and provide best value.</li> <li>• Provide the lowest total cost products driving year-over-year reductions through continuous improvement and Value Analysis/Value Engineering (VA/VE) initiatives.</li> <li>• Be capable of validating products for Tenneco specific applications.</li> <li>• Consistently deliver parts on time.</li> <li>• Be prepared to follow Tenneco into emerging market regions.</li> <li>• Be proactive and flexible in responding to changing customer demands.</li> </ul>	<p>12-22-05</p>	<p>B</p>
<p><b>3.5 Initial Assessment</b></p>	<p>The first step in approving a supplier to join our supply base team is for the supplier to complete an Initial Registration through our supplier website or whatever the local process is in the region. For further details in regions outside of North America and Europe, please refer to your regional appendix.</p> <p>The supplier inputs pertinent information directly into the website which is routed to a Tenneco commodity buyer for review. The commodity buyer uses this registration to make a preliminary assessment of the supplier. If the assessment is favorable then the supplier will be contacted by the commodity buyer. The second step in the approval process is an</p>	<p>05-31-10</p>	<p>C</p>



	onsite assessment by Tenneco at the supplier's location. The supplier must demonstrate compliance to this quality manual. To proceed directly to the supplier website to enter your Initial Registration, click on the following link, <a href="http://tasupplier.com">tasupplier.com</a> . Upon entering the Supplier Registration portal to the Tenneco's Network (TITAN) system prompts.		
<b>3.6 Request For Quote (RFQ)</b>	As a component of continuous improvement, the RFQ process is intended to establish specific costs for each element of a component part. Therefore it is extremely important that suppliers provide a cost breakdown as requested by RFQ, so that through early supplier involvement and value engineering we can identify and implement cost reduction opportunities. Please refer to section 4.2.1.	12-22-05	B
<b>3.7 Blanket Purchase Orders</b>	Blanket purchase orders are typically issued to a supplier by Supply Chain Management (SCM). Each Tenneco plant, will issue forecasts and releases for each part number(s) used at that plant. Blanket orders are updated as parts are added to, or due to new programs, resourcing, programs ending etc.	05-31-10	C
<b>3.8 Blanket Shipping Releases</b>	Blanket Shipping Releases are issued to cover specific quantities of parts due on specific dates at a given Tenneco plant, preferably using SupplyWeb or EDI.	12-22-05	B
<b>3.9 Service Orders</b>	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.	12-22-05	B
<b>3.10 Fabrication / Raw Material Authorizations</b>	Authorization for fabricated and/or raw material must comply with Terms and Conditions on the Purchase Order.	12-22-05	B
<b>3.11 Business Review Meetings</b>	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 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.	12-22-05	B
<b>3.12 Supply Agreements</b>	Supply agreements for repetitive, higher volume requirements are normally awarded for a minimum period of one year. Long Term Agreements (2 - 5 years) are frequently negotiated with established suppliers to support enhanced value-added opportunities for both Tenneco and its' Suppliers.	12-22-05	B
<b>3.13 Prices</b>	In order to effectively administrate 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	05-31-10	C



	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 must comply with the Tenneco process change notification, reference PPAP approval process 4.3.		
<b>3.14 Finance</b>	Tenneco will pay for goods and/or services provided by suppliers according to the terms and conditions of the Tenneco Purchase Orders governing such obligations.	12-22-05	B
<b>3.15 Payment/Terms/ Conditions</b>	<p>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.</p> <p><a href="#">Tenneco Global Terms and Conditions</a> govern all purchase orders placed by Tenneco facilities globally, with the exception of those placed by our European facilities.</p> <p><a href="#">Tenneco European Terms and Conditions</a> govern all purchase orders placed by Tenneco European facilities.</p>	12-22-05	B





Section 4.0	Supplier Performance and Engineering Requirements	Revision Date	Revision Letter
<b>4.1. Quality Systems</b>	<p>Tenneco <b>requires</b> all its Original Equipment (OE) suppliers of purchased product to achieve registration, by an accredited certification body, to the latest version of the ISO 9001 Quality Management Standard. All Tenneco OE suppliers who are not registered will need at minimum, a plan, to certify to this standard. Tenneco <b>recommends</b> that OE suppliers take the initiative to register to the latest version of ISO/TS16949.</p> <p>Tenneco recognizes that suppliers for the Automotive Aftermarket (AM) are not eligible to register to the latest version of ISO/TS 16949.</p> <p>However, Tenneco <b>recommends</b> that all exclusively aftermarket suppliers take the initiative to register to the latest version ISO 9001.</p> <p>Suppliers can obtain copies of these standards from the Automotive Industry Action Group, <a href="#">AIAG</a>.</p> <p>Suppliers are required to upload their current Quality Certificate into their respective folders on the Tenneco TITAN database and/or send a copy to their Tenneco Commodity buyer to assist with the upload. If Quality Certificate has yet to be attained, Tenneco requires suppliers to upload their certification plan in this same folder.</p> <p>Periodic updates to the plan are expected. Upon certification the plan needs to be replaced with the certificate.</p> <p>Any supplier that has its quality standard withdrawn by the issuing certification body or, the supplier by its own action, cancels their quality standard certification, must notify their Tenneco buyer and the Tenneco manufacturing locations within five (5) working days.</p>	05-31-10	E
<b>4.1.1 Engineering Design Rules and CAD Requirements</b>	At the start of each project, the supplier must comply with Tenneco design rules and CAD standards. Region specific rules are located in the appropriate appendix of this document, (NA Appendix, EU Appendix). If questions arise regarding these rules, suppliers are required to contact the Tenneco Project Design Engineers.	05-31-10	A
<b>4.2 Advanced Product Quality Process (APQP)</b>	Upon notification of supplier selection, it is the responsibility of the supplier's organization to provide Quality Planning activity.	05-31-10	C
<b>4.2.1 Feasibility</b>	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. <a href="#">The Team Feasibility Form</a> (PDF file attached) 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 to be "not feasible" should come with recommendations as to how the supplier	05-31-10	C

	would change the part to make it "feasible". Resolutions for these issues are to be documented and retained as part of the product record. This form is the supplier's opportunity to confirm that Tenneco has provided a manufacturable print for quote or production. A Manufacturability Review may be completed to assure supplier is prepared for on-going production (based on Risk Assessment).		
<b>4.2.2 Packaging Planning</b>	Appropriate packaging to protect and preserve the quality of the product is to be considered during feasibility evaluation. Suppliers must use appropriate packaging, to assure that all products will arrive at Tenneco plants free of any damage and it can be transported, stored and used efficiently. The packaging system needs to be approved by the Materials Group of the Tenneco receiving facility, as specified in the packaging plan.	05-31-10	B
<b>4.2.3 Launch Containment Requirements</b>	Containment begins when the supplier has been awarded the part and ships to the Tenneco facility – including sample parts shipped during pre-launch.	05-31-10	B
<b>4.2.3.1 Launch Containment Process</b>	<p>All suppliers are required to develop an internal containment plan to ensure that Tenneco facilities receive 100% defect free product. The internal containment plan must ensure that all products are 100% compliant to fit, form, and function and are properly identified prior to shipping to the Tenneco facility. Any exception must be defined in writing by Tenneco facility Quality Manager or designate.</p> <p>Containment must also confirm capability to Significant and/or Critical Characteristics as identified by the supplier's control plan. Other unique characteristics required may be added at the discretion of the Tenneco facility Quality Manager or designate.</p> <p>The supplier must submit the "containment plan" with the inspection criteria to the Tenneco facility for approval prior to the first shipment and no later than PPAP. The Control Plan format will be used to document the containment plan.</p> <p>Supplier will document and maintain containment results in alignment with the plant approved Control Plan. Upon request from the Tenneco facility, the supplier will provide documentation.</p> <p>The containment time period will begin with the first part shipped and continue at least 30 days after initial shipment and no less than 10 shipments (at discretion of Tenneco facility).</p>	05-31-10	B
<b>4.2.3.2 Launch Containment Process Exit Criteria</b>	<p>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 may self exit the containment process after fulfilling the requirements unless Tenneco facility Quality Manager or designate instructs otherwise.</p> <p>If a problem is identified, (in the containment process or by the Tenneco facility), the containment process must remain in effect for a minimum of 30 consecutive days (without a defect) after implementation of the corrective action or through the original containment period, whichever is longer. All corrective actions must contain elements of the Tenneco 8D process defined in this manual (reference 4.5.2)</p>	05-31-10	B

	<p>Tenneco facilities Quality Manager/designate may also require individual part certification, reference 4.13.</p> <p>Shipment of non-conforming material can result in Controlled Shipping (see section 4.11) per Tenneco facility request.</p>		
<p><b>4.2.4 Run @ Rate</b></p>	<p>The Run @ Rate will verify that the results of the supplier's actual manufacturing process meet the requirements for on-going quality and quoted tooling capacity. Also, it will verify that the supplier's actual process is in compliance with documentation presented at PPAP. During the Run @ Rate, the following will be reviewed:</p> <ul style="list-style-type: none"> <li>• documentation</li> <li>• manufacturing process and results</li> <li>• part quality requirements and results</li> <li>• sub-supplier development activities</li> <li>• packaging</li> </ul> <p>A Tenneco Launch Team will evaluate all new part numbers. The supplier will be notified of the need to perform a Tenneco monitored (or supplier monitored) Run @ Rate as early in the APQP process as possible. Risk level of the supplier, the process, and/or part (Low, Medium, or High risk) will determine monitoring level required. If Run @ Rate is to be Tenneco monitored, it shall be conducted on-site by Tenneco Supplier Development.</p> <p>Additionally, Tenneco customer requirements may mandate that the supplier perform an audited Run@ Rate (using Customer form if available or Tenneco form if not available).</p> <p>During Run @ Rate, 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. The <a href="#">Run @ Rate documentation</a> (checklist, worksheets etc.) has to be available to the supplier one week before Run @ Rate is carried out.</p>	05-31-10	B
<p><b>4.3 Production Part Approval Process (PPAP)</b></p>	<p>PPAP acceptance is a mandatory requirement for production goods and service suppliers to Tenneco. PPAP needs to be submitted in accordance to the PPAP manual requirements from the Automotive Industry Action Group (AIAG) to the latest revision (Refer to link referenced in section 4.1 above). Each supplying location must submit and obtain PPAP approval for each part number prior to shipment to Tenneco.</p> <p>Tenneco Commodity Buyer must be notified of any design and/or process changes prior implementation. To inform Tenneco the supplier shall use the Tenneco Process Change Notification (PCN) worksheet.</p> <p>Changes made to the process or product without this prior authorization will result in the supplier's analysis, replacement or destruction of product built with parts with unauthorized changes via the MRR process, and any costs incurred by Tenneco due to customer charge back proceedings. In addition, this can</p>	05-31-10	E



	<p>result in the supplier being placed on Controlled Shipping level I or II, or placed upon a Supplier Improvement Plan (SIP), which may result in the supplier being unable to participate in new business bids.</p> <p>Tenneco Global Supply Chain Management buyer will advise the supplier when the Process Change Notification worksheet has been approved. The supplier will be required to submit a new PPAP (Level to be defined by Buyer) into the TITAN (or regional specific PPAP process). Changes are NOT to be implemented prior to PPAP approval.</p> <p>Note: End user customer specific requirements for PPAP submissions take precedence to these stated requirements, as directed by the GSCM Buyer.</p>		
<p><b>4.3.1 PPAP Submission</b></p>	<p>The supplier must complete and submit appropriate PPAP documentation in the Tenneco Interactive Tender Alliance Network (TITAN). Documents are to be placed in the individual assigned C-folders (Collaboration folders) . Composite or ".zip"</p> <p>Note: Training documents explaining the path to the C-folders, and how to upload documents, are available on the TITAN site. Suppliers must save their documents with the appropriate file name and date, (example: control-plan-2010-07-22.xls)</p> <p>Note: If the TITAN system is not being used in your region, contact your GSCM representative for further instruction.</p> <p>A Level 3 PPAP is required for products purchased by Tenneco. Any Level PPAP other than Level 3 requires 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. 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 approval notification from Tenneco.</p> <p>All changes to core documents (Control Plan, FMEA etc) must be resubmitted into TITAN with the latest revision date of the document clearly seen in the file name.</p> <p>Bulk material suppliers should contact Tenneco Buyer for specific requirement.</p>	<p>05-31-10</p>	<p>B</p>

	<p>Each supplier is required to register directly and comply with the IMDS database at website: <a href="http://www.mdsystem.com/html/en/home_en.htm">http://www.mdsystem.com/html/en/home_en.htm</a></p> <p>A letter stating that data has been entered into the IMDS website must be included with PPAP submissions. This letter must clearly state the part numbers for which the data was entered, date of entry, and the ID Node number.</p> <p>Note: Suppliers may be required to provide IMDS information for items with previously approved PPAP's requirements for existing products.</p> <p>Where PPAP element(s) are to be waived, a written acceptance by Tenneco constitutes proof that the element(s) are officially waived by Tenneco.</p> <p>All elements required to be submitted should be routed to the attention of the resident PPAP coordinator at the appropriate Tenneco facility.</p>		
<p><b>4.3.1.1 PPAP Submission – Sample Part</b></p>	<p>The supplier shall provide, either, a minimum of 6 samples or 1 sample per cavity for multi-cavity 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.</p> <p>This significant 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.</p> <p>These six parts are to be shipped to the Tenneco PPAP approving plant and must be clearly identified with a Tenneco <a href="#">PPAP Sample label</a>. This label must be printed in color –(Pink)</p>	<p>05-31-10</p>	<p>B</p>
<p><b>4.3.2.1 Design Records</b></p>	<p>Suppliers shall obtain Tenneco design records, (prints, specifications, technical documents) through the TITAN portal. These documents are to be reviewed for the supplier's</p> <p>Note: Revisions made to Tenneco drawings will initiate a new PPAP request for current revision. (TITAN users only)</p> <p>Tenneco will identify and document special characteristics 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 equivalent on these documents.</p> <p>Suppliers are required to perform on-going capability analysis on designated special characteristics. Reference section 4.3.2.9 for guidelines on required capability levels.</p>	<p>05-31-10</p>	<p>B</p>

	A training program about measurement, evaluation, and failure effects of these characteristics must be developed for all employees involved.		
<b>4.3.2.2 Engineering Change Documents</b>	Approval from Tenneco Engineering is required for changes not yet incorporated into the design records.	05-31-10	B
<b>4.3.2.3 Engineering Approval</b>	Any deviations from original planned arrangements require Tenneco Engineering approval. Capability studies are required for deviations requested (30 piece minimum). Suppliers should follow Deviation Process described in Section 4.5.	05-31-10	B
<b>4.3.2.4 DFMEA (Design Failure Mode Effects Analysis)</b>	If the supplier is design responsible, a DFMEA is to be developed and reviewed annually (minimum). If Tenneco is design responsible a review of the PFMEA severity levels by Tenneco Product Engineering is to be completed in lieu of a DFMEA. .	05-31-10	B
<b>4.3.2.5 Process Flow Diagram</b>	Tenneco requires suppliers to have a process flow diagram that clearly defines the manufacturing process steps / sequences.	05-31-10	B
<b>4.3.2.6 PFMEA (Process Failure Mode Effects Analysis)</b>	Where Tenneco is design responsible, the assignment of severity values shall be approved by a Tenneco Product Engineering representative. Tenneco prefers error proofing techniques (Poka Yoke) over detection methods. At a minimum, the PFMEA is required to be reviewed annually. Product characteristics and process parameters identified by the FMEA as "special" will be the key for t	05-31-10	B
<b>4.3.2.7 Dimensional Results</b>	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 two parts from each cavity is required, with one sample identified as 4.3.2.10 master s	05-31-10	B
<b>4.3.2.8 Material / Performance Test Results</b>	Evidence of compliance must be submitted per AIAG guidelines.	05-31-10	B
<b>4.3.2.9 Capability Studies</b>	Before starting the manufacturing process, suppliers will conduct all the preliminary capability studies required for special characteristics identified on the control plan.  Ppk value(s) must be submitted with the PPAP. Evidence of compliance with AIAG guidelines is required.	05-31-10	B

<b>4.3.2.10 Measurement System Analysis</b>	<p>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.</p> <ul style="list-style-type: none"> <li>• Acceptance criteria based on R &amp; R studies are: <ul style="list-style-type: none"> <li>• &lt; 10 % of tolerance ---&gt; accepted</li> <li>• 10 - 30 % of tolerance ---&gt; accepted on importance of application</li> <li>• &gt; 30 % of tolerance ---&gt; unacceptable</li> </ul> </li> <li>• NDC (Number of Distinct Characteristics) ---&gt; 5 (It is the supplier's responsibility to carry out Engineering tests specified on drawings, unless agreed otherwise (in writing) with Tenneco.)</li> </ul>	05-31-10	B
<b>4.3.2.11 Qualified Laboratory Documentation</b>	<p>External laboratories used for testing/calibration must be qualified to ISO/TS-17025 or equivalent.</p>	05-31-10	B
<b>4.3.2.12 Control Plan</b>	<p>The control plan will be developed by suppliers, from the FMEA showing all special characteristics, ES tests and process parameters connected to the product. All control plans must be completed in compliance to the AIAG guidelines (latest revision) Tenneco reserves the right to 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.</p> <p>The Tenneco annual part revalidation requirement in section 4.4.1. must be documented in the supplier's annual process/ product audits (section 4.3.2.19 -if applicable), must be documented in the supplier's control plans for "part families" used; specific part numbers associated with a part family must be identified.</p> <p>Note: If a part family control plan is used, all parts associated with the family control plan should have documentation referencing the part number that contained the original control plan.</p>	05-31-10	B
<b>4.3.2.13 Part Submission Warrant</b>	<p>There are to be no blank spaces on the part submission warrant. Submission of a warrant without approval signature, phone number, and date of approval will be cause for rejection. Suppliers must submit photographic evidence (digital photo) of compliance to Tenneco tooling identification in the TITAN C-folder under the Part Submission Warrant folder (Section 5.1 of this manual).</p>	05-31-10	B
<b>4.3.2.14 Appearance Approval Report</b>	<p>Tenneco will notify suppliers of any appearance approval items.</p>	05-31-10	B
<b>4.3.2.15 Sample Production Parts</b>	<p>The supplier shall provide, either, a minimum of 6 samples or 1 sample per cavity for multi-cavity processes unless otherwise directed by Tenneco. These samples must be defined as PPAP samples on all shipping documents. The <a href="#">PPAP sample label</a> must be placed on the carton near the part number label.</p>	05-31-10	B

<b>4.3.2.16 Master Sample</b>	The master sample must be retained per AIAG guidelines defined in the latest revision of the PPAP manual. Any exceptions must be documented and must accompany the PPAP package.	05-31-10	B
<b>4.3.2.17 Checking Aids</b>	Where checking aids (mylars, product specific gauges, etc.) are used, the supplier shall certify that all aspects of these aids comply with product requirements. The supplier shall provide appropriate preventive maintenance for these checking aids for the life of the part.	05-31-10	B
<b>4.3.2.18 Customer Specific Requirements (Tenneco and End-User)</b>	Tenneco defines its specific requirement through this global document, in addition; Tenneco requires compliance to end-user customer specific requirements. For End-User Customer - Specific requirements, see link: <a href="#">AIAG Global Oversight for OEM Customer Specific Requirements</a> .	05-31-10	B
<b>4.3.2.19 Process Audit Requirements</b>	<p>Tenneco requires an annual special process/ product audit where Tenneco parts have been heat treated, coated, or plated. Special Process assessment templates can be retrieved from the AIAG website. Special process audits are due to Tenneco on the anniversary of the last audit. Suppliers are required to upload their current special process assessment into their respective folder in the Tenneco TITAN database and/or send a copy to their Tenneco Commodity buyer to assist with the upload.</p> <p>An additional process audit required by Tenneco is an audit concerning contamination. This <a href="#">contamination audit</a> is to be completed. The audit should be updated if significant changes occur that may impact contamination. This audit may be uploaded into the TITAN C-folder or held for review by Tenneco upon request.</p>	05-31-10	B
<b>4.3.3 PPAP Approval</b>	<p>Approval will be granted based on a review of samples and documentation submitted by the supplier to the Tenneco receiving facility.</p> <p>Requirements of International Material Data System (IMDS) must be included with PPAP submission. Reference Section 4.3.1 of this manual.</p> <p>If Tenneco/ Tenneco customer owned tooling is involved, Tenneco requires a Tooling Purchase Order signed by the supplier. This purchase order and Vendor Tooling Registration Form must be submitted prior to PPAP approval (see Section 5.3).</p> <p>Notification of PPAP status to supplier: A copy of the Part Submission Warrant or electronic acceptance in the TITAN system will be sent to the supplier indicating status.</p> <ul style="list-style-type: none"> <li>• If the PPAP submission is rejected, the supplier must re-submit the element(s) that are non-conforming in the original PPAP package.</li> <li>• Upon PPAP approval, Tenneco purchasing department shall authorize the supplier to proceed with bulk production, per scheduling agreement releases.</li> </ul> <p>Tenneco reserves the right to approve or deny a request made by the supplier to change a process or product. A change requiring this approval is defined as follows:</p> <p>A change to the supplier's process presented at time of PPAP (Production</p>	05-31-10	B



	<p>Part Approval Process) significant enough to require a change to the process flow, material, sub supplier change in the method of processing, i.e., manual to automated processes, addition of an alternate processing method, change of material supplier, etc.</p> <p>The supplier is required to complete a <a href="#">Process Change Notification (PCN) worksheet</a>. This worksheet must include details of the change, in sufficient detail for analysis by Tenneco.</p> <p>Changes made to the process or product without this prior authorization will result in the supplier's analysis, replacement or destruction of product built with parts with unauthorized changes via the MRR 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 upon a Supplier Improvement Plan (SIP), which may result in the supplier being unable to participate in new business bids.</p> <p>Tenneco Global Supply Chain Management buyer will advise the supplier when the Process Change Notification worksheet has been approved. The supplier will be required to submit a new PPAP (Level to be defined by Buyer) into the TITAN (or regional specific PPAP process). Changes are NOT to be implemented prior to PPAP approval.</p>		
<p><b>4.4 Certified Parts Process (Optional)</b></p>	<p>The Certified Parts Process is an optional procedure to be determined by each respective Tenneco receiving plant.</p> <p>To support continuous improvement initiatives, Tenneco has established a certified parts process whereby supplier material is processed through a progression of receiving inspection phases. Assuming zero defects, certified status is achieved by part number. Essentially, Tenneco will bear the expense of certifying supplier parts providing the parts meet all requirements. However, receipt of defective product will result in the supplier bearing the cost of the certification and re-certification.</p> <p>The certified parts process consists of two phases.</p> <p>Phase 1 - Each part number per supplier, upon PPAP approval, will be placed in Phase 1 and remain until the Tenneco site has received 5 consecutive defect free shipments of the part number per supplier. Once this has been accomplished, the Tenneco site shall advance the part number to Phase 2, and is deemed certified.</p> <p>Phase 2- Each part number per supplier in Phase 2 is considered to be "certified" and is exempt from receiving inspection provided they meet one of the following:</p> <ul style="list-style-type: none"> <li>• Receipt and evaluation of statistical data from the supplier.</li> <li>• Receiving inspection and/or testing (e.g., sampling based on performance).</li> <li>• Second or third party assessments or audits of subcontractor sites, coupled with records of acceptable quality performance.</li> <li>• Part evaluation by accredited laboratories.</li> </ul> <p>Certified parts will remain in Phase 2 as long as shipments are defect free. If during the Tenneco manufacturing process the certified part is</p>	<p>05-31-10</p>	<p>D</p>



	<p>identified as defective, the part number is then returned to Phase 1 losing its' certified status. Once returned to Phase 1, the supplier will be charged for inspection fees, even though parts are acceptable, until completion of Phase1.</p> <p>Note Supplier Performance may be subject to additional containment requirements at the mutual discretion of the Tenneco manufacturing site and purchasing functions.</p>		
<p><b>4.4.1 Ongoing Quality/Annual Parts Validation Requirements</b></p>	<p>Tenneco requires that suppliers 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.</p> <p>Note: Tenneco reserves the right to evaluate need for validation of products required for service production.</p> <p>Characteristics, which are included on a control plan and are measured more frequently than one time per year, will not require annual validation. See section 4.3.2.12 Control Plan for additional requirements.</p> <p>When a characteristic is design the supplier is expected to conduct capability studies at least once each quarter.</p> <p>The results of these studies are required to be completed by the supplier and to be made available to Tenneco upon request.</p> <p>If TITAN is used in your region annual validation results may be attached in the Dimensional Results of the APQP file of the C-folder.</p> <p>The supplier must have a robust extended downtime planning process that includes a shutdown/ startup checklist.</p>	05-31-10	C
<p><b>4.5 Deviation Process</b></p>	<p>Tenneco requires adherence to a formal deviation procedure when the following situations arise:</p> <ol style="list-style-type: none"> <li>Tenneco production schedules require shipment of new/revised materials prior to Production Part Approval Process; or</li> <li>Supplier discovers any type of non-conformance in a lot/batch of product which is urgently needed to meet the Tenneco production schedule.</li> </ol> <p>In either situation, the Supplier must obtain prior 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 be authorized in writing to the supplier by Tenneco Engineering.</p> <p>When a deviation request is required, the supplier will notify the GSCM Buyer of the situation with detail as follows:</p> <ul style="list-style-type: none"> <li>What is the stated requirement?</li> <li>What is the current situation?</li> <li>How many parts are affected? or</li> <li>What is the length of time the deviation is required?</li> </ul> <p>The GSCM Buyer will enter the Deviation Request into the Tenneco system and request approval from Tenneco Engineering and the affected</p>	05-31-10	C

	<p>manufacturing site.</p> <p>The GSCM Buyer will write the Deviation Request, and will forward to Engineering and the affected Tenneco Facility(ies) for approval. When approval is received the GSCM Buyer will notify the supplier that the deviation has been approved– a copy of the approved Deviation notice is to be provided to the supplier.</p> <p>The supplier must include a copy of the approved Deviation Notice with the shipment of parts to the Tenneco Facility (ies). The Deviation Number must be clearly marked on all shipping papers, containers and the Tenneco part number shall have an "x" prefix added on all documents/containers. Failure to follow this procedure will result in a Material Rejection Report and reflect on the Supplier's Quality Performance Rating.</p> <p>If the Deviation Request is denied the GSCM Buyer will notify the supplier and coordinate resolution activities.</p>		
<b>4.6 Supplier Performance Requirements</b>	Supplier performance is monitored and reported monthly for both quality and delivery. Suppliers may request a copy of their performance reports by contacting the responsible GSCM buyer or viewing the performance reports on-line, through the TITAN system (Crystal Reports tab).	05-31-10	D
<b>4.6.1 Quality Performance</b>	Tenneco monitors the supplier's Rejection Reports (reference section 4.8 of this manual). The PPM (Parts Per Million) values are reported monthly on the TITAN system or can be attained through the Tenneco GSCM Buyer.	05-31-10	D
<b>4.6.2 Delivery Performance</b>	<p>Changes to the delivery schedule, unless presented in writing from a Tenneco Representative are not valid.</p> <p>If material does not meet the delivery schedule in either quantity and/or date required as specified by the Tenneco facility, the supplier will be notified of the delivery nonconformance via SupplyWeb.</p> <p>SupplyWeb is an on-line web-based material release communication which covers forecast and shipping requirements as well as shipping notices (ASN) back to the Tenneco facility. Nonconformances of delivery requirement will cause the creation of the DPR (Delivery Performance Report). If this occurs, the supplier will be required to submit corrective action per 4.9</p> <p>It is the responsibility of the supplier to make sure that all Delivery nonconformances are accurately reported. These documents impact the individual supplier performance record. If the supplier disagrees, they must contact the issuing Tenneco facility to resolve.</p> <p>The supplier will be responsible for "extraordinary" costs incurred resulting from the delivery nonconformance. (Reference section 4.12 for details).</p>	05-31-10	C
<b>4.6.3 Service Parts Delivery Performance</b>	<p>Supplier must support up to 15 years of service part requirements after serial production is completed.</p> <p>Supplier must ship to plant release requirements during the service part</p>	05-31-10	D

	<p>lifetime utilizing appropriate containers.</p> <p>Supplier must maintain equivalent serial production pricing for a period of 5 years, minimum, after serial production is completed.</p>		
<b>4.6.4 Quarterly Supplier Scorecards</b>	<p>Tenneco generates a Quarterly Scorecard to measure performance in quality, delivery, service, and cost. Scorecards will be emailed to suppliers that receive demerits for the quarter. If a supplier would like to request a copy of their scorecard, even in the case where no demerits are received, contact the respective Tenneco GSCM Buyer.</p>	05-31-10	A
<b>4.7 Continuous Improvement</b>	<p>Continuous improvement is essential to successfully compete in today's business environment. All suppliers shall continuously improve in quality, service (including timing and delivery) and cost to benefit Tenneco and the supplier's own organization.</p> <p>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.) Characteristics identified as "pass" shall have error proofing (poka-yoke) applied to process steps where possible. Where a poka-yoke is not feasible, capability data must be available upon request.</p> <p>Suppliers are required to have a defined "Business Process Review" process, this is a formalized process of reviewing the key metrics that provide indicators of the performance of the facility. Expected metrics include (at a minimum) engineering document linkage compliance, gauge repeatability and reproducibility performance, process capability, process change management, effectiveness of problem solving, site productivity, defective parts per million, overall equipment efficiency and delivery. If you have questions, reference the <a href="#">Business Process Review example sheet</a>.</p> <p>Improvements made where the original targets have not been met are by definition corrective actions, not continuous improvement.</p>	05-31-10	C
<b>4.8 Material Rejection</b>	<p>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. All validated non-conformances will affect the supplier's overall performance rating.</p> <p>Once disposition of the material is determined, a copy of the Material Rejection Form is sent to the supplier. If so noted on the Material Rejection Form, the supplier has responsibility to provide corrective action. See section 4.9.</p> <p>When a non-conforming part is identified, other Tenneco locations that receive this same part must be notified by the supplier.</p>	05-31-10	D
<b>4.8.1 Disposition of Suspect or Nonconforming</b>	<p>Tenneco shall contact the supplier for disposition of suspect material.</p> <p>In the event of shipment of suspect or non-conforming product to a Tenneco customer, caused by the supplier, the supplier shall be debited for associated customer charges. Suppliers are expected to be</p>	05-31-10	B



<p><b>Material</b></p>	<p>involved with customer required sorting / on-site review as appropriate.</p> <p>If Supplier sorting proves to be ineffective (i.e., Tenneco continues to receive defective material from sorted shipments), the Supplier will be placed on Controlled Shipping Status (Ref. section 4.11).</p> <p>It is the responsibilities of to accurately reflect the non-conformance and amount of defectives reported. These numbers impact the individual supplier performance. If the supplier disagrees, they must contact the issuing Tenneco facility to resolve.</p> <p>The supplier will be responsible for "extraordinary" costs incurred because of the non-conformance. (Ref. section 4.12)</p>		
<p><b>4.8.2 Material at Supplier's Location</b></p>	<p>Current material held by supplier is to be 100% evaluated for reported nonconformance (records of sort results must be maintained and available upon request).</p> <p>Sorted material must be identified (For identify of sorted characteristics) and Material Rejection (###) " handwritten or via a printed label. This must be visible on the outside of the shipping container, and placed near the part number label on both sides of each individual container.</p> <p>Containment activity shall continue until corrective action has been implemented and verified.</p>	<p>05-31-10</p>	<p>B</p>
<p><b>4.8.3 Material in Transit or Tenneco Location</b></p>	<p>For suspect material in-transit or at Tenneco location(s), suppliers shall contact each receiving Tenneco facility for determination of appropriate disposition per the following:</p> <ul style="list-style-type: none"> <li>• Preferred -Return to supplier for sorting. Supplier is responsible for shipping cost and to notify plant of sort results of returned material.</li> <li>• Accept at Tenneco site under deviation (reference section 4.4 of this manual)</li> <li>• Sort at Tenneco site by supplier personnel</li> <li>• Sort at Tenneco site by third party personnel (supplier responsible for all charges)</li> <li>• Sort at Tenneco site by Tenneco personnel (reference section 4.12 for charges)</li> </ul> <p>NOTE: If a third party source is not available for sorting / development / process improvement activities; contact the receiving Tenneco facility for assistance.</p>	<p>05-31-10</p>	<p>B</p>
<p><b>4.9 Corrective Action</b></p>	<p>Tenneco expects suppliers to implement successful, permanent corrective actions for non-conformances identified.</p>	<p>05-31-10</p>	<p>B</p>
<p><b>4.9.1 Corrective Action Reporting</b></p>	<p>The corrective action form currently used by the supplier is acceptable provided it references the MRR # and covers the following areas:</p> <ol style="list-style-type: none"> <li>1) <b>Team Members:</b> include name and title name / phone number.</li> <li>2) <b>Problem Description:</b> What is the problem- stated in the terms of the requirements i.e.</li> </ol>	<p>05-31-10</p>	<p>B</p>



	<p>(specifications, prints, etc...?)  Why is it a problem?  How does it affect the customer?  What is the impact?  Where and when detected?  How many were found?</p> <p><b>3) Containment:</b>  How many defective parts were sorted?  How many defects were found?  What is the containment action?  How are parts being sorted?  What is the method of identification?</p> <p>Reference Material disposition requirements of section 4.8.1, 4.8.2, and 4.8.3.</p> <p><b>4) Root Cause:</b>  How was the failure created?  How did the nonconformance escape?</p> <p>Note: Tenneco does not accept "</p> <p><b>5) Corrective Action(s):</b>  Define and implement the corrective actions.  Include date of implementation.</p> <p><b>6) Verification:</b>  Validate corrective action:  Resolve the issue.  How was it validated?  Include data.</p> <p><b>7) Prevention:</b> – provide evidence of evaluation of processes / products.</p> <p><b>8) Congratulations</b> – how was team rewarded?</p> <p>If you do not have a corrective action form that covers these areas, use the <a href="#">Tenneco Global Corrective Action Report</a> (PDF file attached).</p>		
<p><b>4.9.2</b>  <b>Corrective Action</b>  <b>Timing</b></p>	<p>Timeline requirement (upon notification of the MRR):</p> <ol style="list-style-type: none"> <li>1) Containment action must be developed, implemented, and reported to the Tenneco facility within 24 hours.</li> <li>2) Possible root cause(s) with timely planned corrective action(s) and responsibilities must be completed and submitted to Tenneco within two weeks, unless otherwise agreed upon, with concurrence by the Tenneco facility representative.</li> <li>3) Robust corrective actions should be targeted for verification/closure within 30 working days and affected process documentation (Process Flow, PFMEA, Process Control Plan, Operating Instructions) needs to be reviewed/updated.</li> </ol> <p>A corrective action that cannot be verified and closed within the 30 day window requires concurrence from the issuing plant(s) Quality Manager.</p>	<p>05-31-10</p>	<p>B</p>



	Periodic updates will be defined by the Quality Manager.		
<b>4.10 Supplier Improvement Process</b>	<p>Tenneco suppliers who fail to meet the quality and/or delivery requirements are subject to being placed on a Supplier Improvement Program (SIP).</p> <p>Criteria for selection can include any of the following:</p> <ol style="list-style-type: none"> <li>1) PPM: &gt; 50 per quarter</li> <li>2) Delivery: &lt;98% per quarter</li> <li>3) MRR Value: &gt;\$2500 per quarter</li> <li>4) Number of MRR: &gt; 4 per</li> <li>5) Plant and Buyer Recommendation – Production disruption, on-going quality issues, or any other performance issue.</li> </ol> <p>These are reviewed monthly and communicated quarterly to the supply base by the quarterly scorecard.</p> <p>Note: Suppliers on SIP may be placed on New Business Hold.</p> <p>The following process will be followed:</p> <p><u>Initial Visit:</u></p> <p>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 and an on sight visit will be scheduled. Preliminary visit at supplier will include an overview of the SIP, a review of issues, an on-site review of the supplier's process activities as appropriate. Required to attend from the supplier, (depending on company size), Senior Management Representatives from Operations, Sales, Quality, and Engineering.</p> <p>A preliminary schedule for subsequent visits to Tenneco will be developed.</p> <p><u>Follow-up Visits to Review Improvements:</u></p> <p>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).</p> <p><u>Exit Criteria:</u></p> <p>Supplier Development will schedule a visit to review updating of pertinent documents (PFMEA, Control Plan, and Process Flow), and will conduct an assessment to verify improvement(s) made. Based on this review estimated timing for exit from SIP will be determined.</p> <p>Upon verification of results, Supplier Development will notify SIP participant that exit criteria has been met.</p>	05-31-10	A
<b>4.11 Controlled Shipping</b>	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	05-31-10	C

	evaluation by senior level Tenneco personnel, a supplier may be placed directly on Level II.		
<b>4.11.1 Controlled Shipping Level I</b>	<p>The inspection process is required employees at the supplier's location phone that they have been placed on Controlled Shipping Level I (CS I) status. This conversation will be followed by a written notification including the need for:</p> <ul style="list-style-type: none"> <li>• 100% inspection,</li> <li>• a containment plan,</li> <li>• effective corrective action,</li> <li>• and the exit criteria.</li> </ul> <p>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 CS I, suppliers may be restricted from bidding on or being granted new business.</p> <p>Suppliers placed on CSI containment must:</p> <ul style="list-style-type: none"> <li>• Immediately establish a separate containment activity area at their location.</li> <li>• Start the 100% sort activities and record results. At minimum suppliers must record the number of pieces sorted and the number of nonconforming parts identified.</li> <li>• Contain all suspect material in in-transit, at Tenneco, or Tenneco customer).</li> <li>• Identify parts, material and/or containers with the Tenneco provided CSI or CSII labels. These labels must be printed in color – (<a href="#">CSI –yellow</a>, <a href="#">CSII –orange</a>).</li> <li>• Conduct a daily review of the results of the sort activities and verify the corrective actions are effective or plan required changes.</li> <li>• Communicate results of the sort to Tenneco on the agreed upon frequency (once a week minimum) using the link to the <a href="#">I-Chart</a>.</li> <li>• Provide key quality documents such as DFMEA's, PFMEA's, Control Plans, and statistical controls upon request for Tenneco review.</li> <li>• Meet the exit criteria as defined in the notification letter.</li> <li>• Provide supporting documentation on performance improvements and corrective actions taken.</li> <li>• Formally request exit from Controlled Shipping I.</li> </ul> <p>If the exit criteria are not met in agreed upon timing, supplier may be placed on Controlled Shipping Level II (reference 4.11.2).</p>	05-31-10	C
<b>4.11.2 Controlled Shipping Level II</b>	<p>Includes the same process as Controlled Shipping - Level I (CSI) as well as an added inspection process by a third party representing Tenneco interests. The third party must be approved by Tenneco and will be paid for by the supplier.</p> <ul style="list-style-type: none"> <li>• The supplier will be notified via phone that they have been placed on Controlled Shipping Level II (CS II) status. This conversation will be followed by a written notification including the need for:</li> <li>• 100% inspection,</li> <li>• a containment plan,</li> <li>• effective corrective action</li> </ul>	05-31-10	C



	<ul style="list-style-type: none"> <li>plans for an initial meeting at the supplier's plant</li> </ul> <p>Suppliers are required to provide written confirmation of receipt of this notification, including containment activities, within 24 hours (response form will be provided).</p> <p>Suppliers placed on CSII containment must:</p> <ul style="list-style-type: none"> <li>Comply with all requirements of CS I.</li> <li>Provide appropriate personnel to participate in the initial meeting. At a minimum, the supplier's plant manager/director are required to attend.</li> <li>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 tooling/gages and locations for re-inspection activities. Supplier is responsible for all costs associated with this re-inspection.</li> <li>Provide parts found to be acceptable from CS I to third party for agreed upon re-inspection (parts subjected to CS I sort must be re-inspected by third party).</li> <li>Submit data to Tenneco as agreed upon at initial meeting using the attached I-Chart linked in 4.11.1.</li> <li>Meet the defined exit criteria.</li> <li>Request exit from Controlled Shipping II and coordinate required on-site audit by Tenneco personnel.</li> </ul> <p>Suppliers that fail to meet CS II requirements / timelines may be subject to the Tenneco Revocation Process.</p>		
<b>4.11.3 Tenneco Revocation Process</b>	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.	05-31-10	C
<b>4.11.4 Customer Directed Supplier Mediation</b>	If a supplier is a "Customer Directed Supplier", the Tenneco GSCM buyer and Tenneco Supplier Development will establish a mediation process with customer involvement through the Tenneco Business Unit manager. The purpose of this process is to attain issue resolution through Tenneco customer involvement with the suppliers performance review.	05-31-10	A
<b>4.12 Cost Recovery</b>	<p>Please see Section 3.15 of this manual for Tenneco Global (and European) Terms and Conditions. Charges associated with quality or delivery issues may be debited upon input into the Tenneco quality and accounting systems.</p> <p>Charges associated with nonconforming products and/or delivery issues may include but are not limited to the following:</p> <ul style="list-style-type: none"> <li>Material Rejection Form Charges – costs associated with the creation of the MRR when non-conforming material or a delivery issue with charge back is identified.</li> <li>Incidental charges associated with the non-conformance, such as sorting, rework, investigated 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.</li> </ul>	05-31-10	C

	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Additional cost for Tenneco assembly line downtime to cover unabsorbed overhead or capacity loss. Note: process providers (platers, heat treater etc) will be charged cost associated with non-conforming material.</li> </ul> <p>Settlement of extraordinary costs shall be addressed on a case by case basis.</p>		
<b>4.13 Supplier Quality System Assessment</b>	<p>Tenneco retains the right to perform supplier quality audits of suppliers regardless of certification status.</p> <p>Tenneco will use the Tenneco Supplier Assessment when performing a quality system assessment on suppliers of production materials. The Tenneco Supplier Assessment will be used with other tools to support sourcing decisions for new or existing suppliers.</p>	05-31-10	C
<b>4.14 Record Retention</b>	<p>Unless otherwise specified suppliers are required to retain documentation relating to the purchased item as follows.</p> <p><u>Document Retention Period:</u>  Purchase Orders: Minimum 10 Years  Tenneco Site Drawings: Minimum 10 Years  PPAP level 3 Documents* Minimum 10 years</p> <p>*(e.g.PSW, Control Plan, SPC, PFMEA etc) as requested by the Tenneco site Quality Manager or as specified on Purchasing documents (e.g. RFQ, PPAP waiver).</p>	05-31-10	C
<b>4.15 Training</b>	<p>The supplier must demonstrate a comprehensive training program for all levels of staff. Training must be applicable to each job function, supported by documented evidence of the standards achieved by each individual.</p> <p>The program should be based upon the principles of total quality management and include, Quality Planning Tools, Lean Manufacturing, Six Sigma Tools, Team Problem Solving, Global Working i</p> <p>Conditions Guidance requirements stated in 9.1 of this manual.</p>	05-31-10	C





Section 5.0	Tooling and Equipment	Revision Date	Revision Letter
<b>5.1 Tooling and Equipment Policy</b>	<p>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 Purchase Orders, Blanket Purchase Order Releases, and/or Forecasts furnished to suppliers. Products produced from such tooling may not be sold or furnished to other parties without the express, written authorization of Tenneco.</p> <p>Each article of tooling must be clearly marked (stamped, stenciled, or permanently tagged) identifying applicable "Property of Tenneco (customer)" and the part number, which it produces. Tenneco will reimburse suppliers for only unique, dedicated production tools, and may request evidence of supplier's actual cost for such tooling prior to final payment. Specific photographic evidence must be supplied (reference 4.3.2.13).</p> <p>Note: Suppliers with questions regarding End User Customer Specific (Ford, GM, Chrysler, etc) tooling identification requirements should contact the Tenneco GSCM buyer.</p> <p>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.</p> <p>Tooling purchased by Tenneco is the property of Tenneco and held by suppliers pursuant to the terms and conditions of purchase, for a period of 15 years after the production order.</p> <p>The Supplier may not move Tenneco tooling to alternate locations without advance approval. Tenneco reserves the right to demand surrender of any Tenneco-owned tooling upon reasonable notice.</p> <p>Tenneco reserves the right to carry out an audit of Tenneco owned tooling at the suppliers' premi</p>	12-22-05	B
<b>5.2 Changes/ Maintenance to Tenneco Owned Tooling</b>	<p>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.</p>	12-22-05	B
<b>5.3 Payment/ Terms/ Conditions to Tenneco Owned Tooling</b>	<p>Upon final payment, ownership of tooling is granted to Tenneco. <b>Payment for tooling will not be authorized unless a <a href="#">Vendor Tooling Registration Form</a> is completed.</b> If TITAN is available in your region, this form shall be attached to the A10 folder in TITAN, if TITAN is not available, contact the Tenneco plant for instructions.</p>	05-31-2010	F



This form contains various information such as product, tooling parts identification, location, and % ownership. Suppliers, when requested, must 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 4.3.3 for PPAP required Tooling Purchase Order signed by the supplier.

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

Payment for tooling will be made per the following schedule:

Reference	Receipt	Progressive Net Payment (%)	Terms
Supplier Site Tooling	Supplier PPAP Approval	100%	Net Due 180 Days
Tenneco Site Tooling	Tenneco Site Acceptance	100%	Net Due 180 Days
Equipment	PO Release	5%	60 days, End of Month, 2 <sup>nd</sup> Day
Equipment	Design Approval	30%	60 days, End of Month, 2 <sup>nd</sup> Day
Equipment	Supply Site Runoff Approval	25%	60 days, End of Month, 2 <sup>nd</sup> Day
Equipment	Tenneco Site Acceptance	40%	60 days, End of Month, 2 <sup>nd</sup> Day

Invoices for tooling must show exact physical location by City, State or Province, and Country where tools will be used in production.

# Global Supply Chain Management Manual



Section 6.0	Logistics	Revision Date	Revision Letter
<p><b>6.1 Tenneco Logistics and Export Policy</b></p>	<p>All suppliers are required to follow the requirements defined in this manual and associated purchasing documents. Each region has specific requirements. It is required that all suppliers follow these requirements. Regional requirements can be obtained from the respective local Tenneco Logistics Manager. For assistance obtaining a local directory reference section 2.4.</p> <p>Tenneco has enacted policies and procedures to fully comply with national and international export requirements, including the requirements set forth by <a href="#">International Traffic in Arms Regulations (ITAR)</a> and <a href="#">Export Administration Regulations (EAR)</a>.</p> <p>Tenneco requires its suppliers to fully comply with all export controls. Please see the <i>Global Supplier Manual Link Sheet</i> for applicable website information.</p> <p>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.</p> <p>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, unstable stacks of pallets and general poor trailer, container or load conditions.</p> <p>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 can be obtained from the local Tenneco Logistics Manager. For assistance obtaining a local directory reference section 2.5.</p>	05-31-2010	C
<p><b>6.2 Logistics &amp; Materials Protocol</b></p>	<p><a href="#">Tenneco Inbound Material and Logistics Protocol</a> is a standard template of generic operational agreement on detailed logistics &amp; 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 &amp; labels, customs, etc., for additional clarity see <a href="#">Inbound Material Logistics Process Flow</a>.</p> <p>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</p>	6-22-06	B



	<p>updated before any additional parts are launched.</p> <p>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 &amp; materials arrangement.</p> <p>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.</p>		
<p><b>6.3</b> <b>Basic Packing List Requirements</b></p>	<p>Each shipment must be accompanied by a Packing Slip that clearly and legibly displays:</p> <ul style="list-style-type: none"> <li>• Sold to address</li> <li>• Ship to address</li> <li>• Ship from address</li> <li>• Ship date</li> <li>• Tenneco purchase order number or release number</li> <li>• Tenneco purchase order line item number</li> <li>• Tenneco part number and revision level letter</li> <li>• Tenneco part description (per Tenneco drawing)</li> <li>• Quantity (units as specified by the purchase order)</li> <li>• Number of containers, skids, etc.</li> <li>• Weight of the shipment (gross and net)</li> <li>• Manufacturer's lot number or heat number (when applicable)</li> <li>• Chemical/physical analysis (when applicable)</li> <li>• Carrier used</li> </ul> <p>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.</p>	12-22-05	B
<p><b>6.4</b> <b>Basic Bill of Lading Requirements</b></p>	<p>The bill of lading must be included with each shipment and reference:</p> <ul style="list-style-type: none"> <li>• Bill to address (freight billing)</li> <li>• Ship to address</li> <li>• Ship from address</li> <li>• Weight</li> <li>• Freight pieces</li> <li>• Description of product</li> <li>• Carrier</li> <li>• Any other regional requirements, such as country of origin.</li> </ul> <p>Please note that Tenneco uses 3rd party freight payment in some regions. Please ensure that the freight invoices are sent to the appropriate address.</p>	12-22-05	B



## Global Supply Chain Management Manual

Section 7.0	Packaging	Revision Date	Revision Letter
<b>7.1 Supplier Responsibilities</b>	To ensure damage-free shipments, it is the suppliers' responsibility to design and develop packaging and internal dunnage to withstand the given transportation mode. Tenneco may assist with the design however accepts no responsibility for nonperformance. Once the packaging method has been accepted, the supplier may not change without prior written approval from Tenneco.	12-22-05	B
<b>7.2 Ergonomics</b>	To ensure worker safety and loss prevention, package design shall consider all human interaction. For parts considered for a small container manageable by one person, refer to local EH&S standards for recommended limits. For parts packaged in larger containers that require material handling equipment, drop doors may be required. Drop door height shall be approximately 50% wall height.	05-31-10	C
<b>7.3 Expendable Packaging Considerations</b>	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.	12-22-05	B
<b>7.4 Pack Quantity</b>	Standard pack quantities shall be based on aforementioned ergonomic standards. It is the supplier'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.	12-22-05	B
<b>7.5 Additional Protection Within Containers</b>	For some parts, interior dunnage or bagging may be required to prevent part damage resulting from contact or contamination. Tenneco will identify parts, which require additional protection not provided with the standard packs. For parts potentially damaged by contaminants, the totes must be lined with a plastic bag and necessary dunnage. Returnable dunnage is preferred however expendable packaging is acceptable. Dunnage design must allow easy access to the parts. For this reason it is recommended that Tenneco Plant personnel pre-approve dunnage prior to shipment of product.	12-22-05	B
<b>7.6 Labeling and Identification</b>	Incoming material shall be identified by the supplier with a non-handwritten bar coded identification label. Specification <a href="#">AIAG B10</a> or other regional shipping part identification requirements shall apply. 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 shall be agreed upon with the receiving location.	2-14-08	C
<b>7.7 Substrate Handling</b>	Shrink wrap pallets and wrap with a tamper proof tape.	05-31-10	A





Section 8.0	Environmental Health And Safety	Revision Date	Revision Letter
<b>8.1 EH&amp;S Policy</b>	<p>People are our most important asset; therefore Tenneco is committed to health and safety as a primary focus. It is expected that 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 adheres to all global working condition guidance statements as found on the AIAG website.</p>	12-22-05	B
<b>8.2 Supplier Visits</b>	<p>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.</p> <p>Tenneco sites usually maintain a supply of protection devices for visitors. Levels of protection should be discussed with the appropriate purchasing and health and safety personnel in advance of the visit.</p> <p>Suppliers going into the plant must be on the alert at all times and obey all warning signs and plant visitor rules. When walking in the aisles, stay to the right and obey all traffic signs.</p> <p>Tenneco facilities and offices maintain a smoke free environment. Smoking is prohibited except in designated areas.</p>	05-31-10	D
<b>8.3 Security</b>	<p>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.</p> <p>Visitors will be accompanied by the responsible Tenneco representative.</p> <p>Taking pictures or video taping of Tenneco operations or facilities without authorization is strictly forbidden.</p> <p>No Tenneco printed or electronic files, blueprints, or other documents may be removed from the premises or copied without permission.</p>	05-31-10	C



## Global Supply Chain Management Manual



Section 9.0	Corporate Responsibility for the Automotive Supply Chain	Revision Date	Revision Letter
<b>9.1 Global Working Conditions Guidance Statements</b>	<p>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.</p> <p>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.</p> <p>Tenneco expects our suppliers to oppose any form of forced or compulsory labor, and ensure that their workers are able to communicate openly with management regarding working conditions without fear of reprisal, intimidation, or harassment.</p> <p>Tenneco expects our suppliers to support zero tolerance of harassment or discrimination against their employees in any form.</p> <p>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.</p> <p>Tenneco suppliers must comply with local laws and regulations regarding compensation, benefits, and the amount of hours worked.</p>	05-31-10	A

