



SUPPLIER MANUAL



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1. INTRODUCTION

1.1. THE COMPANY

Tupy is a Brazilian multinational foundry, leader in the market of iron Block Engine and Cylinder Heads in the western hemisphere. Tupy develops and produces cast and machined components for the automotive sector, and serves various segments of industry and construction, with the production of malleable iron connections and continuous profiles, becoming an international reference in Quality and Productivity.

Founded on March 8, 1938 in the City of Joinville, the company has three manufacturing units located in Brazil, in the cities of Joinville/SC, Betim/MG and Mauá/SP, and with the goal of expanding production capacity, in April 2012, Tupy acquired two units located in Mexico, in the cities of Saltillo and Ramos Arizpe Coahuila, thus meaning that the production base of Tupy and foreign units, added 312 thousand tons to its annual production capacity, making the company the largest Block Engines and Cylinder Heads manufacturer of the world.

In 2022 Tupy acquired another plant, which is located in Portugal in the city of Aveiro.

1.2. MISSION, VISION AND VALUES

Mission

Contribute to the success of its Shareholders and Customers by providing casted, machined products and high-value services, while contributing to achieve employees' objectives and supporting the communities in which it operates.

Vision

Be the global leader in the iron foundry and machining industry, with a differentiated business of high technology components and industrial hydraulics. Recognized for being:

- » customers' first choice,
- » preferred employer,
- » attractive to capital markets.

Values

- » People
- » Health and safety
- » Economic excellence
- » Environment and community
- » Customer focus
- » Integrity
- » Commitment

- » Communication
- » Learning and Innovation

1.3. MANAGEMENT POLICY

Quality, Environment, Health, Safety and Social Responsibility

Tupy shall, in all of our plants and offices:

- » Value, recognize and develop people;
- » Deliver continuously outstanding results to our shareholders;
- » Exceed our customer' expectations in (terms of) quality, delivery and services;
- » Pursue the best from our internal and external suppliers;
- » Promote appropriate, opened and clear communications with our stakeholders;
- » Ensure that corporate actions are both ethical and socially responsible;
- » Pursue (continuous) solutions to improve our Management Systems while valuing learning and innovation;
- » Act with responsibility, proactiveness, sense of urgency and collaboration;
- » Comply with all legislation, norms and other applicable requirements, as well as internal procedures;
- » Care for quality, environment, health and safety of our employees, internal service providers, costumers and community by:
 - Prioritize safety, health and environment above any other demands;
 - Prevent hazards and treat non-conformities with due diligence;
 - Optimize use of natural resources that support sustainability.



1.4. ADDRESS OF TUPY UNITS

Joinville Unit

Rúa Albano Schmidt, 3400
CP 89227-901 – Joinville / SC – Brasil
Phone: (47) 4009-8181

Mauá Unit

Avenida Manoel da Nóbrega, 424
CP 09380-120 – Mauá / SP – Brasil
Phone: (11) 2763-9800

Betim Unit

Rúa Senador Giovanni Agnelli 230 a 906
CP 32681-08 – Betim / MG – Brasil
Phone: +55 31 3316-8200

Saltillo Unit

Boulevard Isidro López Zertuche 4003
CP 25230 Saltillo, Coahuila, México
Phone: +52-844-411-2000

Ramos Unit

Carretera Monterrey-Saltillo Km 21.5
CP 25900 Ramos Arizpe, Coahuila, México
Phone: +52-844-866-0600

Aveiro Unit

Rúa da Junqueira Apatado 3
CP 3801-652, Aveiro, Portugal
Phone: +351 234 301 700

Website: www.tupy.com.br



1.5. MANUAL PURPOSE

This manual aims to:

- Establish the activities between Tupy and its Suppliers, focusing on the Quality Management System requirements
- Inform the procedures, requirements and recommendations for the following activities:
 - Development of new suppliers, materials and services.
 - Supplier performance monitoring.
 - Treatment of deviations in materials and services.
- Inform suppliers about specific customer requirements and applicable international standards, and the need to meet them.
- Promote the development and continuous improvement of Suppliers.

1.6. MANUAL SCOPE

This Manual applies to Suppliers of Materials and Services that have a direct impact on the Quality of the products of Tupy units, approved or in development, which are part of the following groups:

Raw material

Material used in the manufacturing process, which is incorporated into the final product and/or is directly related to the physical, chemical, mechanical and dimensional characteristics of the final product.

Process material / Casting accessories

Material necessary for the manufacturing process, which is not incorporated into the final product.

Components

Materials which are assembled in Tupy products in the Machining line.

Painting service

Application of paint on Tupy parts to prevent corrosion.

Heat treatment services

Heating and cooling of parts under controlled conditions of time and temperature to modify their mechanical properties.

Machining services

Forming of parts by material removal

Calibration services

Calibration and maintenance of measuring instruments, devices and equipment.

Inspection, rework and selection services

Work carried out on Tupy products, related to Quality Inspections and rework.

Services performed in Tupy parts

Deburring and assembly services

Transport services

Services provided for the transportation of Tupy products to the Customer, and materials to Tupy



Internal services

Services performed at Tupy plant related to cleaning, material handling, property security, personnel transportation, food, information technologies, health services, internal maintenance, etc.

Packaging

Materials used in the packaging process of the Tupy product.

Load handling devices

Equipment used to move parts and molds

Control devices

Devices used for dimensional control of parts.

Tooling

Molding and Core tooling.

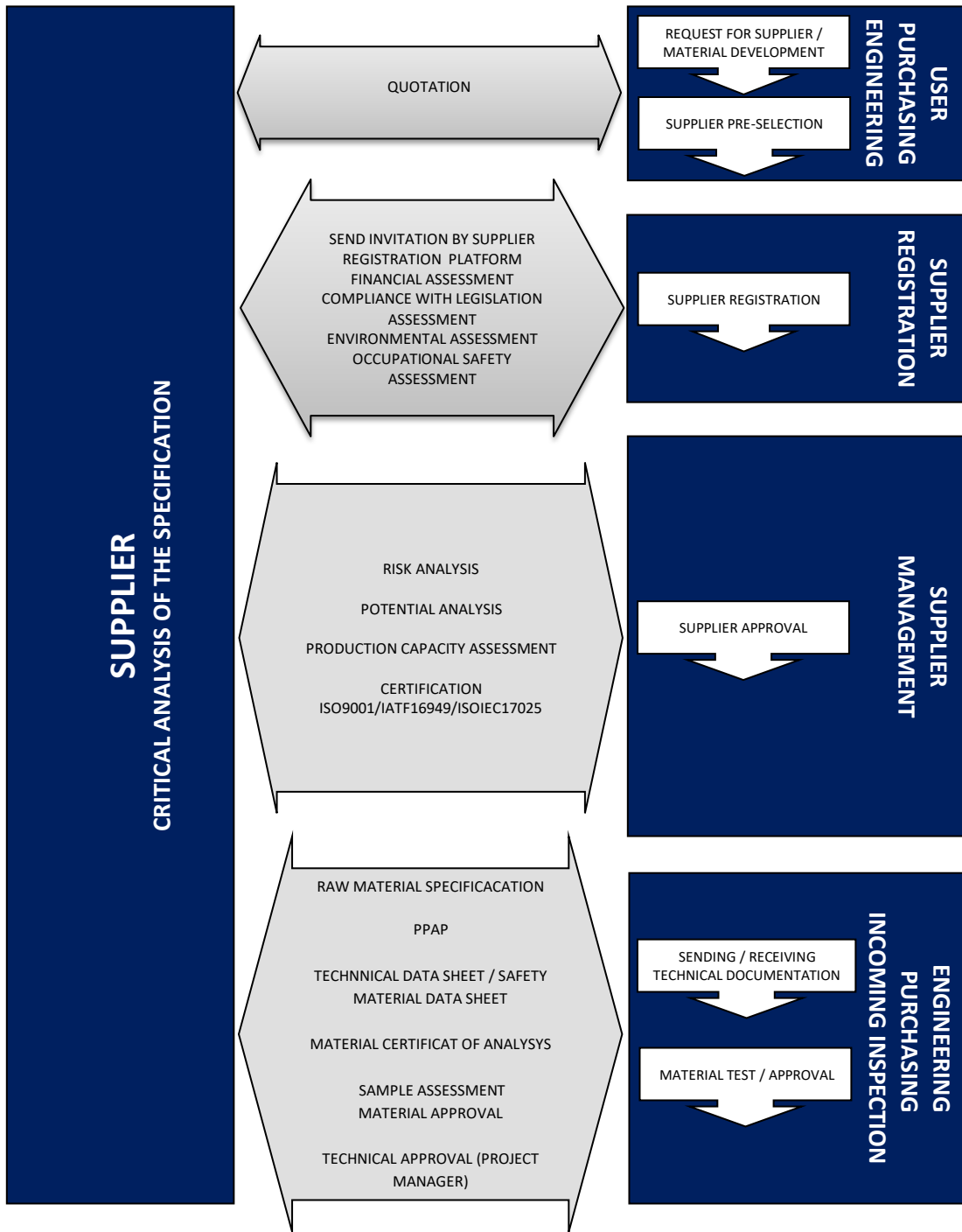
Cutting tools

Tools used in the machining process of Tupy products.

2. SUPPLIER AND MATERIAL DEVELOPMENT PROCESS

2.1 FLOWCHART FOR SUPPLIER / MATERIAL DEVELOPMENT

The next figure shows the Supplier / Material development steps. Documentation exchanged between Tupy and the Supplier varies according to the family of the material supplied.



2.2 SUPPLIER PRE-SELECTION

As part of the pre-selection process, and according to the type of supply, the supplier is evaluated according to the following criteria:

- Quotation, to verify the commercial and technical viability of the Supplier.
- Risk Analysis, to verify the Supplier's business profile, supply capacity and associated risks.
- Supply Capacity Analysis, to validate the Supplier's available productive capacity.
- POT VDA Audit 6.3 – Potential Analysis, to verify the risks of the Supplier's manufacturing process.
- Financial Analysis, to verify financial stability and identify risks of supply interruption due to lack of cash flow.
- Current ISO9001/IATF16949/ISOIEC17025 Certificate from the Supplier or its Sources, as applicable, to verify the implementation of a Quality Management System in production processes.
- Compliance Analysis, to verify compliance with integrity and contractual requirements.

The information contained in the above evaluations will be reviewed and approved by the Supplier Management team. If it is rejected, the Supplier registration process cannot be started.

2.3 SUPPLIER REGISTRATION

The Purchasing Executive and/or Analyst and/or Purchasing Coordinator define the Supplier's classification and send the registration request through the supplier registration platform.

The Supplier must accept the invitation and upload the required documents according to the assigned classification.

To conclude the registration process, the Supplier must accept the conditions of this Supplier Manual, Code of Ethics, and Terms and Conditions.

2.4 ACTIVATION OF SUPPLIERS

Based on the documentation collected in the Supplier Registration Request, depending on the type of Supplier, and depending on the compliance of the information, the Purchasing Department activates the Supplier in the ERP.

2.5 ENVIRONMENTAL ASSESSMENT

Based on the information collected in the Supplier Registration Request, and depending on the type of Supplier, compliance with environmental requirements is verified.

2.5.1 Environmental Management System

It is recommended that the Suppliers in applicable categories, have an Environmental Management System certification according to the ISO14001 Standard, by third-party accredited body, and the accreditation certificate must be submitted to the Supplier Development area.

2.5.2 Environmental operation license (applicable to Tupy Brazil)

This requirement applies to the following groups:

- Casting fittings and components;

- Raw materials;
- Process materials;
- Intern services;
- Machining, painting, heat treatment and deburring service suppliers;
- Transport services;
- Scraps.

The Supplier is requested to send the Environmental Operating License, which document is a mandatory requirement for supply to Tupy.

2.5.3 Transport of hazardous products

For suppliers that provide transport services for hazardous products (waste, chemical and flammable products) it is recommended to have:

Requirements	México	Brasil
A plan for dealing with external emergencies;	X	X
Driver's certification and updated federal driver's license in accordance with the relevant regulations	X	X
Authorization for transport of hazardous products and waste	X	X
An internal self-inspection program and correct fleet maintenance - in the case of Brazil, as required by IBAMA Ordinance 85/1996	X	X
Vehicle identification according to ANTT 420/2004 and NBR 7500/2013 resolution;		X
Environmental license for the transport of hazardous products;		X
Liability insurance	X	

2.6 OCCUPATIONAL SAFETY ASSESSMENT

It is recommended that the Suppliers defined in the scope of this Manual, who provide services within any of the Tupy facilities, have the following points.

- APP (Accident Prevention Program)
- PCMSO (Occupational Health Medical Control Program)

2.7 ASSESSMENT OF THE SUPPLIER'S QUALITY SYSTEM

2.7.1 ISO9001 Certification

Raw Material Suppliers must have a Quality Management System certified by the ISO 9001 Standard in the current version, by an accredited third-party body.

For Process Material Suppliers, a Quality Management System certified by the ISO 9001 Standard in the current version, by an accredited third-party body, is also recommended.

However, according to the needs of the different Tupy locations, or due to Specific Customer Requirements, ISO 9001 certification can be requested for this type of Suppliers.

Distributor suppliers of raw materials and process materials, must have ISO9001 or IATF16949 accreditation of their sources, certified by an accredited third-party body.

2.7.2 IATF 16949

Automotive Suppliers, who supply Components, Painting Services, Heat Treatment, Machining and automotive paints, must have certification of a Quality Management System under IATF Standard 16949 in the current version, by an accredited third-party body.

2.7.2.1 Automotive Suppliers Not Certified by IATF 16949

Automotive Suppliers not certified IATF 16949, must comply with Minimum Automotive Quality Management System Requirements (MAQMSR) which will be verified through a Tupy audit, and which are available in the following link:

<https://www.iatfglobaloversight.org/wp/wp-content/uploads/2016/12/Minimum-Automotive-Quality-Management-System-Requirements-for-Sub-tier-suppliers-2ndEd-rev2.pdf>

2.7.3 ISO / IEC 17025 certification: 2017

Laboratories providing Calibration and Testing Services must have a Quality Management System certified under the ISO/IEC 17025 Standard, in the current version by an accredited third-party body, as well as certification from the Standards Accreditation Entity, from the country of origin.

When a non-accredited laboratory is used, the organization is responsible for ensuring that there is evidence that the laboratory has been evaluated and meets the requirements of Section 7.1.5.3.1 of IATF 16949.

The requirements to meet are:

- a) Adequacy of laboratory technical procedures
- b) Competence of laboratory personnel
- c) Product testing
- d) Ability to perform services correctly, with traceability to process standards (such as ASME, EN, etc.); When national and international standards are not available, the organization must define and implement a methodology to verify the capacity of the measurement system.
- e) Client requirements, if any;
- f) Review of related records

2.7.4 Process audit / Production capacity evaluation

Tupy has the right to audit the manufacturing process or quality management system of its suppliers, in accordance with the VDA 6.3 Process Audit, ISO 9001, IATF 16949 Standards and applicable Customer Specific Requirements (for example: CQI's 9, 11, 12, 15), in its current version.

As part of the quality assurance system, process audits are also extended to sub-suppliers, accompanied by a technical representative designated by the supplier.

Non-conformities identified in the audits will be sent in a report and must be addressed through an action plan.



Whenever Tupy considers it necessary, the supplier will provide information related to the capacity or quality of the process. This measure can be applied preventively, correctively or as a consequence of quality problems in the products supplied.

Annually, Tupy may require capacity studies (Cp and CPk) from its suppliers of the characteristics that it considers critical for the process.

The supplier must carry out and present an annual self-assessment of the special processes applicable to the items supplied:

- CQI-9 (Special Process: Heat Treatment Evaluation)
- CQI-11 (Special Process: Evaluation of Electroplating Treatment)
- CQI-12 (Special Process: Coating Treatment Evaluation)
- CQI-15 (Special Process: Welding Evaluation).

The supplier must carry out the Lay Out Inspection annually (dimensional and functional) after the approval process and start of production. Dimensional analyzes must be carried out as defined in the PPAP and provided for in the control plan.

The supplier must provide a requalification of the PPAP according to the Customer's Specific Requirements.

The frequency for carrying out an audit is defined in the following table, and may be increased if the supplier presents a high number of non-conformities or recurrences, changes in processes, quality or capacity risks, and new developments.

Risk Classification	IQF >80	IQF <80
High Risk Supplier	In-Site or Virtual Audit, frequency according to supply performance	According to LPS Flow
Medium Risk Supplier		
Low Risk Supplier	In-Site or Virtual Audit, frequency according to supply performance	In-Site or Virtual Audit, frequency according to need

High risk suppliers: Services performed on Tupy parts and/or parts with Safety Features

Medium risk suppliers: Process components and materials that interact with the dimensional characteristics of the product.

Low risk suppliers: Process materials that do not interact with the dimensional characteristics of the product. (Inhibitors, non-productive services, packaging).

If the rating level in the audit is "C", the supplier will be blocked for new developments until an action plan is submitted and a new audit is carried out with an increase in the rating level.



2.8 SUPPLIER APPROVAL

After carrying out the analysis of the areas involved, and if the minimum requirements are met in the pre-selection phase (Commercial, Environmental, Quality System, Potential Evaluations), the Supplier can be approved.

The Supplier will be considered approved if it meets the information needs in the evaluations described above. Otherwise, if any of the evaluations is not approved, the Supplier may be conditionally approved, according to the consensus of the areas involved.

2.9 INFORMATION FOR THE SUPPLIER

Material inspection requirements are communicated through a purchase order. The physical-chemical requirements are communicated through technical specifications and standards;

Requirements for inspection and/or rework on castings are communicated through the Inspection Service Order.

Requirements for calibrations are communicated via purchase order.

The Purchase Order is assigned by the buyer and uploaded on Tupy's Supplier Portal.

The legal requirements for the supply of materials and services are described in:

- Terms and Conditions Policy Applicable to Material Purchase Orders
- Terms and Conditions Policy Applicable to Service Purchase Orders

Customer Specific, Legal and Regulatory Requirements, and the needs for special product and process characteristics, are described in section 7.0 of this Supplier Manual, and must be deployed by the Supplier to its sub-Suppliers.

2.10 SUPPLIER REASSESSMENT

Accredited suppliers that have not supplied any material or service for more than 2 years must go through the process described in items 2.2 to 2.8.

Note: For these groups in Brazil, the following rule applies:

- Refractory material suppliers - 5 years
- Cutting tools (MM16) - 3 years

3 PRODUCT APPROVAL PROCESS

3.1 PRODUCTION PART APPROVAL PROCESS - PPAP

This requirement is mainly applicable to Automotive Products: Components, Machining, Painting and Heat Treatment Services.

The Production Part Approval Process is carried out in accordance with the requirements set forth in the PPAP Manual issued by the AIAG, current version.

In Mexico, for Automotive Materials and Components, Bulk Materials Requirements form will apply. For Brazil, PPAP⁵ Requirements will be used.

Level 3 will be taken as the standard for all submissions for Automotive items, unless otherwise specified. Tupy reserves the right to request additional requirements.

The objective of the Production Parts Approval Process - PPAP is to verify that the technical requirements of the Tupy Engineering Specification are understood by the Supplier, and that its manufacturing process has the potential to produce the product in a manner consistent with these requirements, during current production runs, at the quoted production rate.

Questions about specific PPAP requirements should be addressed to the responsible Tupy representative.

The Supplier must obtain PPAP approval from Tupy in the following situations:

- A new material or component
- Correction of a material or component discrepancy
- Engineering change on a material or component
- Changes affecting the shape, durability or performance of the material or component
- Changes in the manufacturing process, equipment, and facilities.
- Tupy update request.

At the end of the PPAP process, the Part Submission Warrant - PSW is issued, indicating that the part or material meets all Tupy's requirements, and the Supplier is authorized to supply the agreed product quantities. The supplier must ensure that future production continues to satisfy all requirements.

3.1.1 PPAP Requirements

Parts for PPAP should be taken from normal production runs. These production runs must last from 1 to 8 hours, with sample size according to customer's requirements, unless otherwise specified by Tupy.

These production runs must be conducted at the production site, at the production rate, using tooling, gauges, measurement devices, processes, materials and production operators.

For Bulk Materials no specific number of "parts" is required. The sample must be taken in a way that ensures it is representative of the production. For Bulk Material, the production history of current products could be used to estimate the initial process ability or performance of new or similar products.

In cases where there is no production history of similar technology, product or material, a containment plan will be applied until a sufficient volume of production demonstrates capacity or performance, unless otherwise specified by Tupy.

During the PPAP stage, any out-of-specification result is cause for suspending shipment of parts/sample products, documentation and/or PPAP records. When this occurs, Tupy must be notified immediately, and the Supplier must correct the process. If upon receiving a quote request for the item, the Supplier identifies that it is not in a position to meet the PPAP requirements, it must notify Tupy before sending the quote to determine the most appropriate corrective action.

3.1.2 Information Submission / Retention Requirements

The Supplier must carry out appropriate and functional tests and/or validations, generate and maintain detailed documentation, and guarantee the availability of information that demonstrates compliance with each of the PPAP requirements established in the AIAG Manual in its current version and present it to Tupy when required, regardless of what requirements have been requested.

PPAP and PSW documents must be updated, digitized and sent to the e-mail address:

gestaofornecedores@tupy.com.br and Gestion.Proveedores@tupy.com.mx

Advanced Product Quality Planning - APQP (Components)

As a phase prior to the Production Part Approval Process, the development of a new component, discrepancy correction, engineering change, change affecting shape or performance, change in the manufacturing process, in materials, equipment or in current facilities, the guidelines established in the current version of the AIAG APQP Manual must be followed.

The documents listed below, and described in the APQP Manual, must be presented with the PPAP information.

- Project / Process FMEA (Failure Mode and Effect Analysis)
- Design FMEA
- Checklist for new equipment, tools and test equipment
- Product / Process Quality Results
- Process Flow Diagrams
- Control Plans
- MSA (Measurement System Analysis)
- Process Capability Studies

The PPAP process is performed according to the following criteria:

- A. Components and Machining, Painting and Heat Treatment Services require initial submission with annual recertification.
- B. For Mexico, if the Material is incorporated into the final product and/or is directly related to its production, the PPAP requirements must be conducted according to the Requalification Materials List.
- C. If the Material is not incorporated into the final product, it is not subject to PPAP submission
- D. Any material is subject to PPAP issuance at the Customer Request.

3.1.3 IMDS (International Material Data System) Restricted Substances

To meet the requirements of our Customers, regarding the prohibition and/or restriction of heavy metals, such as Mercury, Cadmium, Lead and Hexavalent Chromium, in vehicles and automotive parts, Suppliers must register the raw material components and their chemical composition, in the International Material Data System - IMDS (www.mdssystem.com) and carry out the declaration of conformity.

This registration is also necessary for development of new items or replacement of components and/or changes in the manufacturing process, in any other applicable situation and/or when required by Tupy.

To submit the IMDS registration, use ID 7096. This submission of this requirement becomes part of the PPAP documentation and is a mandatory requirement for its approval.

3.2 MATERIAL DEVELOPMENT

Requirement applicable to the development of Raw Materials and Process Materials.

The pilot batch of these Materials must be delivered and identified as described in items 4.1.1 – 4.1.3, and the Supplier must simultaneously submit the following documents to the Technical and Supplier Development Department:

- Data sheet;



- Chemical Material Safety Data Sheet (MSDS), in accordance with the Globally Harmonized System.
- Material Quality Certificate.

3.3. REACH - REGISTRATION, EVALUATION, AUTHORISATION AND RESTRICTION OF CHEMICALS

All Suppliers of products for the European market must comply with REACH EC 1907/2006 legislation. Regulations and guides can be found on the European Chemicals Agency (ECHA) website: http://echa.europa.eu/home_pt.asp

Information needed for new developments:

- 1) Contact information for the personnel responsible for REACH legislation (representing all production units – different tax IDs) – name, company, telephone number and e-mail.
- 2) Chemical Composition. Substances present in the supplied products, including their CAS number (Unique Identifier of the substance - see www.cas.org) and their average percentage in the composition. Also inform the product weight (kg). For Suppliers of polymeric materials, inform the monomer used.
- 3) Report substances that do not require pre-registration / registration. For this task, ECHA has provided a “browser” which can be accessed at the following address to facilitate the process: http://reach.jrc.it/navigator_en.htm

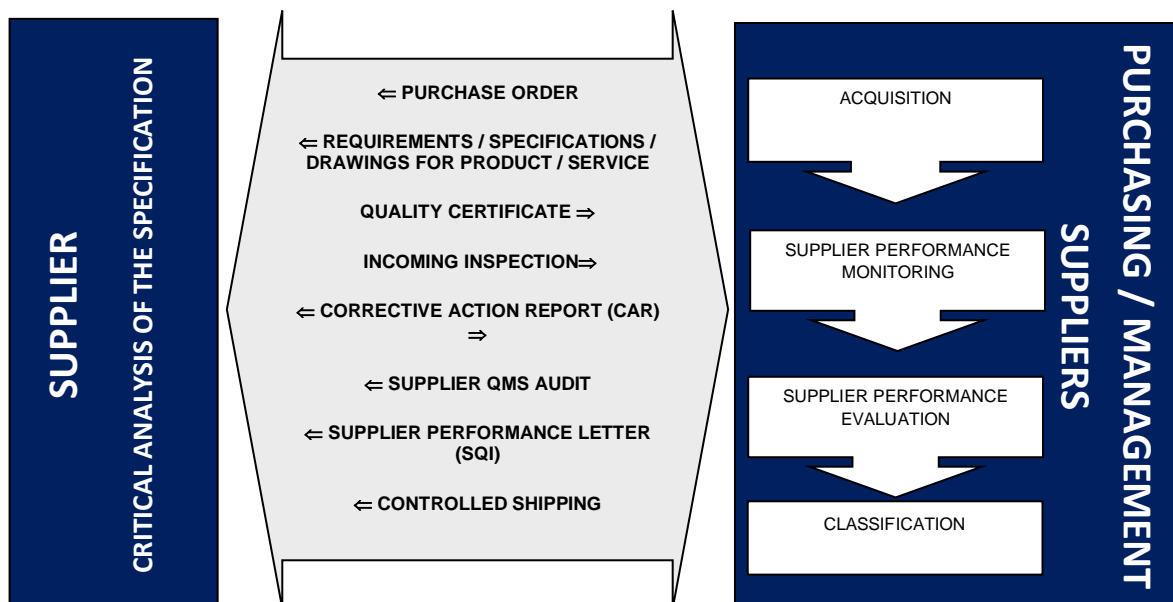
3.4. PRODUCT APPROVAL

After the item is evaluated by the areas involved, regarding technical, commercial, quality, environmental and safety requirements, it may be approved. In the event that one of the areas does not approve it, the approval will be subject to group evaluation.

During the approval process, the Supplier will receive Tupy's technical specification with the requirements for the product (Item applicable to Suppliers of Raw Materials and Process Materials).

4 SUPPLIER MONITORING, PERFORMANCE EVALUATION AND CORRECTIVE ACTION

In general, the process used for Supplier monitoring, performance evaluation and corrective action is shown in the figure below:



4.1 PRODUCT REQUIREMENTS

4.1.1 Material Inspection

The Materials supplied may be inspected in accordance with Tupy Specification - Incoming Inspection. Material Nonconformities, in the case of Mexico, are reported through the Raw Material and Spare Parts Rejection report; In the case of Brazil, the results are communicated through Non-Conformity Report.

4.1.2 Material Quality Certificate

All Material delivered to Tupy must have the Material Quality Certificate. The absence of this document constitutes a reason for rejecting or conditionally releasing the product. It is worth noting that the batch without its respective certificate will imply a demerit in the Material Quality Index.

4.1.2.1 Content of the Material Quality Certificate:

The Quality Certificate must mention at least:

- Material provided;
- Quantity of material supplied;
- Tupy code or item and product description;
- Supplier's batch number;
- Acceptance range and measured result of the Material's features as specified in the Tupy Technical Standards;
- Invoice number;

4.1.2.2 E-mail to send the Quality Certificate

Certificates must be sent by e-mail in advance or on the day of material shipment, to ensure that the certificate will be available at the moment of the receiving inspection to approve and release the Material.

Certificates must be sent to the following addresses:

- **Saltillo plant:** inspeccion.recibo@tupy.com.mx
- **Ramos plant:** recibo.ramos@tupy.com.mx
- **Joinville plant:** insprec@tupy.com.br

4.1.3 Product Identification

Unless otherwise specified in the Tupy Technical Specification of the item, product or part supplied, must be identified, with the following information at least:

- Supplier's name;
- Product description;
- Tupy product / item code;
- Expiration date (if any), which must be legible and highlighted;
- Batch number;
- Quantity.

4.1.4 Calibration certificate

The measuring equipment sent for maintenance, verification and/or calibration must be delivered to Tupy containing the corresponding calibration certificate.



4.1.5 Products, tools and equipment owned by Tupy and/or Customers

The products supplied by Tupy and/or by Customers (products, tools, measuring equipment, packaging, transport) must be identified and registered as “Property of Tupy” and must be controlled in order to allow their quick location and verification of their status of conservation.

For tools Property of Customer, identification must be in accordance with agreement with Tupy. It is the Supplier's responsibility to verify, store, transport, handle, preserve quality, preserve validity and identify the property.

4.1.6 Packaging

The Supplier must develop a packaging that guarantees the integrity of the product supplied and that facilitates handling and storage. The use of returnable and recyclable materials is recommended.

For wooden packaging, the Supplier must meet the requirements of ISPM 15 - International Standard on Phytosanitary Measures - and carry out the phytosanitary treatment.

4.1.7 Non-compliance - Non-conformity

The following cases of non-compliance are subject to the issuance of a Corrective Action Request and a penalty on the Supplier's performance index:

- Incorrect, incomplete or not submitted product documentation as requested in section 4.1 of this Manual.
- Material sent with some characteristic that does not comply with Tupy's technical specifications, detected in Incoming Inspection, in Process at Customer or Tupy plant.
- Expired materials;
- Mixed products;
- Damaged package;
- Wrong identification;
- Delay in responses and/or breach of agreements signed with Tupy.
- Downtime or Lost Time in the Production Line, at Customer or Tupy plant, due to Non-Conformity of Raw Material, Material or Service.
- Interruption of Raw Material, Material or Service supply.
- Safety risk in materials

The following cases of non-compliance are not subject to the issuance of a Corrective Action Request, but are subject to the issuance of an action plan and penalty in the performance indicator.

- Early/late delivery;
- Quantity delivered of the Material in excess / less;

4.1.8 Awareness of Non-Conforming Products – Costs of Non-Quality

The Supplier must promote the awareness of its employees, about the implications of shipping products with quality failures, rework, production stoppages, as well as the Non-Quality Costs associated with these failures, detected in Tupy or the Customer Plant.

The Supplier may be subject to the claim of Non-Quality Costs, which generate production stoppages or claims in Tupy or Client, derived from Quality failures in the Materials, components or services supplied.

4.1.9 Deviation Request

A product with deviation is considered a product that has been produced with some characteristic that does not comply with Tupy specifications.

Products with deviations can only be sent with prior approval from the Tupy technical department. For this, the Supplier must request and fill out the Deviation Request⁷ form and send it to the Supplier Development department.

4.2 NON-CONFORMITY TREATMENT

When a Non-Conformity occurs, the Supplier receives a Corrective Action Request (CAR) in order to determine the root cause of the problem and establish definitive corrective actions. Delay in response incurs a demerit in the Supplier Quality Index.

The Corrective Action Request must be responded to within the following deadlines; delayed response incurs a demerit in the SQI - Supplier Quality Index as follows:

- 24 hours to define containment actions
- 5 business days for complete CAR response in the system.

If the Supplier exceeds the deadline for more than 30 days, can be blocked for new developments. If, even so, the term is exceeded by more than 60 days, the process of disqualification of the Supplier described in item 4.4.5 may be initiated.

It is the responsibility of the Supplier:

- Collection, re-inspection and replacement of non-conforming material delivered to Tupy;
- Retention and re-inspection of non-conforming material, in transit or at the Supplier's premises;
- Quick response process to resolve the issue;
- Reimbursement of damages, line stoppages and quality deviations caused by failures.

4.2.1. Containment of Materials at Tupy or Customer Plant

If application problems occur with the material supplied, the Supplier may be required to carry out immediate containment in Tupy or to hire an outsourced company to carry out 100% inspection.

If after the 100% inspection a recurrence is detected, the Supplier will enter the Level I Controlled Shipping condition. (See section 4.2.4).

4.2.2. Containment of Materials at the Supplier's Plant

When a Non-Conformity is reported, the Supplier must carry out a 100% inspection of the stock in its plant of this product. These parts must be identified by the Supplier as 100% Inspected lots.

4.2.3. Disposal of Materials

If necessary, the disposal of Non-Conforming Material can be carried out at Tupy facilities.

Tupy reserves the right to return or dispose of the Non-Conforming Material in the most convenient manner for Tupy in the event that the Supplier has not done so in a timely manner.

4.2.4. Controlled Shipping

It is an inspection process for Non-Conforming Material, carried out in a separate location from the production line, where out-of-specification characteristics must be inspected, ensuring that non-conforming parts are detected and segregated, and ensuring that the actions taken act directly on the cause of the problem and prevent its recurrence.

4.2.4.1 Determination of the Need for Controlled Shipping

If the organization's corrective actions are not effective, Tupy will determine the need for Controlled Shipping.

One or more of the following situations may be considered in determining the implementation of controlled shipping:

- Defect(s) detected at Tupy;
- Recurrent failures;
- Line stops and/or major interruptions;
- Problem severity;
- Improper containment action causing non-conforming parts to reach TUPY or its customers' facilities.
- Production process not capable.

Based on the severity of the problem, Tupy will decide whether Level I or Level II is more appropriate.

4.2.4.2 Notification for Controlled Shipment Status

Through a Controlled Shipping Letter, Tupy's Supplier Development department notifies the Supplier of the entry into the Level I or Level II controlled shipping process.

4.2.4.3 Level I Controlled Shipping

The Supplier implements 100% inspection process in its plant to ensure the supply of parts without failures.

4.2.4.4 Level II Controlled Shipping

If Non-Conforming Materials are detected in the Level 1 controlled shipping stage, the Supplier will automatically be placed in Level 2 Controlled Shipping.

In this case, the inspection of the products is carried out at the Supplier's or Tupy's facilities, by an outsourced company that will represent Tupy's interests specific to the containment activity. The outsourced company is contracted by Tupy and paid by the Supplier.

Upon being notified of the entry into controlled shipment, the Supplier must take the following provisions:

- Control all non-conforming parts in its facilities, in warehouses, in transit and in Tupy.
- Provide an inspection area, separate from the normal production area. This inspection area must be clearly identified and must be appropriately illuminated and equipped.
- Review all necessary PPAP documentation and submit for Tupy again.
- Define and implement a corrective action plan.
- Do not make repairs and rework in the containment area. The containment process must be conducted independently of the production process, and when possible containment can be applied to the process generating the defect.
- Store all the necessary information in graphs and data sheets. These must be updated and continually reviewed by supervision. This information must be used to guide problem solving, establish controls and block errors.
- Clearly define an efficient flow of Material in the containment area, avoiding the mixing of defective Materials with approved Materials (define areas for the entry and exit of Materials).

Note: If the Supplier enters the controlled shipping process, Level I or II, they may be suspended for new business until the process is concluded.

4.2.4.5 Identification Tag

The Supplier must identify with an identification tag, each of the packages shipped with products under controlled shipment.

Note: Inform the name of the inspectors authorized to conduct the final release and sign the identification tag.

4.2.4.6 Submitting results

Records of these inspections must be maintained and the Supplier must submit the Controlled Shipping Data Sheet weekly.

4.2.4.7 Controlled Shipping Exit Criteria

The period to remain under this regime is subject to the criteria listed below:

- No recurrence of Non-Compliant Material for a minimum period of 60 days after the implementation of the action plan.
- Evidence that a complete problem-solving process was used, that the root cause of the problem was discovered, and that corrective actions were implemented and validated.
- The Supplier must remain in controlled shipping until receiving written authorization from Tupy to exit this process.
- Statistical Process Control must be used, when appropriate, to confirm the stability and capability of the process for 60 days after implementation of the corrective action plan.

4.3. LESSONS LEARNED

In the event of a Customer Complaint for a warranty issue involving Tupy Suppliers, Tupy may share lessons learned information with other Suppliers in the same industry that originated the complaint, once deemed applicable, in a critical analysis.

The Supplier must collect information resulting from experience, both from previous and ongoing projects (for example, field and production area failures, project performance, product safety), and apply it as lessons learned in new projects and products in development, its production operations and its supply chain.

4.4. PERFORMANCE MONITORING

4.4.1. Supplier Quality Index - SQI

The Supplier Quality Index –SQI, is evaluated according to the Material or Service Quality Index, Delivery Quality Index, Commercial Posture Index and Quality System Index, and the Supplier is notified via email.

The monitoring carried out monthly through the Quality Index, applies to suppliers of direct materials, services performed at Tupy parts, critical services with potential for line stoppage, and services related to the health and well-being of their employees.

For scrap suppliers, the quality metric is based on the percentage of materials delivered within specifications.



Formula to calculate the SQI of suppliers of Productive Products and Services

$$SQI = (40\% \times MQI \text{ or } IQS) + (20\% \times DQI) + (20\% \times CPI) + (20\% \times QSI)$$

Formula to calculate the IQF of Non-Productive Service providers

$$SQI = (70\% \times MQI) + (10\% \times CPI) + (20\% \times QSI)$$

Formula to calculate the quality index of scrap metal suppliers

$$QI = 100\% - (\sum \text{Non-conforming deliveries Ton}) / (\sum \text{Deliveries Ton})$$

4.4.2. Quality Goals

The Supplier must establish a continuous improvement process in order to achieve zero quality defects in the delivered products. The minimum performance level accepted by Tupy is 80%.

Supplier Classification		
Classification	IQF	IQF Classification
Excellent Supplier	$94 \leq IQF \leq 100$	+A
Reliable Supplier	$90 \leq IQF < 94$	A
Acceptable Supplier	$80 \leq IQF < 90$	B
Does Not Meet Expectations	$IQF < 80$	C

4.4.3. Delivery times

The Supplier must establish a system that allows 100% delivery performance within the required delivery time.

Note: The Supplier will not be penalized in the Delivery Quality Index - DQI for discrepancies in relation to the delivery of items under development, but it is expected that the products are delivered within the agreed deadlines

4.4.4. Criteria for Supplier Development

Supplier performance (SQI) is evaluated monthly. Suppliers with monthly performance < 80 are eligible for a Corrective Action Request.

MONTHLY SQI	SQI CLASSIFICATION		CRITERIA FOR CORRECTIVE ACTION
$94 \leq IQF \leq 100$	A+	EXCELLENT	<ul style="list-style-type: none"> Possibility of continuous improvement actions request
$90 \leq IQF < 94$	A	RELIABLE	<ul style="list-style-type: none"> Possibility of calling a meeting in Tupy Possibility of corrective action request Possibility of an action plan request
$80 \leq IQF < 90$	B	IMPROVEMENT OPORTUNITY	

IQF < 80	C	DOES NOT MEET EXPECTATIONS	<ul style="list-style-type: none"> Start of performance recovery or disqualification process in accordance with LPS flow
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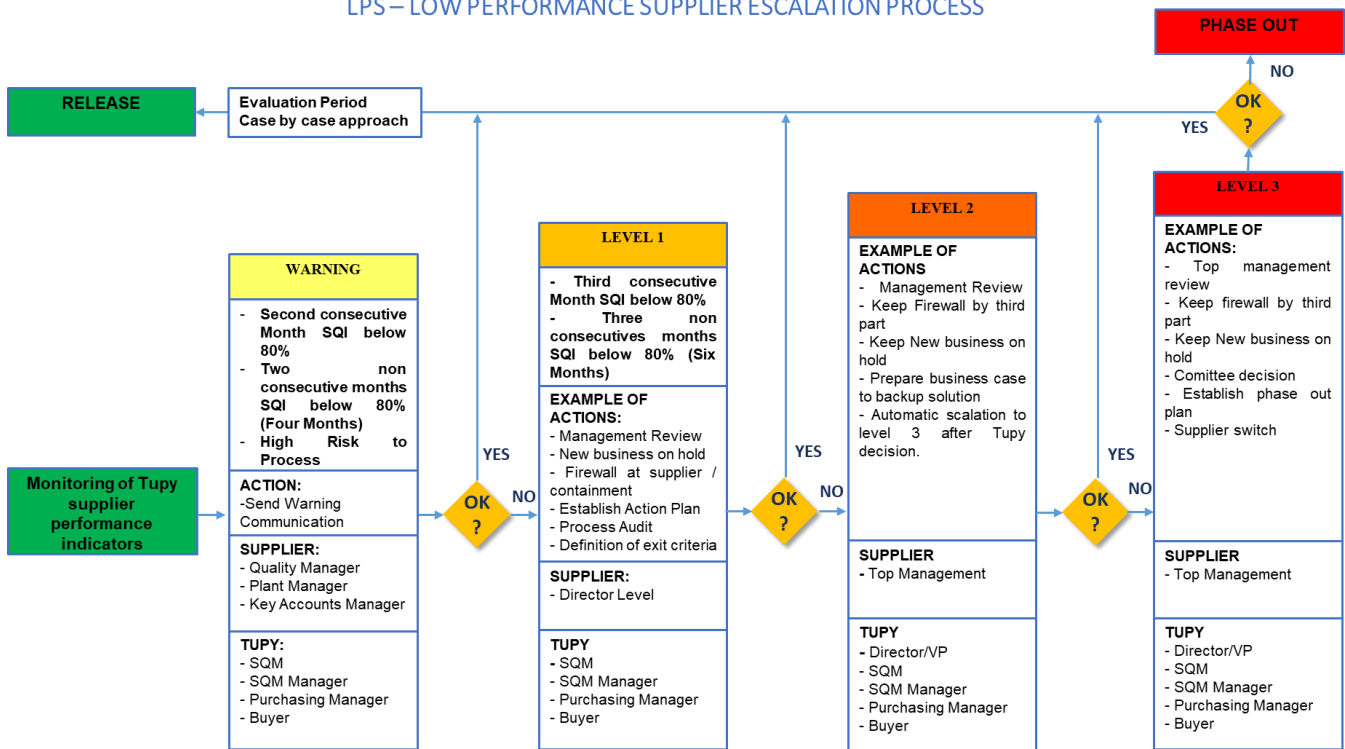
Note 1: The criteria described above can be applied, regardless of the monthly performance result, to:

- Inadequate response to the Product Approval Process – PPAP
- Inadequate response to the Corrective Action Request Process
- Lack of response or inadequate response by the Supplier to Tupy's QMS Requirements, described in this Manual

4.4.5. Supplier Performance Recovery or Disqualification Process

If the Supplier presents a monthly performance level <80% unless otherwise stated in the contract), the following criteria will be adopted to implement the improvement plan, until the Suppliers are disqualified:

LPS – LOW PERFORMANCE SUPPLIER ESCALATION PROCESS



After the Supplier enters Level 1 of the LPS flow (Low Performing Supplier), the supplier's multifunctional team, with the support of Tupy, will define the actions to recover performance. The minimum exit criteria is 3 consecutive months above 80%, which may be postponed by Tupy Supplier Development team if there is instability or ongoing actions.



5. DEVELOPMENT OF THE SUPPLIER QUALITY MANAGEMENT SYSTEM

The development, implementation and improvement of a Supplier Quality Management System should consider:

- a) Compliance with ISO9001 through Second Party Audits
- b) ISO9001 Certification by Third Accredited Party
- c) ISO9001 Certification in compliance with Specific Client Requirements through Second Party Audits.
- d) ISO9001 Certification in compliance with IATF16949 through Second Party Audits.
- e) IATF 16949 Certification by Accredited Third Party (Applicable only to automotive Suppliers).

The Supplier must apply the same criteria to its Suppliers.

For Calibration Service Providers, they must meet the requirements defined in the ISO/IEC 17025 Standard.

5.1. RECOMMENDATIONS FOR THE DEVELOPMENT OF THE QUALITY MANAGEMENT SYSTEM

For the development of their Quality Management System, Suppliers are recommended to use the following AIAG Manuals and Management Systems in the most recent versions:

- FMEA Manual - Potential Failure Mode and Effect Analysis
- APQP Manual - Advanced Product Quality Planning
- MSA Manual - Measurement Systems Analysis
- SPC Manual - Statistical Process Control
- PPAP Manual - Production Part Approval Process

5.2. SUPPLIER QUALITY STRUCTURE

The Supplier must have a Quality organizational structure that guarantees the satisfaction of Tupy's demands and needs and that allows it to supply products with the desired quality, quantity and punctuality.

6. RESPONSIBILITIES OF SUPPLIERS

6.1. MANUFACTURING PROCESS MONITORING

The Supplier must monitor the performance of its manufacturing processes, using graphs and/or applicable indicators such as performance, productivity, lead time, etc. This monitoring will be verified through process audits carried out by Tupy, when necessary.

6.2. CONTINUOUS IMPROVEMENT

The Supplier must use continuous improvement methods, such as:

- 6 sigma - DMAIC
- Failure mode and effect analysis (FMEA)
- Statistical techniques (SPC - Statistical Process Control)
- Analysis and problem-solving methods (MASP, 8D's, Ishikawa), etc.

6.3. CONFIDENTIALITY

The Supplier is committed to maintain the confidentiality of the information related to the contracted services, technical information, patentable or not, and other data related to the work analyzed, executed or accompanied, during and after the validity of this convention, on the penalties of the legislation applicable to the matter.

The parties may not, directly or indirectly, disclose or facilitate third parties or use outside the company, during or after the validity of this agreement, any information obtained by any form of communication, direct or indirect, established between the parties, without the prior written authorization of the Coordinator indicated by the parties.

6.4. CONTINGENCY PLANS

Suppliers must identify the risks that impact supply and have Contingency Plans (e.g., alternative manufacturing, packaging, transportation, use of third-party capacity in cases of power outage, failures in critical equipment and product returns, etc.) with the purpose of ensuring the supply of products and/or services in emergency situations.

6.5. CHANGE OF APPROVED PRODUCT AND/OR PROCESS SPECIFICATIONS

Modifications in the manufacturing process, product design, components, packaging, subcontractors or changes in the manufacturing location of previously approved products must follow the recommendations of the most recent version of the PPAP Manual and/or as defined by Tupy in section 3.1 of this Manual.

No technical modifications are allowed without prior consent by Tupy. The Supplier must inform the Supplier Development Department and the Tupy Technical Department of any modification in the manufacturing process in relation to the approved one, when this means any change in the performance of the product supplied at Tupy. For this, the Supplier must request and complete the Deviation Request form.

6.6. SOCIAL RESPONSIBILITY

Tupy expects its Suppliers to have a minimum standard of social responsibility in accordance with applicable legislation, and its service is a mandatory requirement of all Tupy's businesses, covering the following aspects:

a) Respect for employees

The Supplier must always act in accordance with all labor laws applicable to its activity, including those related to the free choice of employment, working hours and working hours limits (regulated and overtime), freedom of association for its employees, as well as maintain salary and benefit levels that meet the basic needs of its employees. Tupy will not maintain a commercial relationship with any entity that uses forced or slave labor, or similar.

b) Maintain a safe and healthy workplace

The Supplier must maintain a safe and healthy work environment, without harassment tolerance (moral and sexual), discrimination (race, color, religion, sex, age or physical condition), and encouraging creativity and enthusiasm in accordance with applicable health and safety legislation.

c) Environmental protection

The Supplier must always carry out its activities in accordance with applicable environmental laws and regulations, avoiding waste in any form, preventing pollution and energy conservation. We encourage the pursuit of external verification of their environmental performance, for example, ISO 14001 certification.

d) Safety in the supply of products and services

The Supplier shall apply all safety measures in the minimum reasonable conditions to the design, execution and supply of products and/or services. It is mandatory to report any deviation related to the safety of a product and/or service offered to Tupy.

6.7. BUSINESS CONDUCT

a) Gifts, favors and entertainment

Gifts, commissions, advantages and favors, whose value and/or circumstances may raise suspicion of any undue favor, should not be offered or accepted, except for courtesies that are mere courtesy in the relationship, such as business and non-personal dinners and institutional gifts, such as pens, t-shirts, caps, key chains etc. It is not allowed to influence the choice of a process through undue favoring (discrepancy in Quality and price criteria of products and/or services).

b) Fair and honest trading

The exchange of information, during negotiations prior to delivery, must be accurate and comply with all applicable laws (including those relating to competition and unfair practices).

c) Business relationship

The practice of the behaviors described above contributes significantly to the commercial relations with Tupy, creating an ethical, respectful and dignified environment for everyone and for society.

Environmental responsibility

Tupy expects the Supplier to support our efforts to promote awareness of environmental aspects and impacts, both on its own businesses and on Tupy. This must be demonstrated by a proper management policy and an environmental program.

The supplier's responsibilities are:

- Observe and comply with current environmental legislation and its requirements;
- Keep updated the authorizations or licenses required by environmental agencies (operating license, transport license, emergency plans, etc.) necessary for the supply of products and/or services to Tupy;
- Commitment to sustainable development, prevention of pollution and conscious consumption of natural resources;
- Keep environmental documentation always up to date and available to Tupy, when necessary;
- Have a Management team responsible for compliance with legal requirements to prevent government interventions that may lead to interruptions in the supply and/or delivery of products to Tupy.

6.8. SAFETY AND ENVIRONMENTAL REQUIREMENTS FOR THE PRODUCT

Tupy requires that all products and materials be delivered in accordance with all current legal regulations, especially those applicable to the environment, health and safety, including those related to controlled products, restricted substances, toxics and hazardous materials (proper handling, recycling, hazardous material disposal, operating license, extraction, transport etc.).

Suppliers must comply with all necessary process regulations in their own country and the finished product must comply with the governmental, environmental and safety regulations of the destination country.

6.9. HAZARDOUS MATERIALS AND CONTROLLED PRODUCTS

When delivering hazardous materials, the regulations regarding packaging, identification and transport must be observed.

Only chemical products whose Material Safety Data Sheets are in accordance with the Global Harmonized System and have been previously approved by Tupy's environment, safety and occupational health department, may be delivered.

The supplier must notify Tupy in advance in writing of the modifications made in materials, compositions and ingredients and receive Tupy's approval prior to shipment for production.

Before and during the shipment of the Hazardous Materials and Products, Supplier must provide Tupy and Carriers with written notices, including appropriate labels on the products, containers and packaging, along with all special handling instructions, safety measures and precautions, which may be necessary to comply with applicable regulations as well as all applicable legal requirements to avoid accidents and damage during handling, transport, processing, use or disposal.

Hazardous products must only be transported by means of transport authorized by the competent authorities and must have the required licenses for its transportation.

6.10. CERTIFICATION UPDATES

It is the Supplier's responsibility to keep Tupy informed about the updated certifications of its Quality, Safety and Environment Management System.

Once the validity of the certification has expired, and if no updates are received, the certificates will be considered invalid which, depending on the impact of the product supplied to Tupy, will impede the acquisition of the Material.

Suppliers with expired ISO 9001 certification will be considered non-compliant and, if they do not provide the updated certificate, supply may be suspended.

6.11. ENVIRONMENTAL LICENSE

It is a mandatory requirement for the supply of any product, productive service or transport of hazardous materials that the supplier has an Environmental License applicable to its activity, which must be kept up to date in accordance with the applicable law of its country. The Supplier must submit the Environmental License related to its updated activity or the protocol for requesting renewal upon expiration to Tupy.

It is the Supplier's responsibility to send Tupy the updated Environmental License for its activity or the protocol requesting its renewal upon expiration.

6.12. LOGISTICS COMMITMENTS WITH TUPY

6.12 Logistical commitments:

It is mandatory to indicate the Purchase Order number on your invoice. The Supplier must respect the quantities and deadlines agreed in the Purchase Orders, through the Supplier Portal.

6.13 Logistic incidents:

Any logistical incidents will be considered in the Supplier performance analysis, positively or negatively affecting future purchases.

6.13. WASTE

All Materials and products, owned or subcontracted by the Supplier, entered into the Tupy facilities, must be discarded by the Supplier, in accordance with applicable regulations.

The Supplier must comply with all Tupy environmental rules and regulations. All waste arising from any work carried out at Tupy must be treated in accordance with internal procedures related to Waste Management. The companies responsible for the transport and final disposal of waste must be authorized, and follow all current legislation and dispose of waste in accordance with applicable legislation.

The companies responsible for the transportation and final disposal of waste must be authorized, follow all current legislation and dispose of the waste in accordance with the applicable legislation.

The companies responsible for waste disposal must issue the Final Destination Certificate and send it to Tupy Waste Management, along with the Waste Transport Manifesto.

7. CUSTOMER REQUIREMENTS



The need to meet Customer Specific Requirements is highlighted to Suppliers, where the same criteria must be applied to sub-Suppliers.















The Supplier will be subject to demonstrating compliance with these requirements, punctually or through the VDA Process Audit 6.3.

















Note: In case of doubt, to know the Customer Requirements that apply according to the product and/or service they provide, please contact Tupy Supplier Management

Brazil: gestaofornecedores@tupy.com.br

Mexico: gestion.Proveedores@tupy.com.mx

Cliente	Unidad Tupy	CSR – Requisitos Especificos de Cliente
Requisitos Minimos Automotrices	Brasil / México	 Minimum-Automotive-Quality-Management
Caterpillar	Brasil / México	 Caterpillar - Supplier Quality Management
Cummins	Brasil / México	 Cummins Inc.-Supplier Handbook
Stellantis	Brasil / México	 QUALITY REQUIREMENTS FOR SUPPLIERS
DAF	Brasil / México	 DAF_PACCAR - SQRM for suppliers
Bosch	Brasil	 Bosch-supplier-quality-requirements.pdf

FCA (Fiat Chrysler Automotive)	Brasil	  FCA-CSR-EMEA_LAT Carta Requisitos AM_Regions-202103Especificos Provider:
Ford	Brasil / México	 Ford_IATF_CSR.pdf
GM	Brasil	  IATF-16949-GM-CSR Carta de -Aug-2023.pdf Esclarecimentos GM
Groupe PSA	Brasil	 Groupe_PSA_CSR-IA TF16949_May2021_V
Honda	Brasil	 Honda - SQM.pdf
Hitachi	Brasil	 Hitachi-Chassis Brakes SQAM April 2
Hyundai	Brasil	 Customer Specific Requirements Manu
Iveco	Brasil	 IVECO_GROUP_CSR _09052022.pdf
John Deere	Brasil / México	 JDS-G223 - Supplier Quality Manual - Jo
Linamar	Brasil / Mexico	 XR-12-C03-01-15-Su pplier-Quality-Manu
MANN	Brasil	 CVS10 (Grupo Traton - VW, MAN e
Mercedes Benz	Brasil	 Mercedes Benz - Customer Specific R

MWM	Brasil	 MN-7400.1006 - Manual de Fornecir
Musashi	Brasil	 Manual - Musashi v5.docx
Paccar	México / Brasil	 DAF_PACCAR - SQRM for suppliers
Randon	Brasil	 Manual_de_Requisi tos_para_Fornecido
Renault	Brasil	 CSR-RG_RENAULT_ GROUP-2023_V3.pdf
Scania	Brasil	 STD3868 rev31 Scania.pdf  CVS10 (Grupo Traton - VW, MAN e
Volvo	Brasil	 VOLVO - supply-partner-qual
VW	Brasil	  Volkswagen-Group Formula_Q_concret -Customer-Specific-la_6ed_portuguese -  Formel_Q_Capabilit y_Appendix_5.0_202  Formel_Q_Capabilit y_9.0_2022_12_ONE-  CVS10 (Grupo Traton - VW, MAN e
Nelson	Brasil	 Manual Qualidade Fornecedores_rev_10
Navistar	México	 Navistar MWM - Requisitos Especifico
ZF	Brasil	 QD83-2018 -- English - German_20

7.1. QSB

Material Suppliers with direct product application for GM and FIAT clients must practice the GM QSB (Quality Systems Basics) and specific requirements.

7.2. REQUIREMENT FOR SAFETY FEATURES

In the event that Tupy Product Engineering (Part Drawings) specifies Safety Characteristics, which imply a risk to the safety or health of people, these characteristics will be communicated to the Supplier.

The Supplier must identify these characteristics in the control documentation of its processes and must meet the corresponding legal and regulatory requirements.

7.3. PRODUCT SAFETY & CONFORMITY REPRESENTATIVE (PSCR) – VW

The Volkswagen Group requires a Management function defined as Product Safety & Conformity Representative (PSCR), as well as the implementation of organizational and technical measures (Risk Management System) to

This function applies to components whose final use implies a risk to the safety or health of people.

Currently the products manufactured by Tupy are not classified as components that imply a safety or health risk; In the event that our Clients, change the classification of our products, the PSCR function or the requirements defined in 4.4.1.2 of the IATF, must be attended to by our Suppliers.

Changes to this requirement will be notified through this Supplier Manual or Purchase Orders.

7.4. CONFLICT MINERALS

Tupy is concerned about the origin of the mineral used in the manufacture of Tin. These minerals must not be obtained in countries considered conflict zones, especially the Congo. The Tupy's Tin Supplier, declares to be aware of this restriction and that Tin supplied to Tupy does not come from conflict zones. This information can be verified in subsequent audits.

7.5. RESTRICTED SUBSTANCE MANAGEMENT STANDARD

Suppliers of Materials with direct application in products for the Ford Customer must comply with the latest version of the Ford Restricted Substance Management Standard – WSSM99P9999-A1. The IMDS report must be included.

7.6. RECORD RETENTION

Control of records must satisfy legal, regulatory, organizational and Client requirements. They must be retained in most cases for the period of time that the product is active in accordance with production and service requirements, plus one calendar year unless otherwise specified by the Customer.

8. GLOSSARY

Corrective Action - CAR (Corrective Action Request)

It is the action taken to eliminate the causes of existing Non-Conformities and/or prevent recurrences.

Preventive Action

It is the action taken to eliminate the causes of potential Non-Conformities or prevent their occurrence.

Environment

These are all conditions that affect the manufacture and quality of a part or product. Environment may vary for each plant, but generally includes: cleanliness, lighting, noise and safety risks related to storage activities (cleaning or 5S program).

Failure Mode and Effects Analysis (FMEA)

It is a method to identify potential problems in processes, to reduce or eliminate the effects of product failures.

Audit

It is a sample-based on-site verification activity, used to determine the effective implementation of a Supplier Quality Management System.

Assessment

It is a process in which a critical analysis of the documentation is carried out, based on an Audit at the Supplier's facility and the issuance of a report. There is also the self-assessment, where the analysis process is carried out by the Supplier.

Benchmarking

It is a technique used to determine "best" practices for a particular process or product.

Calibration

Compares the values obtained by inspection, measurement or testing equipment against measurement standards traceable to international or national measurement standards.

Capability

It is the way to evaluate whether a certain manufacturing process is capable of meeting a certain specification. Cp and Cpk are the index that measure capacity. See Initial Process Studies.

Special features

They are product characteristics or manufacturing process parameters, designated by the Customer or defined by the Supplier, that may affect the safety or compliance with regulations, function and performance of the product.

Parts Issuance Certificate (PSW)

It is the guarantee that the Supplier issues that the product supplied meets the requirements established by the Client. It is considered a legal document and is supported by PPAP information.

Components

Any product that is assembled on the Tupy product. Example: seal, valve guide, etc.

Statistical Process Control (SPC)

It is a set of statistical tools used to monitor and control processes, and identify sources of variation.

Supplier development

It refers to all activities defined to improve the performance of the Supplier Quality System.

Process Flow Diagram

It is the description of the sequence of operations in the manufacturing process of a given product, from the receipt of raw materials until their shipment.



Packaging

These are materials used to protect the product during handling. Transport and/or storage.

Air Emissions:

Particles, dust, gases, which are emitted into the environment.

Initial Process Studies

They are short-term statistical studies of one or more process characteristics to determine the capability level or initial performance of the process.

R&R studies

It is a study that assesses the interaction between the measuring instrument, the operator and the environment. The acronym R&R stands, mean repeatability and reproducibility.

SDM - Supplier Development Management

Multifunctional group, whose function is to evaluate and develop new items and suppliers, products and services.

Laboratories

Installation for chemical, physical or dimensional testing.

Qualified / Accredited Laboratory

Installation approved by an accredited third party in accordance with ISO / IEC 17025.

Material

Raw material, process material or components.

Non-conforming material

Product or Material that does not meet Tupy's or customer's specifications.

Non-conformity

It is a failure of Tupy's or Customer's specifications.

Defects per Million Opportunities (DPMO)

Method to describe the performance of a process based on the number of defects found. It is the relationship between the quantity of non-conforming material and the quantity of inspected material.

Corrective Action Plan

A document that describes the actions to be implemented, to correct a Non-Conformity or Quality problem of a process, Material or Service, appointing responsibilities and dates.

Control Plan

It is a description of the controls used in production processes, to monitor and control the product or process variables that impact the quality of the final product.

Reaction Plan

Immediate action to contain a Non-Conformity in a Process, Material or Service.

Quality Records



It is documented evidence that the processes were conducted in accordance with the Quality Management System documentation (e.g., inspection and test results, calibration data) and results records.

Regulation

Laws, Decrees, Resolutions, Instructions, Regulations prepared by the Government or Legislative Branch.

Repeatability

It is the variation of measurement results, obtained with an instrument or device, measured on the same part or characteristic, several times by the same operator.

Reproducibility

It is the variation of measurement results, obtained with an instrument or device, measured on the same part or characteristic, several times by different operators.

9. SUGGESTED LITERATURE

ABNT – BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS

Website: www.abnt.org.br

IQA - INSTITUTO DE QUALIDADE AUTOMOTIVA

Website: www.iqa.org.br

AIAG - AUTOMOTIVE INDUSTRY ACTION GROUP

Website: www.aiag.org

ISO9001: 2015 - Quality Management Systems

IATF16949: 2016 - Quality Management Systems

ISO14001: 2015 - Environmental Management Systems

ISO / IEC 17025: 2017 - Management System for Test and Calibration Laboratories

NOM-018 STP 2015

NOM-144 Semarnat 2017

ISPM-15 International Standard for Phytosanitary Measures

FMEA - Potential Failure Mode and Effect Analysis;

APQP - Advanced Product Quality Planning;

MSA - Measurement Systems Analysis;

SPC - Statistical Process Control;

PPAP - Production Part Approval Process.

10. CHANGES

Rev.	Alteration	Date
0	Formulation	August / 2021
1	2.2 Supply Capacity Analysis	July / 2022



	<p>2.8.1 Included “Distributors of suppliers of raw materials and process materials must have ISO9001 or IATF16949 accreditation of their sources, certified by an Accredited Third-Party”.</p> <p>2.8.1.2 Included “However, Tupy also requires that its Automotive Suppliers have ISO 9001 / IATF 16949 certification. Certifications ISO9001 / IATF16949 can be requested by Tupy from its Suppliers or Distributors.”</p> <p>2.10 Included (...) “legal and” (...), “and requirement special characteristics about product and process are” about customer ppecific requirements.</p> <p>7 Updated the name of Stellantis supplier</p> <p>7.3 Included “Changes to this requirement will be notified through this Supplier Manual or Purchase Orders.”</p>	
2	<p>Complete revision of the manual</p> <p>The address of Unidat Betim and Unidat Aveiro is updated in 1.4</p> <p>The supplier pre-selection process is updated in 2.2.</p> <p>The electronic address of the Nimbi platform is updated in 2.3.</p> <p>The requirements for non-accredited laboratories are updated in 2.7.3</p> <p>The supplier's production capacity audit and evaluation process is updated in 2.7.4.</p> <p>The applicability of PPAP is updated in 3.1.</p> <p>The APQP documentation requirements applicable to PPAP are updated in 3.1.2.</p> <p>The material safety risk is included in 4.1.7, such as the case of Non-Conformity issuance.</p> <p>The lessons learned text is updated in 4.3.</p> <p>The supplier monitoring process is updated in 4.4.1, and the formulas for calculating IQF are described according to the type of supply.</p> <p>The IQF values for the Reliable and Excellent Supplier Classifications are updated in 4.4.2 (98 to 94)</p> <p>Criteria table for supplier development and monthly IQF qualifications updated in 4.4.4</p> <p>The performance recovery or supplier disabling process is updated in 4.4.5</p> <p>The environmental responsibility requirement is updated in 6.7</p> <p>The Specific Customer Requirements are updated in 7</p>	May / 2024