INTERNAL

Supplier Logistics Manual

Autoneum BGEU

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Revision History

Revision	Date	Writer	Description
1	16.06.2015	K. Rehacek	Document creation
2	27.09.2016	K.Rehacek	Chapter 4.4 added; Chapter 5 updated, Supplier Contingency Plan template added; Chapter 6.1 update related to SRM; Abbreviations updated
3	17.10.2019	P.Polivka	Chapter 3.1.1, 3.1.2 updated; Chapter 10 updated

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1. Introduction

Autoneum, with its headquarters in Winterthur, Switzerland, is the globally leading producer of vehicle acoustics and thermal management systems. The company develops and manufactures components, modules and complete systems for interior and engine bay as well as heatshields and underbody shields.

Logistics procedures and processes are becoming an important factor in our competitive market. Their standardization and continuous improvement are a basis for a transparent logistics supply chain and all parties can benefit from them. This Logistics Supplier Manual is intended to inform you about our logistics requirements which all suppliers are expected to meet. Compliance with the content is crucial and may impact on future sourcing decisions.

The manual shall apply to all suppliers to the Autoneum Business Group European plants. It is part of the purchasing terms and conditions but in the case of any conflicting terms between the manual and the written agreement between the supplier and Autoneum, a common agreement will be made between the two parties. The remainder of the manual will remain in full force and effect.

2. Autoneum logistics principles

The increased individuality of our customers places a high expectation on our business. Therefore Autoneum are looking to implement the following lean logistics principles for our suppliers. Firstly we are looking to control and reduce lead times in order to increase flexibility. We aim to achieve this by managing a stable inbound transport flow (FCA), level schedule our suppliers, reduce transport time and increase its frequency. Essentially Autoneum are looking to manage smaller, more frequent lot sizes aligned to supplier schedules and standardized packaging.

Autoneum focus on the following principles:

1. Pull systems
2. Production and Supplier level schedules
3. FCA collection from suppliers of Autoneum defined quantities and collection times
4. Frequent, regular deliveries of smaller quantities
5. Packaging quantities & minimum order quantities based on defined inventory segmentation rules

Production and Supplier Level Scheduling

The objective of production level scheduling is to balance production volumes and mix by decoupling production orders and customer demand. It helps to avoid variability in the production schedule caused by fluctuations in customer demand. Level scheduling enables production to meet customer demand without holding large inventories or spare capacity. Inventories are limited to a controlled level, the bullwhip-effect is diminished or ideally avoided and lead times are shortened.

Ultimately the benefit is level supplier schedules giving a smooth supplier demand meeting Autoneums requirements. Suppliers are requested to alert Autoneum in the case of any shortages.

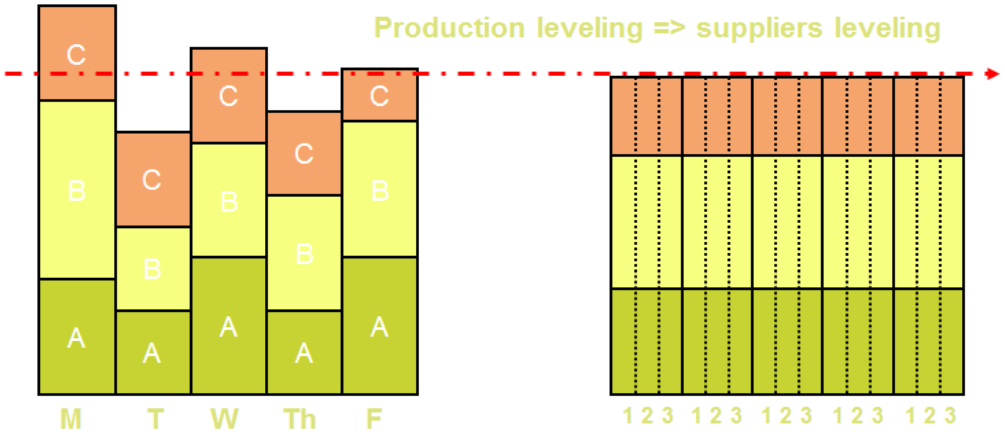


Figure 1. Production and Supplier Level Scheduling

3. Information flow

Good communication between a supplier and Autoneum is fundamental for successful business relationship. Suppliers must nominate a key logistic contact person with language skills equal to that of the corresponding Autoneum Plant or have a good understanding of both spoken and written English.

The key contact person must be reachable on working days between 8am and 5pm and at any time in case of emergencies. Any change of contact person must be communicated to Autoneum in advance by the supplier.

All suppliers are expected to supply Autoneum with a full list of out of hours contact details in case of emergency and escalation.

3.1. Exchange of Information and Data

3.1.1. EDI

Autoneum considers the use of EDI as a requirement of its suppliers. All suppliers are expected to use this form of communication and those who are not currently taking advantage of this form of information interchange will be strongly encouraged to do so.

Suppliers should use it to receive and transmit information such as delivery schedules and ASN's to Autoneum.

ASN needs to contain information about packaging.

In case of Expendable packaging:
Following number needs to be in ASN: 29000010

In case of Returnable packaging:
Contact plant PC&L to receive number for returnable packaging (example 52010000).

Suppliers who do not have existing EDI links to Autoneum but have the technical ability to do so, should establish an EDI system based on a schedule agreed with the Autoneum EDI Service and Support, edi.support@autoneum.com. For the electronic data interchange Autoneum uses the usual range of formats: EDIFACT, VDA, ODETTE, ANSI X12.

Additional information about EDI and message specifications can be found in the following appendices:

Appendix 1.Supplier_EDI_inquiry.docx (Template)

Appendix 2.EDIFACT INVRPT D.97A message spec.

Appendix 3.EDIFACT DELFOR D.99B message spec.

Appendix 4.VDA 4905 message spec.

Appendix 5.VDA 4913 message spec.

Appendix 6.ANSI X12 830 message spec.

Appendix 7.ANSI X12 856 message spec.

3.1.2. Web EDI

WebEDI is an internet-based information system for suppliers to communicate with Autoneum and can be used if suppliers do not possess the necessary infrastructure to establish a direct EDI link.

Autoneum standard WebEDI is accessible via the following internet address:

https://webedi.autoneum.com

The requirement for accessing the WebEDI platform is an existing internet connection as well as internet browser (e.g. Internet Explorer or Mozilla Firefox). In addition, suppliers need a WebEDI User-Account which they can obtain after completing the Supplier Data included in Appendix 8. WebEDI Supplier information letter and sending them back to webedi@autoneum.com.

After creation of your WebEDI account, a supplier receives an email with their login information and two manuals with detailed explanations of receiving delivery instructions and creating shipments.

If there is a technical problem with the WebEDI portal, the respective Autoneum Plants PC&L Department will get in contact with the internal IT department.

More details about WebEDI as well as working instructions are included in:

Appendix 8. WebEDI Supplier information letter

Appendix 9. WebEDI Delivery instructions process handbook

Appendix 10. WebEDI Shipment process handbook (direct delivery with packaging)

Appendix 11. WebEDI Shipment process handbook (direct delivery without packaging)

3.2. Scheduling system

Delivery schedule

Delivery schedules are transmitted by Autoneum on a weekly rolling basis. The specific date of releasing the delivery schedule allows the supplier sufficient time to prepare parts at takt time. Delivery schedules are intended to inform suppliers about current and future requirements based on single and cumulative quantities. The delivery schedule consists of 3 zones: Firm Zone, Trade off Zone (if applicable) and Forecast. Schedule horizon reflects Autoneum's customer schedules. All new releases replace all previous schedules.

Firm zone

Firm zone (also known as frozen or fixed horizon) means that the quantity and delivery dates are fixed in the respective delivery schedule for the agreed time period of the frozen horizon. Short frozen horizon brings transparency into the planning process and enables the supplier to react quickly and flexibly to short term demand changes.

Firm zone depends on the transportation lead time. It includes the transit time, the supplier preparation time and the number of days in the previous week since the schedule was released. It is equal to:

- 5 to 10 days for European Suppliers
- As long as the transport lead time is higher than 5 working days it will be added to the average 7 working days

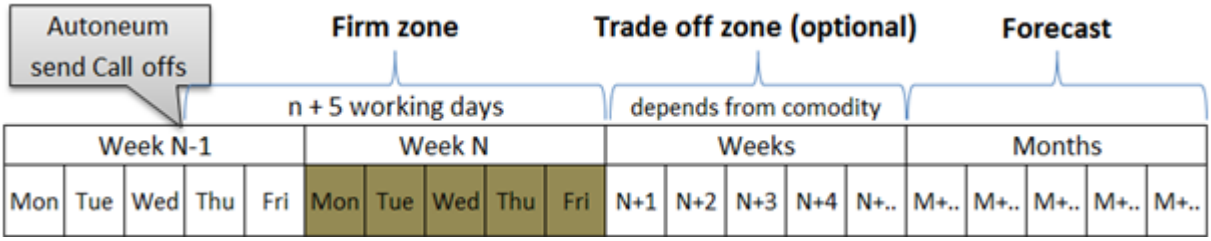


Figure 2. Firm, trade off zone and forecast

Example 1. European Suppliers
Autoneum releases a delivery schedule in week N-1 on Wednesday. Transport time does not exceed 5 days. In this case the firm zone includes 2 days of week N-1 (Thursday and Friday) and 5 days of week N. In total 7 days.

Example 2. Intercontinental suppliers
Firm zone of delivery from other intercontinent suppliers is equal to standard transport lead time (eg. from China 5 weeks) + 7 working days.

Trade off zone (optional)

Trade off zone is the legally binding authorization Autoneum gives to suppliers to purchase raw material. It is a part of the individual agreement with a supplier. In this period Autoneum accepts liability for material and production which has been based on the latest release.

Forecast

Material forecast is communicated to the suppliers through their weekly schedules. Forecast is the non-binding information for the supplier's planning purposes only.

Supplier capacity analysis regarding delivery schedules

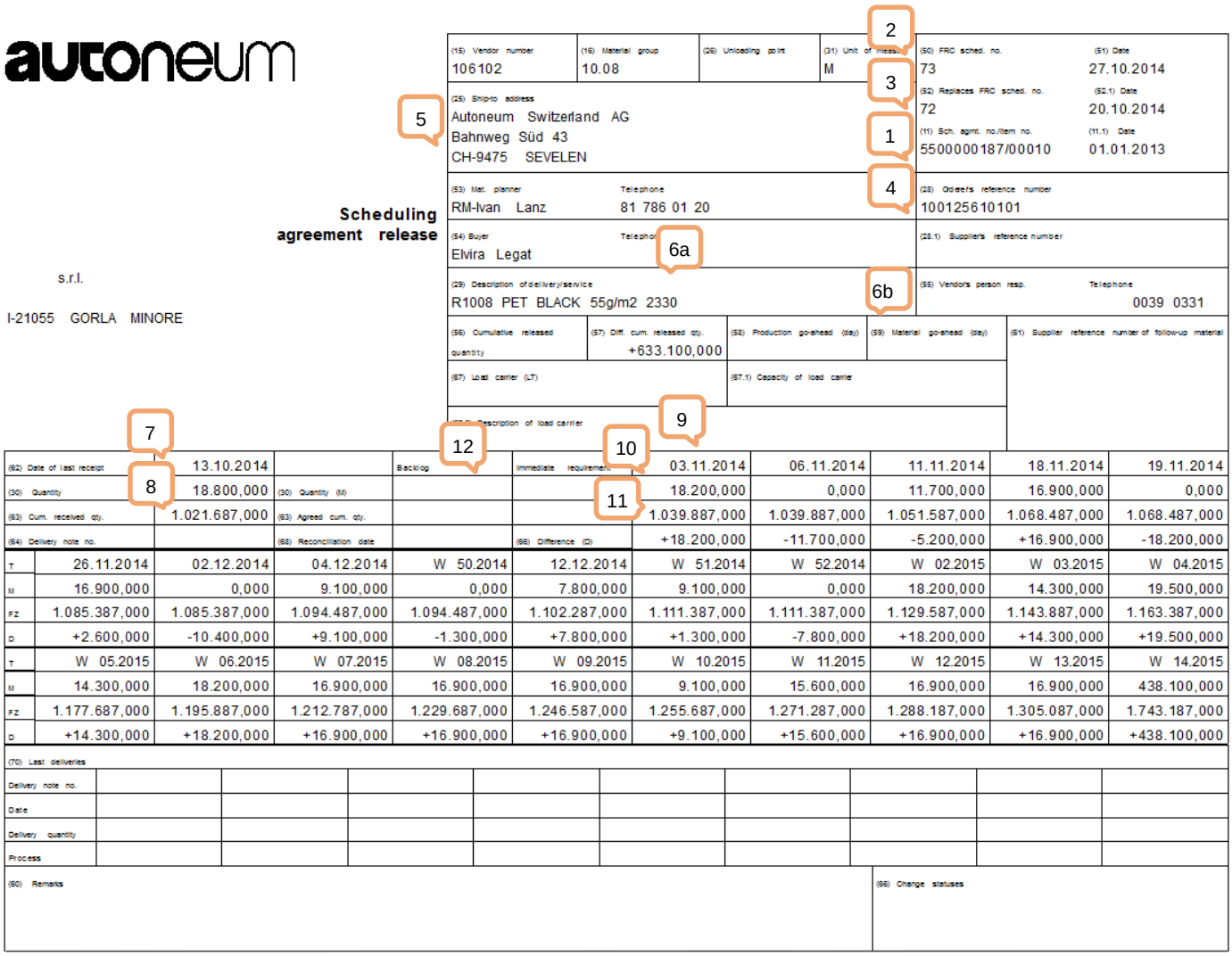
After receiving a delivery schedule the supplier is obliged to verify it. If no response is received within 24 hours of the schedule being released, Autoneum will take this as acceptance of the new release. If the supplier is unable to fulfill the schedule, they must advise the Autoneum Plant within 24 of their inability to meet the schedule. The supplier is obliged to provide Autoneum with an alternative arrangement and recovery plan.

If such a case arises the supplier must be able to provide the following information:

- The cause of the supply problem
- Production output capabilities for the parts(s) in backlog and their production plan (number of shifts/hours per working)

- Alternative production options (production lines and/or production schedule)
- Possibility of partial delivery
- Premium freight capabilities and timing
- Escalation of the problem within its company

If no mutual solution can be found, Autoneum expect the issue to be escalated within the suppliers organization. This is to protect the continuity of Autoneum's and our customers business.



Scheduling agreement release

s.r.l.

I-21055 GORLA MINORE

(15) Vendor number: 106102	(16) Material group: 10.08	(26) Unloading point	(31) Unit of measure: M		(50) FRC sched. no.: 73		(51) Date: 27.10.2014			
(25) Ship-to address: Autoneum Switzerland AG, Bahnweg Süd 43, CH-9475 SEVELEN					(52) Replaces FRC sched. no.: 72		(52.1) Date: 20.10.2014			
					(11) Sch. agmt. no./item no.: 5500000187/00010		(11.1) Date: 01.01.2013			
(53) Mat. planner: RM-Ivan Lanz	Telephone: 81 786 01 20				(28) Orderer's reference number: 100125610101					
(54) Buyer: Elvira Legat	Telephone				(28.1) Supplier's reference number					
(29) Description of delivery/service: R1008 PET BLACK 55g/m2 2330					(55) Vendor's person resp.		Telephone: 0039 0331			
(56) Cumulative released quantity	(57) Diff. cum. released qty.: +633.100,000		(58) Production go-ahead (day)		(59) Material go-ahead (day)		(61) Supplier reference number of follow-up material			
(67) Load carrier (LT)			(67.1) Capacity of load carrier							
(68) Description of load carrier										

(62) Date of last receipt	13.10.2014		Backlog	Immediate requirement	03.11.2014	06.11.2014	11.11.2014	18.11.2014	19.11.2014	
(30) Quantity	18.800,000	(30) Quantity (M)			18.200,000	0,000	11.700,000	16.900,000	0,000	
(63) Cum. received qty.	1.021.687,000	(63) Agreed cum. qty.			1.039.887,000	1.039.887,000	1.051.587,000	1.068.487,000	1.068.487,000	
(64) Delivery note no.		(68) Reconciliation date		(69) Difference (D)	+18.200,000	-11.700,000	-5.200,000	+16.900,000	-18.200,000	
T	26.11.2014	02.12.2014	04.12.2014	W 50.2014	12.12.2014	W 51.2014	W 52.2014	W 02.2015	W 03.2015	W 04.2015
M	16.900,000	0,000	9.100,000	0,000	7.800,000	9.100,000	0,000	18.200,000	14.300,000	19.500,000
FZ	1.085.387,000	1.085.387,000	1.094.487,000	1.094.487,000	1.102.287,000	1.111.387,000	1.111.387,000	1.129.587,000	1.143.887,000	1.163.387,000
D	+2.600,000	-10.400,000	+9.100,000	-1.300,000	+7.800,000	+1.300,000	-7.800,000	+18.200,000	+14.300,000	+19.500,000
T	W 05.2015	W 06.2015	W 07.2015	W 08.2015	W 09.2015	W 10.2015	W 11.2015	W 12.2015	W 13.2015	W 14.2015
M	14.300,000	18.200,000	16.900,000	16.900,000	16.900,000	9.100,000	15.600,000	16.900,000	16.900,000	438.100,000
FZ	1.177.687,000	1.195.887,000	1.212.787,000	1.229.687,000	1.246.587,000	1.255.687,000	1.271.287,000	1.288.187,000	1.305.087,000	1.743.187,000
D	+14.300,000	+18.200,000	+16.900,000	+16.900,000	+16.900,000	+9.100,000	+15.600,000	+16.900,000	+16.900,000	+438.100,000

(70) Last deliveries									
Delivery note no.									
Date									
Delivery quantity									
Process									

(60) Remarks	(66) Change statuses

Figure 3. Delivery schedule Example

1. Delivery schedule number
2. Current delivery schedule for the particular part number and release date. This shows how many delivery schedules for the same part number have been issued to date
3. Previous delivery schedule number
4. Autoneum part number
5. Delivery adress
6. a) Firm zone
   b) Trade off zone. At this date Autoneum pays the raw material costs for planned quantities in the case of cancelling the order
7. Last delivery received – date, quantity and number of the last delivery received at Autoneum

8. Cumulative delivered quantity. This is the quantity of parts received by Autoneum since beginning of the calendar year
9. Arrival date in the case of DAP or pick up date in case of FCA
10. Quantity to be delivered
11. Cumulative planned quantity
12. Delivery backlog – back order schedule which has not been delivered yet. The supplier must immediately provide Autoneum with recovery plan including quantities and delivery dates.

4. Transportation and shipping process

The supplier should ensure they use a rotation stock management system (FIFO)

In order to ensure fixed lead times as well as optimization of vehilces, Autoneum will control and organise all transportation.

4.1. Delivery Terms

The supplier and Autoneum will agree on delivery terms according to the specific requirements of the supply chain. The delivery terms will be defined between Purchasing and the Production Control and Logistics Department of the respective Autoneum Plant and the supplier.

Preferred options for Autoneum are:

- European suppliers: “FCA (named place)”

  All except chemicals, bulk, direct trade

- Consignment stock

  Aluminum, Syloware, oversee sourcing

Under FCA – Free Carrier terms, the supplier is responsible to handover the goods to the carrier named by the buyer at the agreed place. If delivery is agreed at the supplier location, the supplier is responsible for loading. The supplier is responsible for providing complete and correct shipping documentation which complies with all International Freight forwarding.

In the case of “FCA, named place”, Autoneum will nominate the Logistic Service Provider. The supplier will be informed by Autoneum accordingly.

4.2. Shipping process

As mentioned in Chapter 2, production and supplier level scheduling enables Autoneum to control collections and optimize truck utilisation.

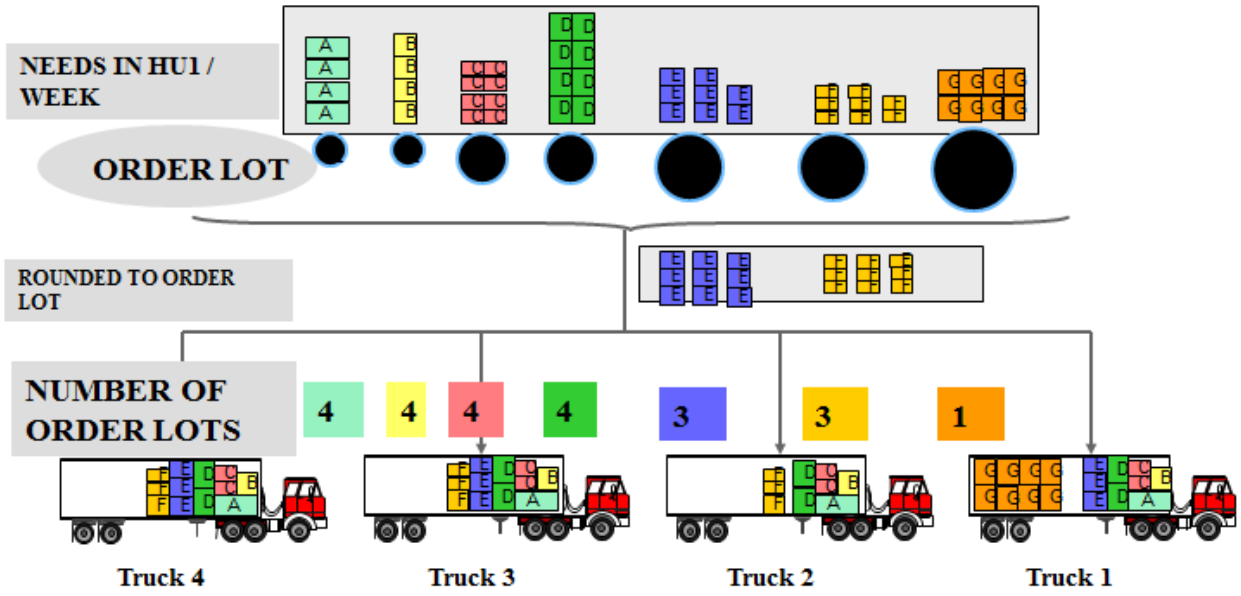


Figure 4. Order lot and transport planning

In the case of milk-runs organized by Autoneum, the Autoneum Scheduler will plan the vehicle volume required to accommodate the scheduled collection.

The supplier is required to prepare the load in line with the schedule release unless otherwise arranged with the Autoneum Plant.

In the case of an over delivery, the unscheduled parts will be rejected and shipped back at the suppliers cost. If there is any reason to ship outside of the scheduled quantity, authorization must be gained in writing from a representative of Autoneum prior to shipment taking place.

The delivery note must comply with the requirements of VDA / Odette/ Galia standard.

In order to improve the Autoneum receiving process, the supplier must release an electronic ASN using the existing direct EDI or Web EDI.

4.3. Shortages and emergency

4.3.1. Supplier responsibility

If the supplier is unable to fulfill the scheduled delivery, the supplier must inform Autoneum via telephone call immediately with a proposed recovery plan. This must then be confirmed in a written email to the Autoneum Plant contact.

In the case of a late delivery caused by the supplier, Autoneum reserves the rights to charge to the supplier all costs relating to any special transport that is required. The routing and transport timing must be agreed with the Autoneum Plant contact. The supplier must inform Autoneum as soon as the parts are dispatched via special transport.

Within 5 days of an incident occurring, the supplier must complete an 8D document giving full details of the issue, root cause analysis and corrective actions to ensure there is no repeat of the incident.

4.3.2. Autoneum responsibility

Autoneum takes responsibility for additional freight in the case of:

- none sufficient space available on the transport organized by Autoneum
- none collection because of delayed or cancelled transport within1 hour after the scheduled time

In this case the supplier is requested to contact the Autoneum Plant immediately to agree a new collection time or back-up transportation.

4.4. Deliveries before and during Autoneum or Supplier plant shutdown

The supplier is obliged to strictly respect delivery day and quantity according to the delivery schedule issued by Autoneum.

In case of shutdown of Autoneum plant like summer or end of the year break, supplier will be notified by mail about Autoneum opening time. This planning will be considered in the delivery schedule. No deliveries outside this schedule will be accepted and trucks will be returned.

During any shutdown of supplier plant, the supplier is obliged to assure that:

- In case of FCA deliveries:

The goods can be withdrawn during supplier shut down at any time. In special cases the supplier may use 3rd party logistic warehouse on his own cost. In this case supplier must agree with Autoneum the dates and temporary pick-up location.

- In case of DAP deliveries

Supplier must strictly respect delivery date and quantity according to the delivery schedule issued by Autoneum. If this requires 3rd party logistics involvement it must to be fully managed by supplier to strictly respect delivery schedule.

All logistic costs for warehousing and/or return of unauthorized excess/advance deliveries are to be paid by the supplier.

4.5. Truck loading and load securing

The Supplier must load the truck according to the schedule supplied by Autoneum, the transportation program (delivery and pick-up-timetable) and loading scheme (pallets and trucks).

Truck loading procedure:

- Unload your empty packaging
- Ensure all pallets are well cubed, flat to surface and level for safe loading
- Stack pallets for maximum space utilization
- Ensure all pallet labels are clearly visible, attached to short side of the stillage
- All pallets and containers with short edge facing out
- Ensure 100% side loading ability
- Respect the loading plan, if communicated
- All cargo has to be secured properly

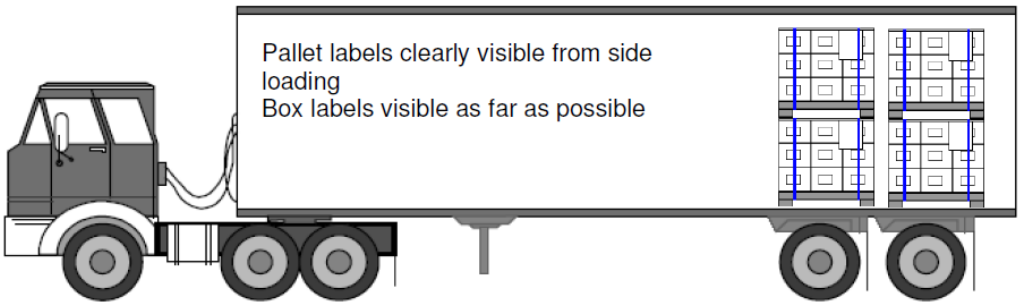


Figure 5.Load position on the truck

Mandatory transportation load safety regulations:

- Drivers must be trained in secure loading
- Supplier and driver are in charge of managing goods loading weight to ensure that the legal requirements regarding permissible maximum load on the axle(s) are respected
- Drivers must have enough equipment for securing the load
- Container has to be fixed with belts, bars and anti-slip pads
- Drivers must respect Autoneum safety rules (safety shoes, fluorescent jacket, gloves for truck preparation)

Legal documents required for travelling

According to specific country regulations, additional documents may be required such as:

- Delivery note,
- Certificate of Conformity,
- Forwarding order and customs papers.

5. Supplier Contingency Plan

The supplier is required to draw up and distribute a Supplier Contingency Plan within its organization and to Autoneum for the eventuality of disturbances affecting its logistic processes and the supplies of goods to Autoneum plants. It should explain how parts supplied to Autoneum are secured in case any disturbance occurs.

The organization shall prepare contingency plans to satisfy customer requirements in the event of an emergency such as:

- Relocation of tools and machinery
- Capacity problems
- Damage or delays in shipment
- Shortage of staff or means of transport
- Non-conformities
- Tool breakage
- Disturbances in suppliers from subcontractors
- IT problems
- Force majeure: flood, wind, hurricane, tornado, earth quake, explosion or similar catastrophe, hostilities, restraint of rulers or people, civil commotion, act of terrorism, strike, labour dispute, blockage or embargo, or any act of nature, fires, accident, epidemic or quarantine restrictions

These events may affect raw material supplies, production, transportation and distribution.

Detailed list of possible failures is included in the Supplier Contingency Plan Template - Appendix 16.

In case of any emergency the supplier is obliged to immediately contact Autoneum PC&L Manager.

6. Supplier evaluation

6.1. Supplier performance index (SPI)

Autoneum uses the Supplier Performance Index (SPI) to evaluate its supplier's performance. SPI consists of measurements in five specific areas P.R.I.D.E:

P – Product quality, Based on rejected material
R – Relationship, Financial status, Innovation capability
I – Integrity Quality System assessment of the Supplier
D – Delivery performance
E – Economic, Based on price trends

The vendor evaluation measured by Autoneum is interfaced to the Supplier SDS Portal.
SPI scores influence future business with suppliers.

More information about SDS can be found in Appendix 12.Supplier SDS Portal Website Tutorial.

D – Delivery performance

Delivery performance is a 4th SPI area. Autoneum expect its suppliers to achieve the level of 100 %.

Delivery performance is measured as misdeliveries per million (mpm). This indicator is defined as:

If DAP / DDP:

$$\text{Misdeliveries Per Million MPM} = \frac{\text{\# of lines delivered in the wrong quantity or at the wrong time}}{\text{\# of lines to be delivered}} \times 1.000.000$$

If FCA:

$$\text{Misdeliveries Per Million MPM} = \frac{\text{\# of lines delivered in the wrong quantity}}{\text{\# of lines to be delivered}} \times 1.000.000$$

The MPM target is 0.

Depending on the MPM achieved there are different measures to be implemented:

MPM	Measure	Performance
Level 1: MPM <499	Preventive measures	Best
Level 2: 500 < MPM < 1.999	Standard warning, via phone, email or fax	Good
Level 3: 2.000 < MPM < 4.999	Corrective action plan required	Medium
Level 4: 5.000 < MPM < 49.999	Autoneum written notice, request for improvement Official audit carried out	Low
Level 5: MPM > 50.000	Strategic intervention	Bad

The PRIDE Level score points are:

Level 1: 100
Level 2: 75
Level 3: 50
Level 4: 25
Level 5: 0

SDS will group and aggregate the PRIDE score on a monthly basis. The results and requested improvement measures will be communicated via the SDS Portal.

Poor delivery performance will lead the Autoneum PC&L Department to request an immediate MMOG/LE audit. Its scope is described in Chapter 6.3.

6.2. Logistic claims

In case of any nonconformity in reference to the Autoneum Supplier Manual, Autoneum will issue a Logistics Claim Report in accordance with the following categories:

Generic cause	Code	Description
L11.Packaging	11.1	Packaging (or pallet) not compliant with specifications
	11.2	Packaging damaged (handling or safety problem)
	11.3	Quantity per packaging not compliant with specifications
L12.Labelling	12.1	Noncompliant or missing label
	12.2	Label item mismatch(wrong parts)
L13. Delivery document	13.1	Delivery note illegible or unusable
	13.2	Delivery note missing
	13.3	Delivery note documentation incomplete or erroneous
L14. Quantity discrepancy	14.1	Discrepancy between delivery note and physical quantities
	14.2	Shortage due to wrong parts delivered
	14.3	No supplier alert after shortage
L15. Transport	15.1	Load not compliant with loading plan
	15.2	Noncompliant with safety instructions
L16. Non-respect of picking time-slot	16.1	Advance or delay with respect to picking time order

The minimum administrative cost of any logistic claim released is Eur 150.

6.3. MMOG/LE

Global Materials Management Operational Guidelines/Logistics Evaluation (MMOG/LE) is a supplier self-assessment and continuous improvement tool that increases materials management efficiency and accuracy while reducing costs from errors and waste.

Autoneum requests from its supplier to complete full or basic version of MMOG/LE. Using the guidelines, suppliers receive “A”, “B” or “C” (full version) or “ZA”, “ZB” or “ZC” (basic version) ratings based on their compliance. While deficiency in one or more critical areas automatically earns a “C” or “ZC” rating, the MMOG/LE guide automatically develops an action plan to allow suppliers to address deficiencies and drive continuous improvement.

All suppliers in existing business relationships with Autoneum are requested to carry out self-assessment ones a year. New suppliers evaluate themselves before entering a new business relationship with Autoneum but not later the first delivery.

All supplier must upload their MMOG/LE selfassestment in SDS Portal.

Control Panel => Supplier Control Panel => Attachments => MMOG/LE

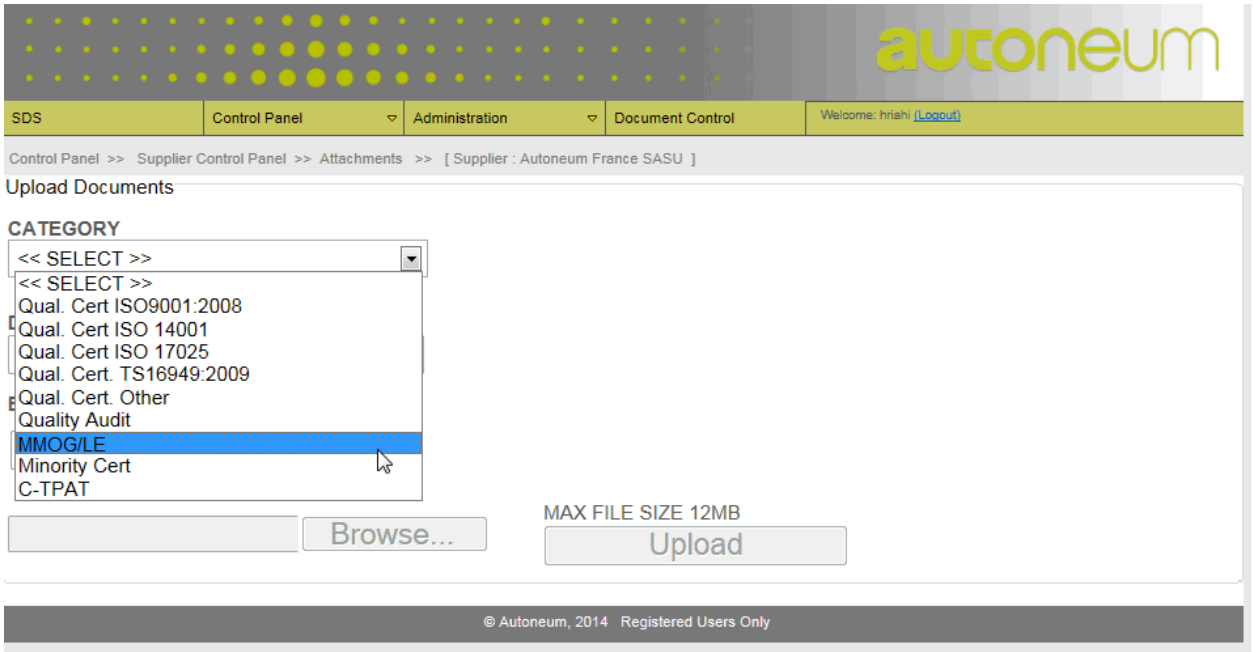


Figure 6. MMOGLE self-assesment upload into SDS

Suppliers not familiar with MMOG/LE should contact the appropriate Autoneum plant for assistance.
More details about MMOG/LE self-assesment can be found on:

http://www.aiag.org
http://www.odette.org

7. Sourcing

The supplier is requested to provide Autoneum Purchasing with a transparent logistic cost breakdown in the Purchasing Quotation Analysis Form (QAF), inluding:

- Part 6 of QAF: Packaging Cost – all logistics costs related to expendable or/and returnable packaging requested by Autoneum Advanced PC&L in the Logistic Data Sheet;

- Part 7 of QAF: Freight Cost - delivery frequency is requested according to the packaging quantity and MOQ matrix. They should include customs clearance costs in case it is the supplier responsibility defined by Incoterms.

In the case of special requirements for delivering the material via an external warehouse or consignment stock, it will be subject to a separate agreement with its cost tranparency.

It is required to outline in the QAF, the freight costs, even if mass production deliveries will be shipped as FCA.

As part of the Autoneum soucing process the supplier is expected respect all the conditions specified in Supplier Logistic Manual.

In the case of nomination of business the Supplier Logistic Manual is a binding agreement between the supplier and Autoneum.

Packaging density and MOQ definition

Autoneum PC&L Department defines the packaging density and MOQ based on inventory segmentation principles – value and volume as follow:

Part class	Qty / box	MOQ
A – 80%	30 min	1 day
B – 15%	hours	3 days
C – 5%	1 day	5 days

Figure 7. Packaging Quantity and MOQ

8. Start up and SLA

The following list gives the supplier an overview of the key logistics points which must be considered during development and ramp-up phase:

- Supplier Logistics Manual
- Delivery terms agreement
- Supplier Logistics Agreement (SLA)
- Logistic Data Sheet agreement
- Serial and back-up packaging in place
- Labeling
- EDI connection setup and testing / Web EDI
- Delivery schedule transmitted to the supplier and confirmation of its receipt

During start-up and phase-out, Autoneum expects increased flexibility from its suppliers. This requires a capacity planning process in order to be able to supply smaller volumes in a timely manner.

Supplier Logistics Agreement (SLA)

The Supplier Logistics Agreement is the contractual summary of logistics information necessary for correct operational procurement flow. SLA has to be agreed by Autoneum PC&L and the Supplier at least 3 months prior to SOP.

SLA is attached in Appendix 14.

9. Packaging

9.1. Planning and validation process

The supplier is obligated to proactively support and participate in the packaging definition.

The packaging planning process is outlines on the below flowchart

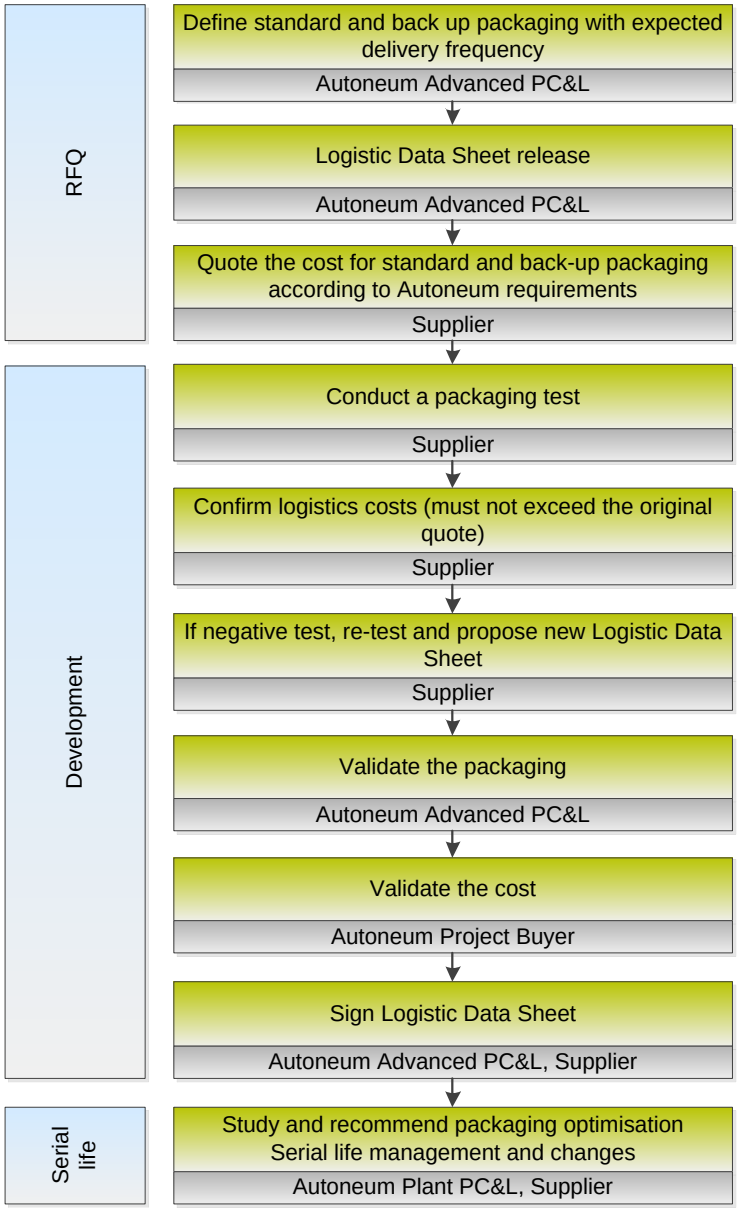


Figure 8. Packaging planning and validation process

RFQ Phase

Autoneum Advanced PC&L Engineer submits Logistic Data Sheet (more details see Chapter 9.3. LDS) including a including a standard and an emergency packaging concept according to requirements described in SLM appendix - Packaging standards - types and dimensions (see Appendix 13.). The supplier must consider these needs whilst quoting.

Development Phase

The supplier is responsible for conducting packaging trials, the results of which should be presented to Autoneum. After static packaging trials the supplier has to confirm the validity of the original packaging quote or whether it is possible to reduce it. It is not acceptable that the costs exceed the initial quote. If it turns out that the packaging concept needs to be changed, the supplier is obliged to send a new proposal using Logistic Data Sheet to his corresponding Advanced PC&L Engineer. Any change must be agreed and validated by both sides.

After successful static packaging tests, the packaging will be validated by the Autoneum PC&L Department. Following a static packaging test the supplier is obliged to launch a dynamic packaging trial.

After that an Autoneum Project Buyer validates the packaging costs. If the agreement is met, all above-mentioned parties and the supplier must sign the Logistic Data Sheet. The final agreement will take place at least 6 months prior to start of production. SQE agreement is done by PSW sign off.

As soon as the Logistic Data Sheet and packaging implemention date are agreed between Autoneum and the supplier, the supplier is obliged to use only this packaging. The delivery of parts with or without having completed the Logistic Data Sheet agreement, shall not exempt the supplier of his obligation to supply the goods without damage.

Serial life

Provided containers must always assure a maximum pack density. Container pack density optimization can be proposed by the supplier or corresponding Autoneum Plant PC&L Department and agreed and carried our with a common approach. The Logistic Data Sheet must be updated accordingly.

Engineering changes

When enginnering changes occur, the Autoneum Plant PC&L Department proposes the new packaging. The supplier is obliged to conduct packaging trials and communicate the results to Autoneum. If an agreement is made, the Logistics Data Sheet needs to be updated and signed by both parties.

9.1. Packaging definition chart

Packaging size is defined taking into consideration the commodity, component type, size, weight and daily consumption. The packaging size is driven by packaging standardization.

Packaging type – one way or returnable - is defined taking into consideration the distance and delivery frequency. Returnable packaging shall be used as and when it is cost effective. The distance will determine the selection criteria of foldable or not foldable packaging. The packaging type is driven by the cost.

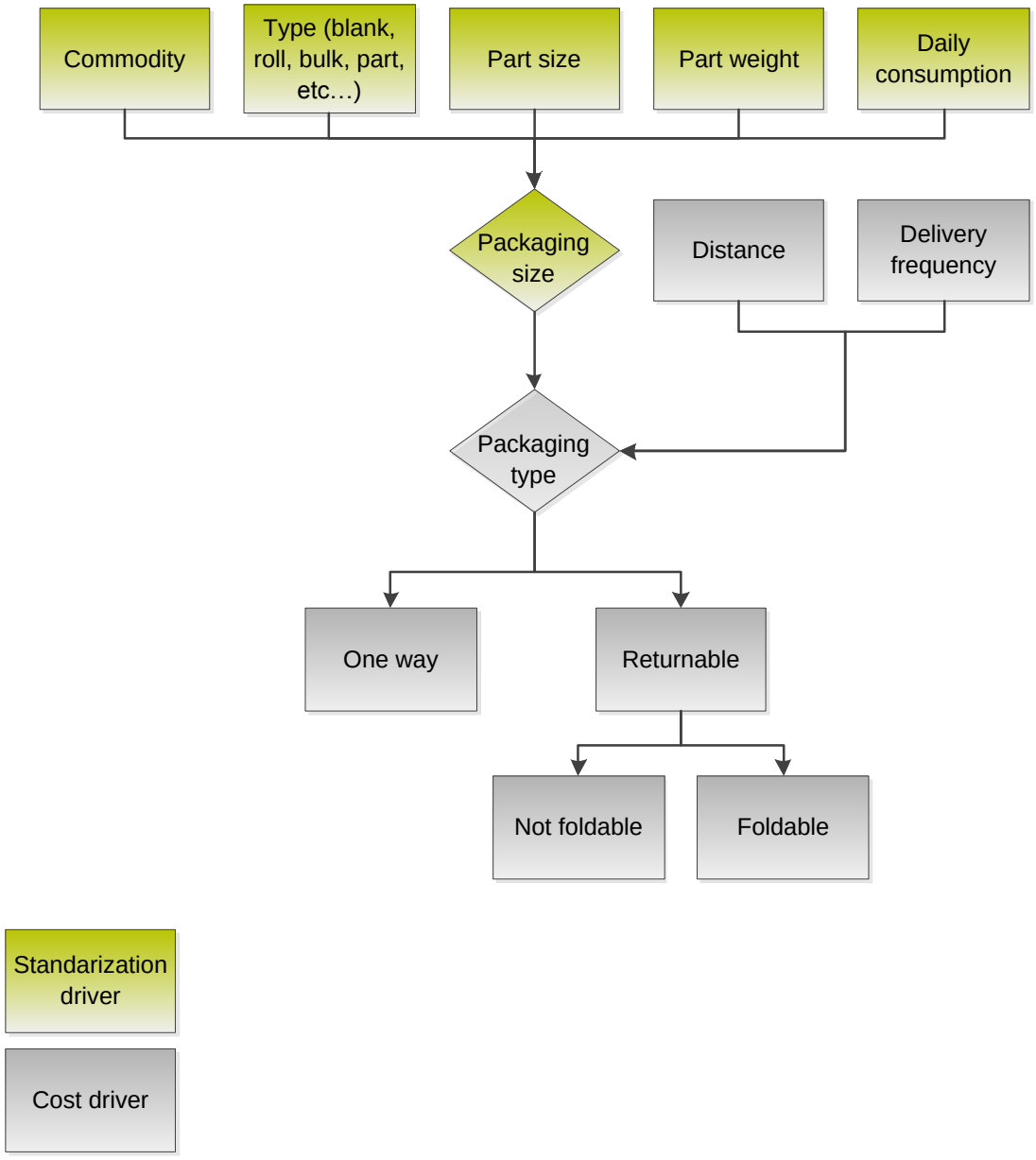


Figure 9. Packaging definition chart

9.3. Logistic Data Sheet (LDS)

The Logistic Data Sheet (LDS) is a document specifying the standard and alternative (back-up) packaging. LDS is created by the Advanced PC&L Engineer at the supplier RFQ phase. The supplier is obligated to proactively participate in the packaging definition stage until the LDS is agreed. (LDS is attached in Appendix 15.)

Each Logistics Data Sheet for returnable packaging shall include an alternative packaging that may be used in the case of unforeseen shortages of returnable packaging.

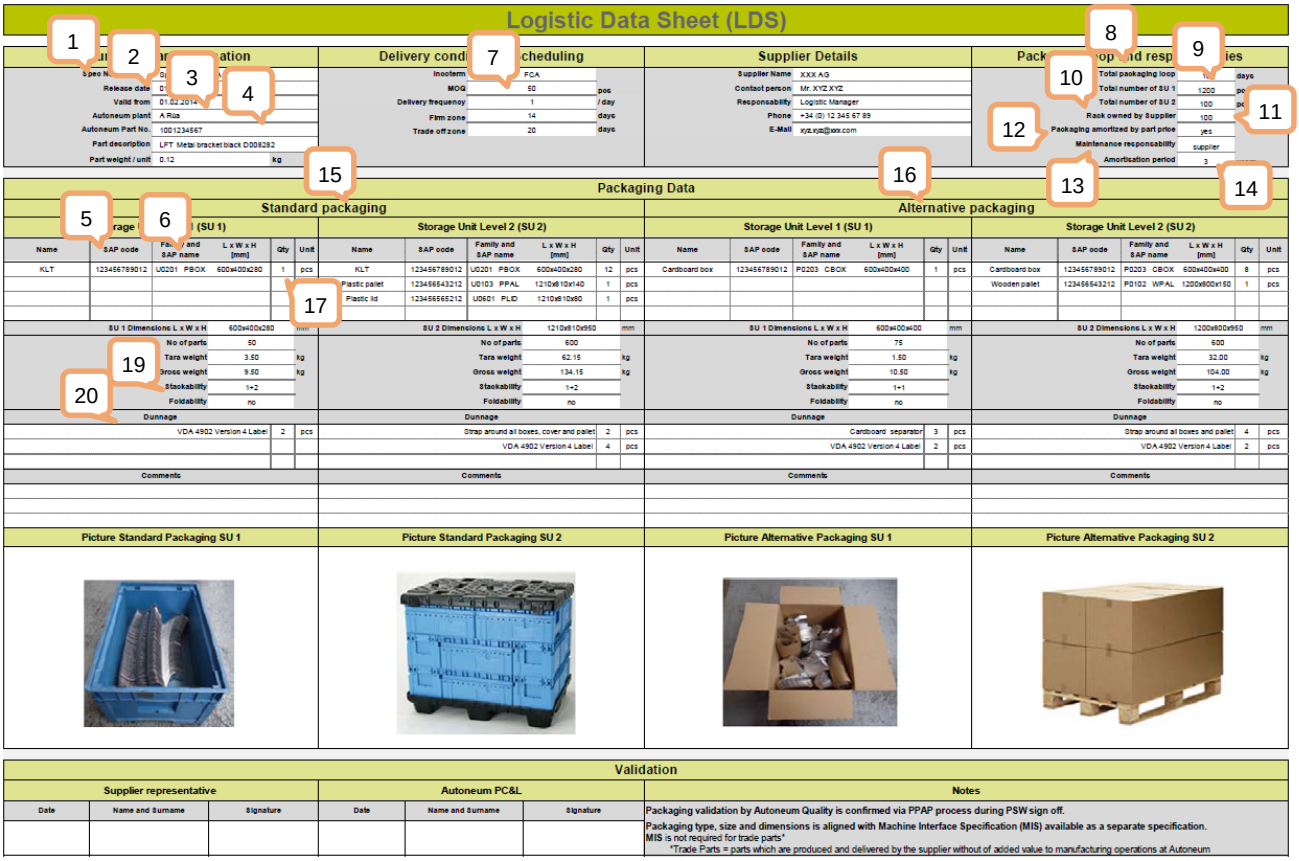


Figure 10.Logistic Data Sheet (LDS)

Fields explanation:

1. Spec. No / release – document number
2. Release date – date of document creation
3. Valid from – date from which the document is valid
4. Autoneum plant – Autoneum receiving plant
5. SAP code – internal Autoneum packaging code
6. Family and SAP name – internal Autoneum packaging information
7. MOQ – Minimum Order Quantity
8. Total packaging loop [days] – range of coverage in the circulation in days
9. Total no. of SU1 – total number of Storage Unit level 1 (see definition Chapter 9.4)
10. Total no. of SU2 – total number of Storage Unit level 2 (see definition Chapter 9.4)
11. Rack owned by supplier – container of supplier property, e.g. 50 %, 100 % etc.
12. Packaging amortized by part price – is the packaging amortized by part price: yes or no.

13. Maintenance responsibility – supplier / Autoneum / 50% - 50%
14. Amortization period – time frame during which a supplier / Autoneum pays off packaging investment
15. Standard packaging – serial packaging
16. Alternative packaging – emergency / back-up packaging
17. No of parts / SU1 – packaging density, number of parts per Storage Unit level 1 (packaging units)
18. No of SU1 / SU2 – number of packaging units per Storage Unit level 2 (handling units)
19. Dynamic stackability of SU2 / pile – how many times handling unit can be stacked during transportation in pile, e.g., 1+2 means that 3 handling units can be stacked in one pile
20. Dunnage - packing material used to protect a packaging and handling unit from damage during transport

9.4. Definition of Storage Unit level 1 (SU1) and (SU2)

Storage Unit level 1 (SU1)
Small packaging containing material allows frequent delivery, easy human handling and workstation supply. Small packaging weight must not exceed 12kg (tare included)

Examples:

Storage Unit level 1 (SU1)
Cardboard box

Storage Unit level 1 (SU1)
Small load carrier

Storage Unit level 2 (SU2) combines individual items or packaging units in shipping containers into a single "unit" that can be moved easily with pallet jack or forklift truck. SU2 packs tightly into warehouse racks, modular containers, trucks, which can be easily broken apart at an advanced logistics warehouse, consignment stock, Autoneum warehouse, etc.

Examples:

Storage Unit level 2 (SU2)
More than one cardboard box

Storage Unit level 2 (SU2)
One big cardboard box on the pallet

Storage Unit level 2 (SU2)
Small load carriers (KLT) on the pallet

Storage Unit level 2 (SU2)
Container

Figure 11. Storage Unit 1 (SU1) and Storage Unit 2 (SU2) definition

9.5. Packaging requirements

Autoneum requires it's suppliers to use returnable or one way packaging in the standardized dimensions. It is intended to ensure optimisation of vehicles and a rational and smooth material flow between the supplier and Autoneum plants.

Regardless of the type of packaging used, the following requirements must be satisfied to ensure optimal processes:

- Returnable packaging preferable. Usage of expendable packaging to be limited
- Packaging type depending on the commodity – see Appendix 13
- Compliance with specified standard dimensions - see Appendix 13
- The smallest possible and economically effective SU1 – see matrix Packaging Dimensions and MOQ described in Chapter 7. Sourcing
- One part number per packaging
- Maximization of packaging density
- Stackability
- Returnable packaging solid enough to last project lifetime rotations
- Only necessary packaging protection dunnage to be considered
- Basic outer dimensions of pallet must be maintained. Protrusions and overhangs must be avoided
- Undamaged condition of pallets (reference European Pallet Association EPAL)
- Clean and dry packaging
- Damage-free parts delivery
- Formation of efficient load units
- Secure transportation
- Problem-free unloading ability from the transportation vehicle by industrial forklift trucks
- Easy handling
- Convenient access to the goods
- Recyclable packaging material

Before using alternative packaging, the supplier has to notify the receiving Autoneum plant of the returnable packaging shortage.

Packaging in small load carrier and small cardboard boxes requirements:

- Maximum weight 12 kg
- The handles are closed (no holes)
- Easy to handle
- RL-KLT – flat box bottom to roll on dynamic flow racks
- Small cardboard boxes (up to 800x600x400) with a lid

Storing Unit level 2 (SU2) with small boxes requirements:

- SU2 dimensions: 1200 x 800 x max. 990 mm
- For a correct and acceptable loading unit a 4-way-free-entry-block pallet and minimum 2 plastic straps are required.
- The use of empty small load carriers (KLT) to fill up a layer is allowed
- Mixed pallets are allowed
- Master labels per material are required for mixed pallets

- The loading unit shall not be shrunk or stretched because of additional handling for removing, waste and work safety
- Steel straps are not allowed
- Single small cartons at the top of SU which causes a non stackability of the SU2 are not permitted. In such cases the supplier should contact the Material Planner at Autoneum to optimize the ordered quantity in accordance to a stackable packaging unit.

9.6. Packaging cost and responsibilities

The Responsibilities of Autoneum and supplier are as follows:

	Autoneum	Supplier
Packaging definition	x	xx
Dunnage definition		x
Packaging validation	x	x
Standard packaging procurement	x	x[1]
One way & Emergency packaging procurement		x
Dunnage procurement		x
Removing old labels	x	x
Labeling		x
Repair cost	x[2]	x[2]
Replacement cost	x[2]	x[2]
Cleaning		x

x main responsibility
xx support
1 Barrel, Bottles, IBC, Big Bag (Autoneum Packaging standard – types and dimensions)
2 according to cause of damage and loss described in chapter 9.9

Autoneum strategy for investment and cost is shown in the following matrix:

	Assumed cost	
	Supplier	Autoneum
Packaging procurement standard containers	See Investment rules above	
Container repair	50%	50%
Procurement of specific containers dedicated to a specific part from the supplier	0 %	100 %
Packaging costs for returnable inlays / load aids for container	0 %	100 %
Emergency packaging	According to cause of missing returnable packaging	
Cost for new containers due to waste and loss of standard / specific containers	According to cause of damage and loss	
Cost for use of containers not confirmed by Autoneum in the LDS	100 %	0 %
Repacking cost caused by the use of packaging non conform with the LDS	100 %	0 %

Autoneum Define the Packaging Investment Rules as follows:

- Autoneum invests in the returnable packaging loop quantity as agreed with the supplier
- Autoneum inter/intercompany returnable packaging cost is part of the transfer price
- Autoneum returnable container invest do not cover loop for caused by supplier process inefficiencies
- Autoneum invest do not cover loop for supplier's internal packaging needs including his sub-supplier flow.

The supplier can invest in additional packaging if they have exceptional needs during the life of the project in order to secure on time deliveries. In this case the supplier has to invest within Autoneum specifications with Autoneum approval.

When the supplier invests in additional containers, they must monitor the flow in and out of the Autoneum business in order to distinguish between the Autoneum containers they hold and the containers they hold for their own purpose.

Autoneum invest in packaging for Run at Rate according to APD (Autoneum Program Deliverables) which means a minimum of 6 months prior to SOP. Full loop of returnable packaging will be fulfilled according to Autoneum rump-up.

9.7. Packaging loop calculation

Autoneum and the supplier define the container loop based on:

- Empty containers before shipment
- Empty containers in transit to supplier plant
- Safety stock
- Supermarket
- Production line
- Full containers in transit to the Autoneum plant
- To be negotiated and agreed with supplier:
  - Finish Products
  - Truck preparation

The containers are intended only for the transportation of parts between the supplier and the respective Autoneum plant. They must not be used for any other purpose, i.e.:

- for circulating goods as part of the internal production process at the supplier's plant
- intermediate storage of semi -finished goods,
- storage of goods at the supplier surplus to the amount currently being called off (batch production, intermediate storage)
- deliveries to sub suppliers (3rd Party) or service providers on behalf of the supplier

The supplier must procure the containers required for these purposes at their own expense.

Definition of total quantity of containers is done based on Packaging loop calculation sheet.

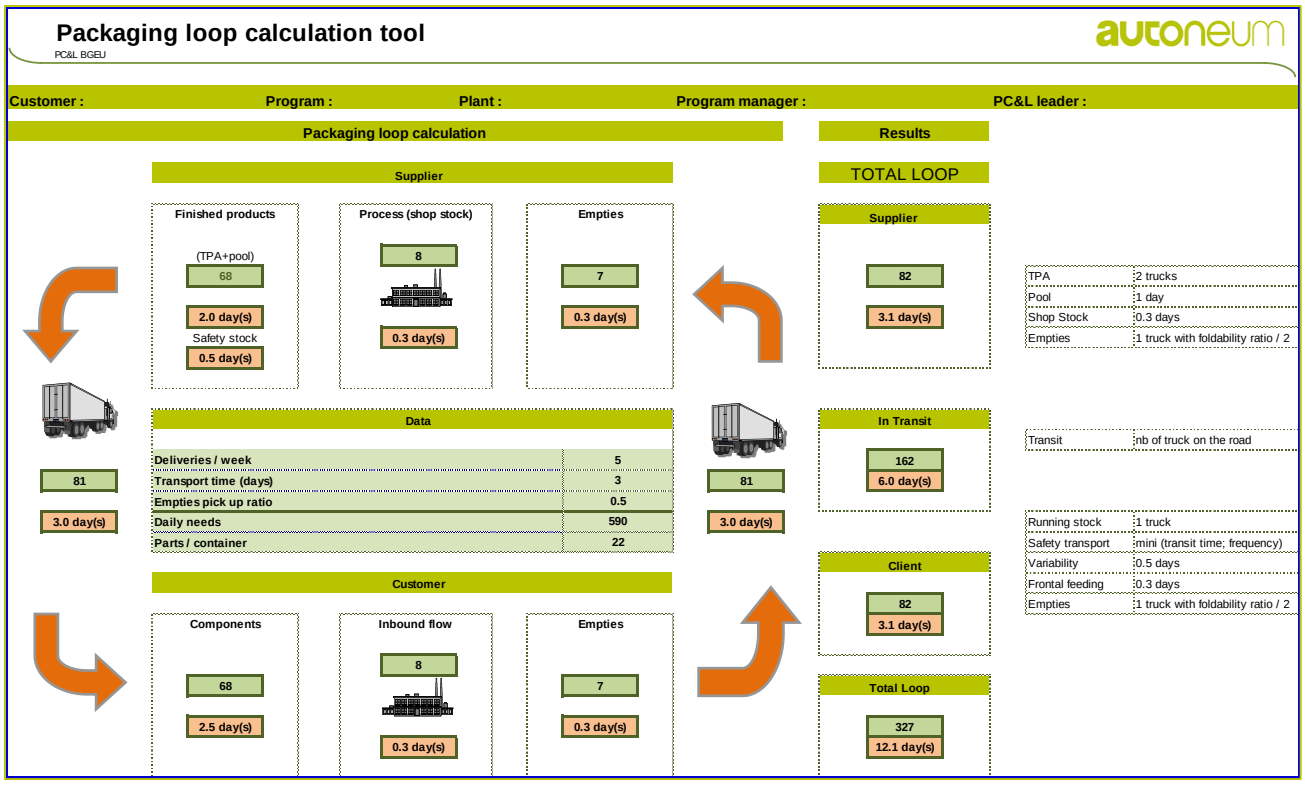


Figure 12. Packaging loop calculation sheet

9.8. Container maintenance – cleaning, repair, lost, replacement

Container cleaning

The supplier must ensure that all packaging is clean, serviceable and free from redundant labels, prior to packing material/parts.

Delivery in dirty unfit containers will not be accepted by Autoneum and the supplier will be charged accordingly for the cleaning.
Dirty containers from the supplier which cannot be cleaned will be ship back to the supplier at their own cost in order to be repaired or replaced.

Container repair and maintenance

Autoneum checks containers upon their arrival (delivery) and when they leave the Autoneum plant. The supplier must ensure that containers are always maintained in a ready-to-use state (by regularly oiling hinges etc.).

Identified damaged containers to be reported immediately by both parties. Decision about its repair or scraping will be part of mutual agreement. Autoneum will not accept any cost of repair or maintenance without of prior damage report and repair agreement.

Repairs and maintenance costs for containers are split equally between Autoneum and the supplier.

Lost containers and replacement

If the supplier loses any packaging, they are obligated to replace the packaging on their own cost. If Autoneum loses any packaging, the missing quantity will be replaced by Autoneum.

Any number of new containers purchased must to be coordinated between Autoneum and the supplier.
If the cause of lost containers cannot be identified, the new investment costs are split equally (50/50).

Container scrapping

Any unusable containers that require scrapping must be approved by Autoneum prior to disposal. The supplier will be charged the replacement costs if this authorization is not received.

Return of container at the end of cooperation

Autoneum schedule regular supply base on Sales & Operation Plan. By scheduling inbound delivery Autoneum will assure that only required amount of containers will be in loop at the end of cooperation. In case of identified lost container vs. last agreed balance account form the empties control process, the lost containers need to be replaced according to **Lost containers and replacement** rules written above. This replacement should take place latest in 30days after end of cooperation.
For any delay in return of packaging beyond that deadline supplier will be charged an amount calculated pro rata for every day base on 10% of container market price per Month.

9.9. Empties control

Quantity control in the loop

Autoneum and the supplier are responsible for controlling the returnable packaging loop quantity.

Autoneum ensures packaging control. Autoneum targets to manage the packaging within ERP (SAP or BPCS). Autoneum packaging control contains:

- Booking in
- Permanent balance account
- Monthly container balance
- Booking out

The supplier must agree to implement a packaging accounting system into its standard process.
If the supplier does adhere to the packaging account balance they will bear the full costs of investment to replenish the missing quantity.

Monthly container balance:

Autoneum and the supplier register the type and number of containers upon their arrival or delivery.

Containers will be booked to specific accounts for each supplier. These accounts are confirmed and balanced with the suppliers on a monthly basis.

Autoneum will generate and send a container balance to the supplier on a monthly basis.

The monthly balance has to be validated and confirmed by the supplier. If the supplier does not clearly indicate any issues within 10 days after receiving the information, the data is deemed accepted by both parties.

Yearly container inventory

In order to establish the inventory levels of containers the supplier is required to carry out an annual container inventory count in coordination with Autoneum.

The date for the annual stocktake will be set by Autoneum (usually 1st of December of each year). Autoneum will inform the supplier approximately 4 weeks in advance with the exact date and will, if necessary also co-ordinate schedules with other assembly partners (if containers are not solely used by the supplier and Autoneum but also in other places of assembly).
Autoneum reserves the right to initiate an additional stock check as and when required.

10. Labeling requirements

The suppliers are requested to use labels according to VDA 4902 standard.

Field 15 has to be always in following format:
22XXXXXXYYYYYYYYYY

XXXXXX = Six digit Supplier number (provided on Scheduling Agreement Release)

YYYYYYYYYY = 10 digit running number (with every label, number to be increased by one)

Examples:
221061890000000001
221061890000000002
221061890000000003

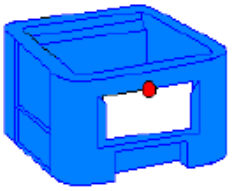
22 = Fix number
106189 = Supplier number
0000000001 = Running number

Figure 13. VDA Master Label 210 x 148 mm , picture dimensions reduced

Figure 14. VDA Single Label 210 x 74 mm , picture dimensions reduced

Labelling requirements for small load carriers, small cardboard boxes on the pallet:

- Use a minimum of one single label
- In case of small load carriers place the label in the label holder. On cardboard boxes place it in a way that is visible when the whole SU2 is completed
- ensure that label is of sufficient thickness to remain securely located in a holder. If necessary a small sticker(s) may be required to secure the label
- Do not use self adhesive labels on small load carriers
- Use low adhesive stickers to help fix the labels on small load carriers



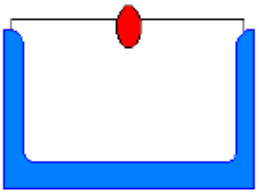
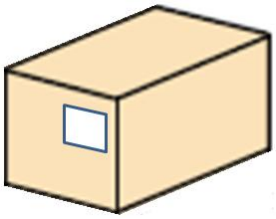


Figure 14. Labels on small load carriers



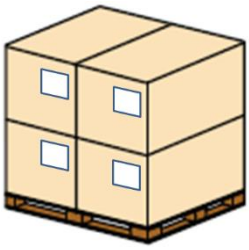


Figure 15. Labels on small cardboard boxes

- If a single part number is being shipped, use a master label. The master label should be attached to the adjacent sides of the SU2, attaching it using low adhesive stickers.
- If multiply part numbers are being shipped within one SU2, use a Master load label for each material

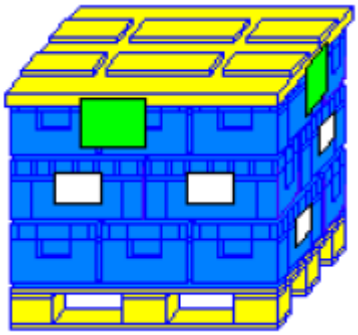


Figure 16. Master and Mixed load labels on SU2

Labelling requirements for specific material:

- In case of small fasteners (eg. clips) where more sealed plastic bags are packed in one small load carrier or cardboard box or , each bag must have an adhesive label, clearly showing part number, part name and quantity
- If material is delivered in rolls, bags, barrels placed on one pallet, a single label must be placed on each SU1 (roll, bag, barrel etc.)
- The whole SU2 must be marked with Master Label

Labelling requirements for large load carriers, single cardboard on the pallet:

- Use a minimum of 2 Master Labels on adjacent sides of the container or cardboard box
- All labels shall be clearly visible from outside
- Available label pockets must be used.
- Tags must be attached to returnable packaging by means of easily removable, residue-free adhesive spots or adhesive tape. Tags must **not be glued** onto returnable packaging.
-

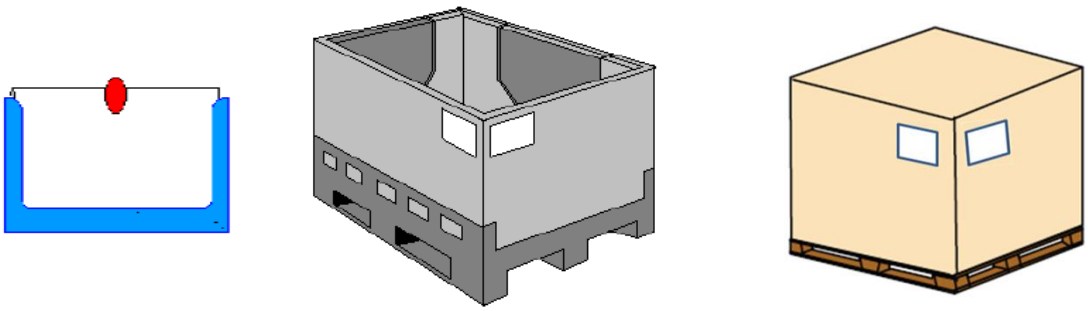


Figure 17. Master load labels on SU2 large load carriers and single cardboard boxes on the pallet

11. Abbreviations

AIAG	Automotive Industry Action Group
ASN	Advanced Shipping Notice
BGEU	Business Group Europe
SRM	Supplier Relationship Management
DAP	Delivered Duty Paid (named place of destination)
DDP	Delivered at Place (named place of destination)
FCA	Free Carier (named place)
EDI	Electronic Data Interchange
EDIFACT	Electronic data interchange for administration, commerce and transport
GALIA	Groupement pour l'Amelioration des Liaisons dans l'Industrie Automotive
KLT	Stadardized small load carrier
MMOG/LE	Global Materials Management Operations Guideline / Logistics Evalutions
MRP	Material Resource Planning
ODETTE	Organization for Data Exchange by Tele Transmission in Europe
PRIDE	Product Quality / Relationship / Integrity / Delivery / Economic
QAF	Quotation Analisys Form
PSW	Part Submission Warrant
RFQ	Request for quotation
SOP	Start of Production
SQE	Supplier Quality Engineer
VDA	Verband der Automobilindustrie (German Automobile Industry Association)
WebEDI	EDI via internet with content displayed and / or entered using a browser

12. List of Appendices

Appendix 1.Supplier_EDI_inquiry.docx (Template)

Appendix 2.EDIFACT INVRPT D.97A message spec.

Appendix 3.EDIFACT DELFOR D.99B message spec.

Appendix 4.VDA 4905 message spec.

Appendix 5.VDA 4913 message spec.

Appendix 6.ANSI X12 830 message spec.

Appendix 7.ANSI X12 856 message spec.

Appendix 8. WebEDI Supplier information letter

Appendix 9. WebEDI Delivery instructions process handbook

Appendix 10. WebEDI Shipment process handbook (direct delivery with packaging)

Appendix 11. WebEDI Shipment process handbook (direct delivery without packaging)

Appendix 12. Supplier SDS Portal Website Tutorial

Appendix 13. Packaging standard – types and dimensions.

Appendix 14. Supplier Logistics Agreement (SLA)

Appendix 15. Logistic Data Sheet (LDS)

Appendix 16. Supplier Contingency Plan