Label Quality Report

GS1 Field Study - May to July 2013

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Table of Contents

Executive Summary

The GS1 Logistic Label enables efficient and correct shipping, receiving, transport, and warehousing processes, and helps to provide end-to-end supply chain visibility to shippers, receivers and LSPs. Higher adoption of the GS1 Logistic Label and better standards conformance is a key objective of GS1.

The goal of the Label Quality Report field study was to gain a better understanding of the use of the GS1 Logistic Label across the world and to identify any areas where common errors are occurring.

Besides establishing a baseline, the Label Quality Report will also help to assess the need for further global GS1 Logistic Label Quality initiatives.

The fourteen GS1 Member Organisations (MOs) that provided data reported several problems in the use of a logistic label on the pallets they reviewed at various Distribution Centres (DCs). **Almost 30%** of all pallets reviewed had some form of labelling problem, such as poor print quality, wrong SSCC (or no SSCC), multiple labels applied, incorrect product information, etc.

Recurring errors across many MO' reports:

- Poor knowledge on the label materials' suitability to the task (e.g. paper labels with frozen goods), the quality of printing (bad ribbons, or scratching of printing), and the need to place labels in the correct position with no chance of wrinkling, being cut, covered by other labels, covered by shrink-wrap.
- Poor understanding of the creation and use of the logistic label, including the use and creation of the SSCC, the use of Application Identifiers, the correct creation of GTINs, and the need for white space around a bar code.
- Poor understanding of the use of the logistic label in the processes of business partners.

Overall, the main cause seems to be lack of education of the Shippers. The placement of the labels, the poor quality of the labels, the poor choice of label material, and the incorrect data content/format suggests that work to educate those creating the labels would be a good next step.

Concrete steps to facilitate better education could be:

- Launch a communication campaign on the importance of the label, emphasizing that there is business value for all parties involved, including Shippers and Logistic Service Providers
- Review and validate the GS1 Logistic Label Guideline [STILL] in order to make it more generally applicable.
- Set up a training and education programme on the correct implementation of the GS1 Logistic Label.
- Establish a Label Conformance Programme in order to align label conformance criteria and promote the establishment of testing / certification services by MOs and solution providers.

Continued monitoring of the label quality is recommended, and a next version of the Label Quality report should be conducted on a broader level if possible.

1. Background

The survey was conducted by GS1 Global Office to gain a better understanding of the situation with respect to the correct use of the SSCC label. The goal was to gain a better understanding of the use of the SSCC label across the world and to identify any areas where common errors are occurring.

A total of 21 GS1 Member Organisations (MOs) agreed to take part in the survey, 14 of which provided data in time to be included in this version of the report:

- Australia
- Colombia
- Finland
- France
- Germany
- Hong Kong
- Italy
- Malaysia
- Mexico
- Netherlands
- Norway
- Portugal
- Spain
- Sweden

Each MO was asked to visit at least two Distribution Centres (DCs) and complete two forms for each centre and pallet that they reviewed. The forms are attached as Annex 1 and Annex 2. A sample of the type of responses was also supplied to the MOs.

The MOs were asked to submit photos along with the report forms to explain any issues they believed were worth noting.

1.1. References

- [GEN_SPECS] GS1, “GS1 General Specifications Version 13.1,” June 2013
- [STILL] GS1, “GS1 Standard International Logistic Label – STILL”, 2008

1.2. List of Abbreviations

- ASN – Advance Shipping Notice
- DC – Distribution Centre
- GS1 MO – GS1 Member Organisation
- GTIN – Global Trade Item Number
- MO – Member Organisation
- SSCC – Serial Shipping Container Code

2. Results

The questionnaire asked the MOs to provide details on the types of issues with the number of times they encountered each issue (see annex 1).

Five different issues were pre-identified and then space was provided for the MOs to detail other errors or explain the errors they saw.

Almost every MO saw errors in all five of the identified areas but the responses were varied from a simple “YES” to a percentage of errors, to an actual number of errors for each category.

2.1. General

- Not all MOs returned all the forms.
- The answers were not always in the same format/units. This may have been caused by some ambiguity in the questions.
- Many different sized pallets were reviewed containing dry, chilled and frozen goods.
- The field study covered mostly standard pallets though some were mixed as well.
- There were large differences in the size of the visited DCs.
- None of the MOs provided information on the quality of the bar codes. They did not have verifiers at the DCs.

2.2. Statistical Data

General

- The 14 MOs participating in the process together visited 18 Distribution Centres and reviewed a total of 2102 pallets. Of these, 617 were described with problems or issues (29%).

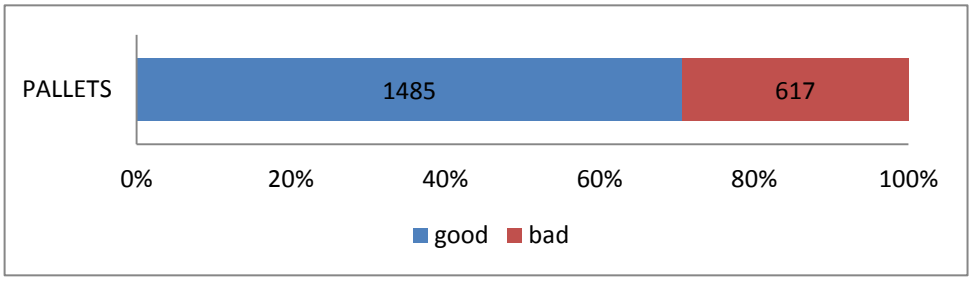

Figure 1 – Number and % of pallets with issues

- The size of the DCs reviewed was varied with inbound shipments ranging from 15 cartons per day to 180.000 per day. One MO quoted 6000 pallets per day from 700 different suppliers, while another stated 260 trucks per day from 1200 different suppliers.
- Some DCs do not see many pallets with SSCC labels (four DCs see <10% of pallets with SSCC, six DCs see > 80% of pallets with SSCC)

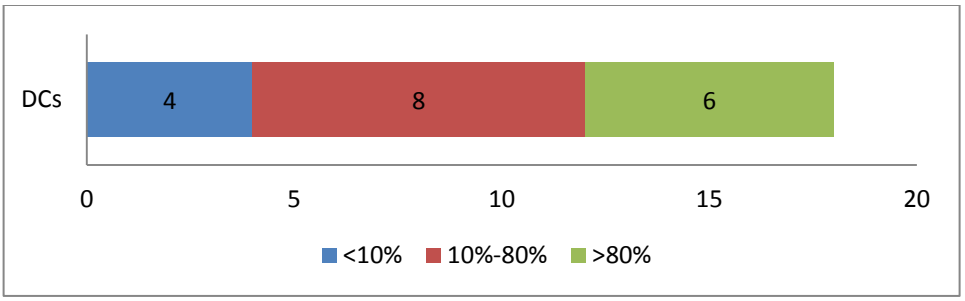

Figure 2 – GS1 Logistic Label usage across DCs

- Several MOs did not report the number of scanners in use (just that they were used).
- Only one MO noted that both fixed and hand held scanners were in use.

Inbound

- Most of the MOs reported that there was at least 1 scan point in the DC on inbound shipments
- The MOs were asked to report on the percentage of inbound logistics units with issues. This ranged from less than 0-5% for a few of the MOs to as high as 30-50% for others. In one case the MO quoted the percentage of logistical units with issues as 32% and the percentage of suppliers with issues as 75%. Other MOs reported 50% of all logistical units as having problems.
- The percentage of inbound pallets with Despatch Advice / ASN on SSCC labels was typically low (<10%) though several MOs reported high percentages (>80%) at some DCs

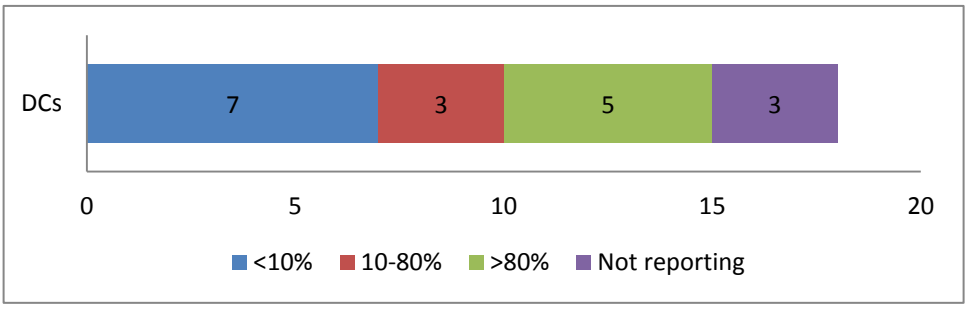

Figure 3 – Despatch Advice / ASN usage on inbound across DCs

Outbound

- Several MOs stated that scanners were not used in the outbound process.
- Only a small number of MOs reported back on the use of the logistic label by carriers in the outbound process. It is unclear whether carriers are mostly applying their own label on outbound shipments or that carriers are using the label as assigned by the shipper.
- Only a small number of MOs reported that outbound despatch advice / ASN was used on SSCC level or that the transport instruction was used on SSCC level.
- One MO reported that the Distribution Centre had developed his own identification system for pallets that have more than one configuration, but not based on the GS1 standard

2.3. Specific Issues

2.3.1. Multiple different labels on pallet

Ten MOs reported the problem of multiple labels with different information present on a pallet. MO responses were in various formats: The answers ranged from YES to ALL to 10-20% of errors, to 3.4-7% of the total errors, to an actual number 9 and 32. One MO described this as the most common error.

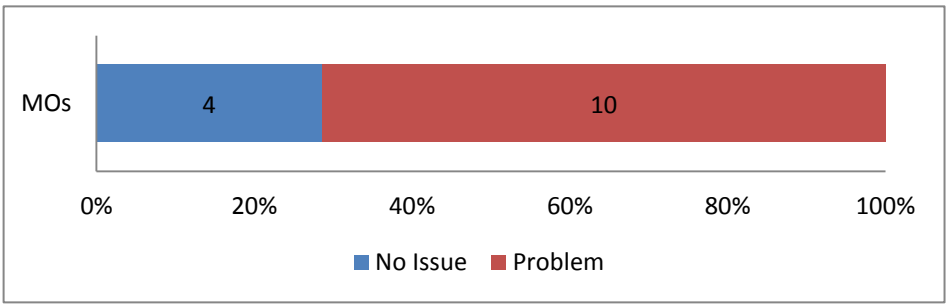

Figure 4 – MOs reporting multiple different labels on pallet

2.3.2. No label on pallet

Only one MO did NOT report this problem. MO responses were in various formats, with responses ranging from YES to 5-30% of errors to 52-55% of the total errors, to 9, 105, and 200 pallets. It was noted by one MO that this was the most common error and one MO described the problem as very common on fruits and vegetables.

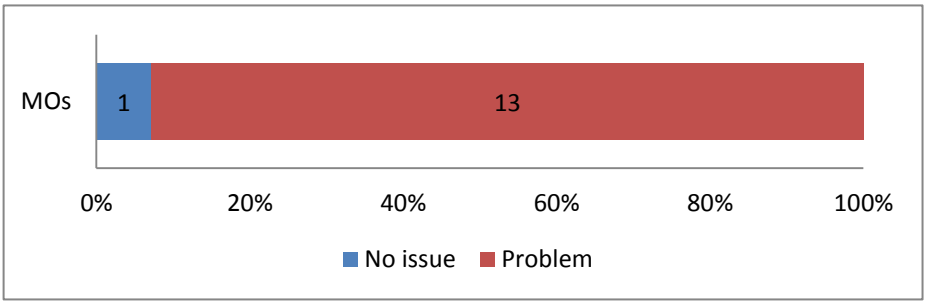

Figure 5 – MOs reporting no label on pallet

2.3.3. Label not scannable

Only one MO did NOT report this problem with responses ranging from YES to 5-80% of errors to 3.4-16% of the total errors, to 12 and 100 pallets. It was noted by two MOs that this was the most common error.

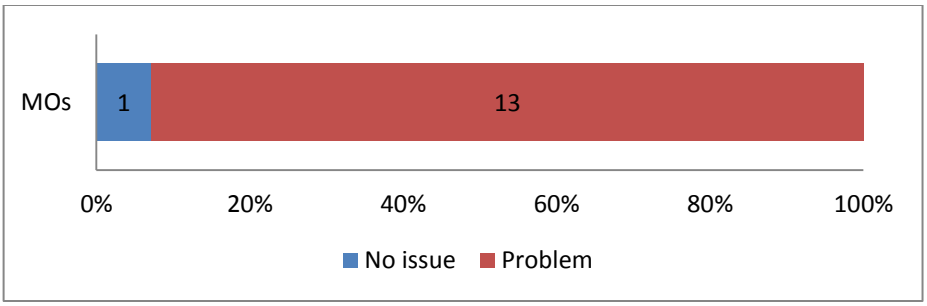

Figure 6 – MOs reporting label not scannable

2.3.4. Incorrect SSCC number

Twelve MOs reported the problem of incorrectly constructed SSCC numbers, with responses ranging from YES to 10-70% of errors to 13-26% of the total errors, to 32 pallets.

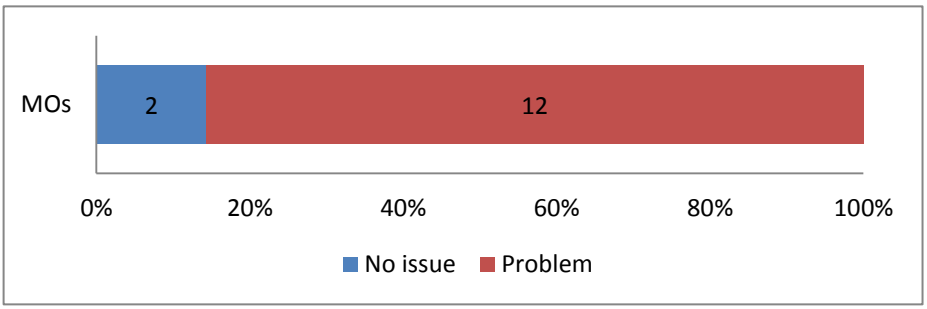

Figure 7 – MOs reporting incorrect SSCC numbers

2.3.5. SSCC does not match Despatch Advice / ASN

Nine MOs reported the problem of SSCCs not corresponding to the information received in the Despatch Advice / ASN, with responses ranging from YES to 10-80% of errors.

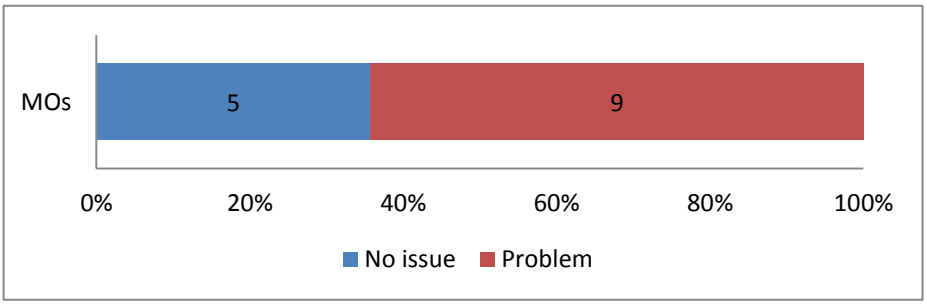

Figure 8 – MOs reporting non-matching Despatch Advice / ASN information

2.3.6. Label location

The General Specifications [GEN_SPECS, section 6.8.1] state that the bar codes should be placed in a picket fence orientation with 1 or 2 labels per pallet, with a target height of between 400 and 800 mm from the base of the pallet to the bottom of the symbol. Section 6.8.2 recommends that two or more sides contain the label (printed with exactly the same data).

The MOs reported that the pallets had between 1 and 5 labels per pallet. Although there were many locations for the labels, most met the General Specification requirement of at least 400mm from the bottom of the pallet.

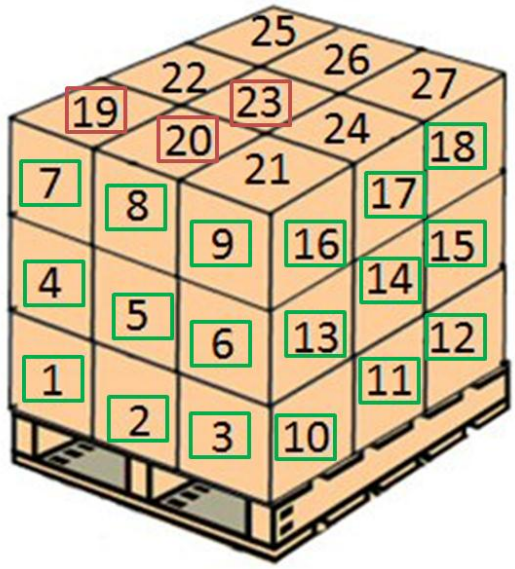

Figure 9 - Label locations that were reported

Figure 9 shows the possible locations for labels, and the MOs were asked to report the location of the labels on the pallets investigated.

- The placement of labels was not consistent.
- The only locations NOT reported were 21, 22, 24, 25, 26, and 27. This means that the top locations of 19, 20, and 23 were used on some pallets (the location 20 was described as part of a label that was placed over the edge in locations 8 and 20).
- There were also reports of labels on opposite faces rather than adjacent.
- In many cases where 2 (or more) labels were reported, they were not in the same location on adjacent sides. For example: locations 5 and 14 or 6 and 15 were commonly reported, however just as common were locations 3 and 10 or 6 and 13.

2.4. Details of Issues

2.4.1. Encoding problems

- Wrong association of information and wrong use of application identifiers:
  - AI(02) without AI (37)
  - AI(01) with (37)

- AI(02) with AI(37) present, but AI(00) missing
- wrong AI association (00)+(10)+(15)
- use of function1 character wasn't correct (function1 character missing after not pre-defined length information)
- Bar code is not a GS1-128 symbol

2.4.2. SSCC issues

- Badly formed SSCC
  - the SSCC starts with company prefix and not with the extension digit
  - SSCC composed of 20 digits
  - check digit of SSCC is missing
- Wrong or missing SSCC
  - label with a different SSCC
  - 2 labels with different SSCC
  - no SSCC on label
  - SSCC bar code not scannable
  - Wrong position of the SSCC bar code
- Human Readable Information errors
  - SSCC not present in human readable information
  - missing check digit in human readable information

2.4.3. GTIN issues

- GTIN wrong, missing or badly formed
  - incorrect GTIN
  - GTIN missing
  - GTIN only 13 digits

2.4.4. Data errors

- Different quantity of items stated in despatch advice / ASN
- GTIN not defined in the retailer master data file
- No results in GEPIR
- Labels without standardized information. Not using GTINS, nor SSCC in most of the cases
- Wrong information in AI(37): quantity different from the number of boxes on the pallet.
- One of the labels refers to the next pallet

2.4.5. Printing errors

- Badly formed bar code
  - Frame or text around the bar code that infringes on the "light margin"

- Does not have the sufficient X and/or Y values

- Print quality of bar code
  - Poor print quality
  - White line(s) crossing the bar code:

- Orientation
  - the bar code in wrong orientation, not picket fence oriented

2.4.6. Label quality

- Material
  - Paper quality of labels
  - Paper labels are problem with frozen products, labels should be plastic
  - Wrong paper used to print the label

2.4.7. Label position

- Location
  - Position of label not according to GS1 recommendation
  - Placed on the wrong sides of the pallet
  - SSCC are applied to each of the outbound carton boxes, but not on pallet, because the pallet will be further split into different groups to different destination at the importing country port
  - Vegetable carton cases are so low that the pallet label is attached to two different cases. During transport stage cases move so the label gets be wrinkled

- Label damaged
  - Label is cut in 2 parts
  - One of the labels is damaged
  - Creased label
  - Labels folded
  - Labels detached from the logistic unit

- Overlapping labels
  - SSCC label is covered by another label

- Under shrink wrap
  - Label is applied underneath the stretch foil and therefore not scannable

- Multiple labels
  - Transport label(s) of carrier present (carrier not using the GS1 logistic label)
  - Multiple transport and product labels on same pallet.
  - Two different SSCC-codes on same pallet.
  - Retailer used transport/logistic label from one pallet and product label from another pallet.

2.4.8. Process issues

- Lacking infrastructure on the supplier side. Not well-developed logistic systems, lacking procedures.
- Reprocessing and manual entry tasks causing errors and extra work.
- Issues with the transmission of the data scanned. During certain periods of the day, especially during high operation and volume periods, network lagging can cause information to be missed and not registered into their warehouse management system (WMS).

3. Suggested Sources of Problems

There are many errors identified above, but several of them are common across many of the MOs' reports:

- Poor knowledge on the label materials' suitability to the task (e.g. paper labels with frozen goods), the quality of printing (bad ribbons, or scratching of printing), and the need to place labels in the correct position with no chance of wrinkling, being cut, covered by other labels, or being covered by shrink-wrap.
- Poor understanding of the creation and use of the logistic label including the use and creation of the SSCC, the use of Application Identifiers, the correct creation of GTINs, and the need for white space around a bar code.
- Poor understanding of the use of the logistic label in the processes of business partners.

4. Recommendations

Overall, the main cause seems to be lack of education of the shippers. The placement of the labels, the poor quality of the labels, the poor choice of label material, and the incorrect data content/format suggests that work to educate those creating the labels would be a good next step.

Concrete steps to facilitate better education could be:

- Launch a communication campaign on the importance of the label, emphasizing that there is business value for all parties involved, including Shippers and Logistic Service Providers
- Review and validate the GS1 Logistic Label Guideline [STILL] in order to make it more generally applicable.
- Set up a training and education programme on the correct implementation of the GS1 Logistic Label.
- Establish a Label Conformance Programme in order to align label conformance criteria and promote the establishment of testing / certification services by MOs and solution providers.

Continued monitoring of the label quality is recommended, and a next version of the Label Quality report should be conducted on a broader level if possible. The field study did not provide any information about the grade of the bar codes being created. This information could be included in future reports.

Annex 1

LABEL QUALITY FIELD STUDY FORM – part 1

GS1 Member Organisation	
Distribution Centre	
INBOUND	
Average number of inbound logistic units per day	
Number of different suppliers	
Percentage with SSCC-label	
Percentage of logistic units with issues	
Percentage of suppliers with issues	
Percentage of suppliers with Despatch Advice / ASN	
Percentage of suppliers with Despatch Advice / ASN on SSCC level	
Percentage of Despatch Advices / ASNs with issues	
Types of issues (number of each)	
multiple different labels	
no label	
label not scannable	
incorrect SSCC number	
SSCC does not match Despatch Advice / ASN	
Other (detail below)	
Inbound process	
Number of scan points:	
During receiving / unloading	
During acceptance	
During storing	
OUTBOUND	
Average number of outbound logistic units per day	
Percentage with SSCC-label	
Outbound process	
Scan points:	
Picking	
Staging	
Loading	
Outbound Depatch Advice / ASN used on SSCC level?	
Transport Instruction used on SSCC level?	
Carrier applying own label on outbound?	
Carrier using SSCC as assigned by shipper?	

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LABEL QUALITY FIELD STUDY FORM – part 2: Detail Observations:

Types of issues : - Other (list all details) _____

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Other Observations: _____

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LABEL QUALITY FIELD STUDY FORM – part 3: Photo Description Sheet

Please upload the photos to the Sharepoint site, http://extranet.gs1.org/llqr/SitePages/Home.aspx and complete the table below with details (use additional sheets if needed)

Please contact coen.janssen@gs1.org for your access details and upload instructions.

Photo ID	Description of photo	Reason for taking picture

Annex 2

GS1 MO:	Contact:				Location:	
Supplier:		Date:			Time:	
Total number of pallets:			No. of pallets with error:			
Product: name:			Place of pick-up:			
four last digits of SSCC:		Buyers ref:			Label type:	Transport / Product
Height of pallet (cm):	Height of lower edge of label with SSCC:				GTIN on pallet label:	
Type of error in electronic ASN:	Electronic ASN received:			Yes / No	ASN Match:	YES / NO
Number of labels on each pallet:	Type of goods:	Dry		Frozen	Placement of Labels (see below):	
		Chilled				
ISO-grade of bar code: Condition:	Type of Pallet:	Std. Pl.		Cust. Pl.	Model of Verifier (if used):	
		Mix Pl.		Display Pl.		
Error:					Labels:	
Comments and additional info: