WR #	GSCN Name	Effective Date
WR 23-272	Scan4Transport Freight unit type AI	Jul 2024

1 **Associated Work Request (WR) Number:**

2 **Background:**

Logistic service providers require the ability to encode and retrieve the freight unity type of a logistic unit.

3 **Disclaimer**

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Symbol size is determined by the amount of data and the number of rows and columns required encoding the data for the X-dimensions selected (see figures section 5.6.3.2).

Consult *GS1 symbol specification table 7*, section 5.12.3.7, for minimum and maximum X-dimensions and other sizing requirements.

Durable labelling and marking:

For long distance scanning see section 5.12.3.13, *GS1 symbol specification table 13*.

For short distance scanning see section 5.12.3.9, *GS1 symbol specification table 9* (assets) or section 5.12.3.4, *GS1 symbol specification table 4* (trade items).

Symbol placement

General principles on placement of barcodes are described in section 6.

The majority of uses for these symbols will be on very small items with curved surfaces such as vials, ampoules and very small bottles. For guidance in locating these symbols on curved surfaces, refer to section 6.2.

Unique application processing requirements for direct part marking

See section 7 and section 5.12.4.3.

2.6.15 Encoding transport process information

Introduction

The global Transport & Logistics industry is experiencing exponential growth in freight volumes and becoming ever more open and competitive to support the growing needs. The increasing number of service providers (especially in Last Mile) and new entrants coming in from outside the traditional T&L environment causes challenges within the supply chain where parties involved in a supply chain at times don't even know each other, let alone have integrated systems. The fragmented nature of the industry, connectivity limitations (e.g., internet access) and the need for redundancy (e.g., absence of advance information exchange) drives the need for greater interoperability and the ability to capture transport process information via barcode(s). Information such as ship-to / deliver-to address and other delivery information is encoded directly on the logistic label to support first/last mile and sortation processes.

Note (informative): For further guidance and supporting standards see the GS1 Encoding Transport Process Information Implementation Guideline.

Application description

This application describes the creation of transport unit labels when using 2D barcodes to include necessary transport data on GS1 transport labels. The SSCC is the mandatory identifier required on all transport labels in a GS1-128 barcode and this application defines how it should be used together with optional attributes in 2D barcodes to support transport and logistic processes.

GS1 key

Required

- SSCC

The GS1 Application Identifier for the SSCC is AI (00), see section 3.2.

Rules

All SSCC rules described in section 4.3.

Attributes

Required

Not applicable

Optional

To provide optional transport process information, see figure below for a listing of GS1 Application Identifiers. For all the GS1 Application Identifiers that may be used with an SSCC in support of encoding transport process information and their format, see section 3.2.

Figure 2.6.15-1. Application Identifiers used to support the transport process

AI	Data Content	Permits Non-Latin Characters
420	Ship-to / Deliver-to postal code with a single postal authority	
4300	Ship-to / Deliver-to company name	X
4301	Ship-to / Deliver-to contact	X
4302	Ship-to / Deliver-to address line 1	X
4303	Ship-to / Deliver-to address line 2	X
4304	Ship-to / Deliver-to suburb	X
4305	Ship-to / Deliver-to locality	X
4306	Ship-to / Deliver-to region	X
4307	Ship-to / Deliver-to country code	
4308	Ship-to / Deliver-to telephone number	
4309	Ship-to / Deliver-to GEO location	
4310	Return-to company name	X
4311	Return-to contact	X
4312	Return-to address line 1	X
4313	Return-to address line 2	X
4314	Return-to suburb	X
4315	Return-to locality	X
4316	Return-to region	X
4317	Return-to country code	
4318	Return-to postal code	
4319	Return-to telephone number	
4320	Service code description	X
4321	Dangerous goods flag	
4322	Authority to leave	
4323	Signature required flag	
4324	Not before delivery date time	
4325	Not after delivery date time	
4326	Release date	
4330	Maximum temperature in Fahrenheit (expressed in hundredths of degrees)	
4331	Maximum temperature in Celsius (expressed in hundredths of degrees)	
4332	Minimum temperature in Fahrenheit (expressed in hundredths of degrees)	
4333	Minimum temperature in Celsius (expressed in hundredths of degrees)	
7041	UN/CEFACT freight unit type	

AI	Data Content	Format [1]	FNC1 required [4]	Data title
4317	Return-to country code: AI (4317)	N4+X2	(FNC1)	RTN TO COUNTRY
4318	Return-to postal code: AI (4318)	N4+X..20	(FNC1)	RTN TO POST
4319	Return-to telephone number: AI (4319)	N4+X..30	(FNC1)	RTN TO PHONE
4320	Service code description: AI (4320)	N4+X..35	(FNC1)	SRV DESCRIPTION
4321	Dangerous goods flag: AI (4321)	N4+N1	(FNC1)	DANGEROUS GOODS
4322	Authority to leave flag: AI (4322)	N4+N1	(FNC1)	AUTH LEAVE
4323	Signature required flag: AI (4323)	N4+N1	(FNC1)	SIG REQUIRED
4324	Not before delivery date/time: AI (4324)	N4+N10	(FNC1)	NBEF DEL DT
4325	Not after delivery date/time: AI (4325)	N4+N10	(FNC1)	NAFT DEL DT
4326	Release date: AI (4326)	N4+N6	(FNC1)	REL DATE
4330[7]	Maximum temperature in Fahrenheit: AI (4330)~~Maximum temperature in Fahrenheit: AI (4330)~~	N4+N6+[-]	(FNC1)	MAX TEMP F
4331[7]	Maximum temperature in Celsius: AI (4331)~~Maximum temperature in Celsius: AI (4331)~~	N4+N6+[-]	(FNC1)	MAX TEMP C
4332[7]	Minimum temperature in Fahrenheit: AI (4332)~~Minimum temperature in Fahrenheit: AI (4332)~~	N4+N6+[-]	(FNC1)	MIN TEMP F
4333[7]	Minimum temperature in Celsius: AI (4333)~~Minimum temperature in Celsius: AI (4333)~~	N4+N6+[-]	(FNC1)	MIN TEMP C
7001	NATO Stock Number (NSN): AI (7001)	N4+N13	(FNC1)	NSN
7002	UNECE meat carcasses and cuts classification: AI (7002)~~UNECE meat carcasses and cuts classification: AI (7002)~~	N4+X..30	(FNC1)	MEAT CUT
7003	Expiration date and time: AI (7003)	N4+N10	(FNC1)	EXPIRY TIME
7004	Active potency: AI (7004)	N4+N..4	(FNC1)	ACTIVE POTENCY
7005	Catch area: AI (7005)	N4+X..12	(FNC1)	CATCH AREA
7006	First freeze date: AI (7006)	N4+N6	(FNC1)	FIRST FREEZE DATE
7007	Harvest date: AI (7007)	N4+N6[+N6]	(FNC1)	HARVEST DATE
7008	Species for fishery purposes: AI (7008)	N4+X..3	(FNC1)	AQUATIC SPECIES
7009	Fishing gear type: AI (7009)	N4+X..10	(FNC1)	FISHING GEAR TYPE
7010	Production method: AI (7010)	N4+X..2	(FNC1)	PROD METHOD
7011	Test by date: AI (7011)	N4+N6[+N4]	(FNC1)	TEST BY DATE
7020	Refurbishment lot ID: AI (7020)	N4+X..20	(FNC1)	REFURB LOT
7021	Functional status: AI (7021)	N4+X..20	(FNC1)	FUNC STAT
7022	Revision status: AI (7022)	N4+X..20	(FNC1)	REV STAT
7023	Global Individual Asset Identifier of an assembly: AI (7023)	N4+X..30	(FNC1)	GIAI – ASSEMBLY
703s [6]	Number of processor with three-digit ISO country code: AI (703s)	N4+N3+X..27	(FNC1)	PROCESSOR # s
7040	GS1 UIC with Extension 1 and Importer index: AI (7040)	N4+N1+X3	(FNC1)	UIC+EXT
7041	UN/CEFACT freight unit type: AI (7041)	N4+X1..X4	(FNC1)	UFRGT UNIT TYPE
710	National Healthcare Reimbursement Number (NHRN) – Germany PZN: AI (710)	N3+X..20	(FNC1)	NHRN PZN
711	National Healthcare Reimbursement Number (NHRN) – France CIP: AI 711)	N3+X..20	(FNC1)	NHRN CIP
712	National Healthcare Reimbursement Number (NHRN) – Spain CN: AI (712)	N3+X..20	(FNC1)	NHRN CN

The data transmitted from the barcode reader means that the element string denoting the ISO country code and number of processor has been captured. As this element string is an attribute of a trade item, it must be processed together with the GTIN of the trade item to which it relates (see section 4.13 *Data relationships*).

When indicating this element string in the non-HRI text section of a barcode label, the following data title SHOULD be used: **PROCESSOR # s**

3.8.18 GS1 UIC with Extension 1 and Importer index: AI (7040)

The GS1 Application Identifier (7040) indicates that the GS1 Application Identifier data field contains the Unique Identification Code of an EU 2018/574 ID Issuer, the National Authority that appointed it (via the GS1 UIC Extension 1), and, if applicable, the Importer (via an Importer Index). The UIC begins with one numeric digit followed by one alphanumeric character from the ISO/IEC 646 invariant character set per figure 7.11-1. The GS1 UIC Extension 1 is one alphanumeric character from the ISO/IEC 646 invariant character set per figure 7.11-1. The Importer Index is one character and include A-Z, a-z, 0-9, - (hyphen) and _ (underscore). Underscore is used to indicate the importer index does not apply (null). The other characters identify up to 63 importers of a product per country of placement. This identifier is authorised for use by the ID Issuer as long as it meets minimum requirements established by GS1. The use of UIC is limited to application standard 2.1.14 European Regulation 2018/574, traceability of tobacco products. The UIC shall be used solely exclusively to facilitate identification of country level authorisation for GS1 identification keys within illicit trade surveillance systems. The UIC shall not be used with GS1 identification keys for open, supply chain systems.

Figure 3.8.18-1. Format of the element string

GS1 Application Identifier	GS1 UIC with Extension 1 and Importer index		
	GS1 UIC	Extension 1	Importer index
7 0 4 0	N_1X_2	X_3	X_4

The data transmitted from the barcode reader means that the element string denoting a Unique Identification Code has been captured.

When indicating this element string in the non-HRI text section of a barcode label, this element string in the non-HRI text section of a barcode label, the following data title SHOULD be used: **UIC+EXT**

3.8.19 UN/CEFACT freight unit type: AI (7041)

The GS1 Application Identifier (7041) indicates that the data field contains the type of freight of the logistic unit. The codes used for freight unit type are the UN/CEFACT alphanumeric codes. GS1 maintains a list based on the UN/ECE Recommendation 21 codes on GS1 Navigator which includes some additional GS1 code values. All codes in the UN/ECE Recommendation 21 and GS1 code list are valid codes to be used with AI (7041). A list of code values maintained by GS1 can be viewed at: https://navigator.gs1.org/edi/codelist-details?name=PackageTypeCode.

Figure 3.8.19-1. Format of the element string

GS1 Application Identifier	UN/CEFACT freight unit type code
7 0 4 1	$X_1 ... X_{i\,(2 \leq i \leq 4)}$

The data transmitted from the barcode reader means that the element string denoting the freight unit type has been captured. As this element string is an attribute to a logistic unit it must be processed together with the SSCC of the unit to which it relates (see section 4.13 *Data relationships*). When indicating this element string in the non-HRI text section of a barcode label, the following data title SHOULD be used: **UFRGT UNIT TYPE**.

Invalid pairs of element strings				Rule
AI	**Designation**	**AI**	**Designation**	
8006	ITIP	01	GTIN	The GTIN SHALL NOT be used in combination with the identification of an individual trade item piece. The GTIN of the trade item to which the individual trade item piece belongs is contained in the element string.
8006	ITIP	37	Count of units contained	The count of units contained SHALL only be used with GTIN of contained trade items or trade item pieces.
8018	GSRN for the recipient	8017	GSRN for the provider	Only one Global Service Relation Number (recipient or provider) SHALL be applied at one time for identification of an individual in a given service relationship
8026	Identification of a trade item piece contained in a logistic unit	02, 8006	GTIN of contained trade items, Identification of an individual trade item piece	Identification of the trade item piece contained in a logistic unit SHALL NOT be used in combination with GTIN of contained trade items or identification of an individual trade item piece.

4.13.2 Mandatory association of element strings

This section defines the element strings that mandate the appearance of another element string on the same physical entity.

✅ **Note**: This does not necessarily mean that the element strings need to appear in the same data carrier. For example, multiple GS1-128 barcode symbols may be used in combination on a GS1 Logistic Label.

The figure below reflects the use case requirements to date. Should future applications arise that require associations they will be added at that time.

Some explanation on figure 4.13.2-1:

- The table is sorted by AI value, with the AI that is the trigger for the rule displayed in the first column. This means that this table cannot be read in both directions. For example, a rule that states AI (17) must be used together with AI (01), does not imply that AI (01) can only be used together with AI (17), since it can also be used with other AIs.

- Multiple AIs may be listed in the first column, separated by commas. This means that the rule applies to all of the listed AIs (element strings).

- The same AI can occur in the first column multiple times, in different rows. This means that depending on the value of the element string different rules need to be applied.

- When multiple AIs are included in the third column, this is always done with an AND, OR or XOR logical operator between them:
  - ☐ AND means that all element strings SHALL appear on the physical entity
  - ☐ OR means that one or a combination of the element strings SHALL appear on the physical entity.
  - ☐ XOR means that one of the element strings SHALL appear on the physical entity and the other element string SHALL NOT.

If element string		Then mandatory associated element string	Rule
AI	Designation	AI	
7009	Fishing gear type	01 XOR 02	The fishing gear type SHALL occur in combination with: ▪ a GTIN; or ▪ a GTIN of contained trade items.
7010	Production method	01 XOR 02	The production method SHALL occur in combination with: ▪ a GTIN; or ▪ a GTIN of contained trade items.
7011	Test by date	01 XOR 02	The test by date and optional time SHALL occur in combination with: ▪ a GTIN; or a GTIN of contained trade items.
703(s)	Number of processor	01 XOR 02	The number of processor SHALL occur in combination with: ▪ a GTIN; or ▪ a GTIN of contained trade items.
710, 711, 712, 713, 714, 715	National Healthcare Reimbursement Number	01	National Healthcare Reimbursement Number(s) SHALL occur in combination with the GTIN.
7020	Refurbishment lot ID	(01 XOR 8006***) AND 416	The refurbishment lot ID SHALL occur in combination with the GLN of production/service location and: ▪ a GTIN; or ▪ an ITIP
7021	Functional status	01 XOR 8006***	The functional status SHALL occur in combination with: ▪ a GTIN; or ▪ an ITIP
7022	Revision status	(01 XOR 8006***) AND 7021	The revision status SHALL occur in combination with the functional status and: ▪ a GTIN; or ▪ an ITIP
7041	UN/CEFACT freight unit type	00	The UN/CEFACT freight unit type SHALL occur with an SSCC.
723s	Certification reference	01 XOR 8004	Certification reference SHALL occur in combination with: ▪ a GTIN; or ▪ a GIAI
7240	Protocol ID	01 XOR 8006	The protocol ID SHALL occur in combination with a GTIN
7241	AIDC media type	8017 XOR 8018	The AIDC media type SHALL occur in combination with: ▪ the GSRN for the provider; or ▪ the GSRN for the recipient
7242	Version Control Number (VCN)	8017 XOR 8018	The Version Control Number SHALL occur in combination with: ▪ the GSRN for the provider; or ▪ the GSRN for the recipient
8001	Dimensions of roll products	01	Dimensions of roll products SHALL occur in combination with the GTIN. Note: The GTIN must relate to a variable measure trade item.
8005	Price per unit of measure	01 XOR 02	The price per unit of measure SHALL occur in combination with: ▪ a GTIN; or ▪ a GTIN of contained trade items. Note: The GTIN must relate to a variable measure trade item.
8007	International Bank Account Number	8020 AND 415	The International Bank Account Number SHALL occur in combination with the payment slip reference number and the GLN of the invoicing party.