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Specialized Section on Standardization of Meat

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Item 6 of the provisional agenda

**Digitalization of the Standard for Bovine meat –
proposal by the delegation of Poland**

Proposal by the delegation of Poland on digitalization of the Standard for Bovine Meat – Carcasses and Cuts*

Submitted by the delegation of Poland

Summary

At the thirtieth session of the Specialized Section on Standardization of Meat the delegation of Poland proposed to look into the digitization of the United Nations Economic Commission for Europe (UNECE) Standard for Bovine Meat – Carcasses and Cuts. They volunteered to take the lead on such work and develop a proposed work plan.

During 2023, three informal meetings were held to discuss the potential scope and objective of such work. Following that, the attached proposal was submitted by the delegation of Poland, and includes the objective, scope and potential options/solutions for the proposed work.

The Specialized Section is invited to discuss the proposal and consider further work on the proposal to digitize the UNECE meat standards.

* This document was submitted late for processing due to resource constraints.



I. Introduction

At the thirtieth session of the Specialized Section on Standardization of Meat the delegation of Poland proposed to include as future work the establishment of a rapporteur's group to look into the digitization of the United Nations Economic Commission for Europe (UNECE) Standard for Bovine Meat – Carcasses and Cuts. They volunteered to take the lead on such work and develop a proposed work plan. The Specialized Section decided to place the below item on the agenda for 2023.

In this regard, a call for participation in meetings to develop a workplan went out, and three informal meetings were organized in 2023: on 27 February, 26 April, and 29 June.

The meetings, chaired by Poland, were attended by representatives from Australia, China, France, Ireland, Serbia and the United States of America. The third meeting was also attended by a representative of GS1 Poland.

During the meetings, participants discussed the possibility of digitizing the UNECE Standard for Bovine Meat – Carcasses and Cuts. Poland presented conclusions from a case study on machine-understandable and processable representation of the UNECE Standard for Bovine Meat – Carcasses and Cuts. Representatives from Australia and the United States shared with the participants their experience in the digitization of documents implemented in their national markets.

The possibility of using codes from this standard to carry out digitization of documents was discussed. It was pointed out that for most of the cut codes there is an additional description specifying whether or not the item is with fat cover, number of ribs, etc. Each such description should be assigned a digit. There are 20 digits/numbers in the standard, of which 3 are not used. Therefore, clarifying the element numbers for those additional descriptions would enable translating the written language of the standard into digital language.

Following these discussions, the delegation of Poland is pleased to submit the following proposal. The document consists of four parts: proposal, justification, objective and conclusion.

The Specialized Section is invited to consider further work on the proposal to digitize the UNECE meat standards.

II. Proposal

The delegation of Poland would like to propose the development of a fully digitized version of the UNECE Standard for Bovine Meat – Carcasses and Cuts. Given the increasing digitalization of trade processes and the need for precise identification of beef products, we believe that creating a digital version of this standard is crucial.

The UNECE code for purchaser requirements for beef, as defined in chapter 4 of the UNECE Standard for Bovine Meat – Carcasses and Cuts, consist of 20 digits,¹ allowing for precise identification of meat cuts in trade. However, when buyers and sellers want to include optional parameters (listed under each cut as “To be specified”) such parameters can currently not be included in the 20-digit code string.

In the UNECE Standard for Bovine Meat – Carcasses and Cuts almost all cut descriptions include a section “To be specified” that lists aspects that are to be additionally agreed between buyer and seller, e.g.: intercostals retained or removed, diaphragm retained or removed, peritoneum retained or removed, fat cover retained or removed, rib number, width of ribs, etc. It means that for digital use of the descriptions listed under “to be specified”, those descriptions need to be described by numbers in order to be used in the form of GS1 bar codes. Thus, it means that they are to be standardized in the same fashion as, for instance, the refrigeration or production system codes in the standard.

¹ In line with the GS1-128 Bar Code Symbolology.

GS1 uses Application Identifiers as prefixes to identify the meaning and format of the data that follow it. The UNECE Standard for Bovine Meat – Carcasses and Cuts has been assigned the GS1 Application Identifier (7002) to be used in conjunction with a Global Trade Item Number (GTIN) and represented in the GS1-128 Bar Code Symbology. GS1 Application Identifier for meat has the format N4+X..30, where N4 stands for prefix “7002” and “X..30” stands for any 30 digits string consisting of characters from the list of more than 80 symbols.² Thus, there are 10 extra digit spaces that could be used to record data concerning the missing aspects of meat items.

The UNECE code for purchaser requirements currently has 14 fields and 20 digits.

The following code example 10**164300**153201040050 describes a chilled, vacuum packaged, brisket that was trimmed to 3 mm maximum fat thickness from a steer or heifer raised in an organic production system, forage fed and slaughtered conventionally, where field number 2 (in bold) contains the product/cut number (1643).

Fields number 3 (two digits) and 7b (one digit) – marked in underline in the example above – are currently not used.

The unused 3 digits from the current 20-digit string could be used to describe qualitative parameters. There are many possible solutions, some of which are described below:

A. Two-digit solutions

For a two-digit solution, it would be possible to use field number 3 consisting of 2 digits (see section 4.1 and 4.2 of the UNECE Standard for Bovine Meat – Carcasses and Cuts).

In this case, by adding two digits to the four-digit cut code, we would have 100 possible codes (combinations) which could be used to define (codify) the value “to be specified”.

For example, code 160401 may represent an agreed and published list of parameters for ribs-prepared (item 1604), e.g.:

- Spinous process removed
- Tip of scapular and associated cartilage removed
- Rib length distance from eye muscle – 5 cm
- Cap muscle (M. trapezius) removed
- Ligamentum nuchae removed.

Using the full 20-digit code example used above, and replacing brisket with ribs-prepared (1604) and adding the example parameters above (01), the related code string would look as follows: 10**160401**153201040050.

B. Three-digit solution

Three digits allow for more combinations, up to 1000 if 100 combinations is not enough. We can use field 7b for the third digit.

C. Ten-digit solution

The use of 10 digits (as the UNECE standard currently uses 20 out of the 30 digits available in the GS1-128 Bar Code Symbology) would provide a more extensive range of codes and allow for even greater flexibility in representing parameters and conditions. With 10 digits, each digit can represent a specific parameter, and the value of the digit can indicate the condition (retained or removed). With this solution, the code string would have a length of


² See Figure 7.11-1, in GS1 General Specifications Standard, available at: https://www.gs1.org/docs/barcodes/GS1_General_Specifications.pdf, as well as pages 189–190 for information on the UNECE meat carcasses and cuts classification (AI (7002)).

30 characters, the 20 currently existing plus an additional 10 as is possible according to the GS1-128 specification. Field 3 and field 7b would then not need to be used.

D. Qualitative parameters

There are parameters that are qualitative, so cannot be captured by the binary condition 1 – retained or 0 – removed. For instance in the UNECE Standard for Bovine Meat – Carcasses and Cuts, full rib set 1599 in the “to be specified” section has the following parameters: “Rib number (to be agreed between buyer and seller)”, “Width of ribs”.

Two examples are presented below:




PISTOLA HINDQUARTER 1020

Pistola hindquarter is prepared from a hindquarter (1010) by the removal of the thin flank (2200), lateral portion ribs and portion of the navel end brisket. A cut is made commencing at the superficial inguinal lymph node separating the M. rectus abdominus and following the contour of the hip, running parallel to the bodies of the vertebrae approximately 50mm from the M. longissimus dorsi (eye muscle) to the specified rib.


To be specified:


- Rib number required (1 to 10).
- Diaphragm retained or removed.
- Kidney retained or removed.
- Kidney / channel retained or removed.
- Specified rib length from eye muscle.
- Flank steak, inside skirt & internal flank plate retained.

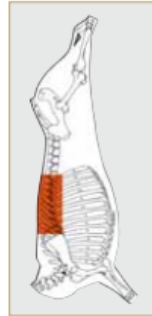


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1020 (8-rib)	1025 (5-rib)
1021 (1-rib)	1026 (6-rib)
1022 (2-rib)	1027 (7-rib)
1023 (3-rib)	1028 (9-rib)
1024 (4-rib)	1029 (10-rib)







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1600 (5-rib)
1601 (6-rib)
1602 (7-rib)
1603 (8-rib)
1604 (9-rib)
1605 (4-rib)

RIBS - PREPARED 1604

Ribs prepared is prepared from a forequarter (1063) after the removal of the brisket (1643) and chuck square cut (1617). Short ribs portion (1694) is removed at a distance of 75mm from the M. longissimus dorsi (eye muscle) at the loin (caudal) end, parallel with the vertebral column (cranial) to the specified rib. The body of the vertebrae (chine) on the ribs prepared is removed exposing the lean meat but leaving the spinous processes (feather bones) attached.

To be specified:

● Rib numbers required (4 to 9 ribs).	● Rib length distance from eye muscle.
● Spinous process retained or removed.	● Cap muscle (M. trapezius) retained or removed.
● Tip of scapular and associated cartilage retained or removed.	● Ligamentum nuchae retained or removed.

III. Justification

The digitization of the additional descriptions contained in the UNECE Standard for Bovine Meat –Carcasses and Cuts is justified for several reasons:

- Improved identification precision: The current four-digit coding of cuts in the UNECE standard allows for general identification of meat items. However, optional parameters require additional agreements between buyers and sellers. Introducing a digital version would enable more precise description and identification of meat elements, such as retained or removed intercostals, diaphragm, peritoneum, fat cover, rib number, rib width, etc.
- Lack of precise representation in GS1 128 AI(7002) codes: Currently, there is no suitable representation for the “To be specified” parameters in the GS1 128 AI(7002) standard, limiting the digital use of these parameters in GS1 bar codes. The

development of a standardized digital representation of the “To be specified” parameters would allow for precise representation and standardization of these parameters, improving trade processes and meat product identification.

- Facilitating communication between trading parties: The development of a standardized digital representation of the “To be specified” parameters of the standard would enable clear specification of meat parameters and sales conditions. This would streamline communication between buyers and sellers, eliminating ambiguities and uncertainties associated with additional parameter agreements, which could lead to confusion and trade disputes.
- Alignment with the trend of digitizing trade processes: In today’s era, where digitalization of trade processes is increasingly prevalent, ensuring digitization of all parameters of the UNECE standard is in line with market needs and trends. It would enable effective data exchange, process automation, and enhanced traceability of meat products in the supply chain.

In conclusion, the development of a standardized digital representation of the “To be specified” parameters of the UNECE Standard for Bovine Meat – Carcasses and Cuts is justified due to improved meat identification precision, the lack of precise representation in the current GS1 128 AI (7002) standard, facilitation of communication between trading parties, and alignment with the trend of digitizing trade processes.

IV. Objectives

- Finding the optimal model to encode the parameters listed as “To be specified” in the GS1 128 AI(7002) standard. The goal is to identify the most efficient and effective method for representing these parameters within the existing GS1 128 bar code framework.
- Making a decision regarding the choice between utilizing a library or an ontology for encoding the parameters. This involves evaluating the advantages and disadvantages of each approach and determining which one is better suited for the specific requirements of the UNECE standard.
- Generating the necessary items within the selected library/ontology to represent the parameters and their corresponding conditions. This involves creating a comprehensive set of codes or representations for each parameter, considering both retained and removed conditions.
- Publishing the developed library/ontology within the UNECE domain. The objective is to make the standardized representation of the parameters available to stakeholders and ensure its accessibility for implementation in the meat trade industry.

By achieving these objectives, we aim to establish a standardized and effective method for encoding the “To be specified” parameters in the AI(7002) GS1 128 format, facilitating precise identification and description of meat items in line with UNECE standards.

V. Conclusion

In conclusion, the proposed objectives aim to address the need for a more precise and standardized encoding of the “To be specified” parameters in the GS1 128 AI(7002) format for meat items. By finding the optimal model for encoding, choosing between a library or ontology, generating the necessary items, and publishing them within the UNECE domain, we strive to establish an efficient and universally accessible solution.

The successful achievement of these objectives will enable better identification, description, and tracking of meat products in trade, enhancing transparency, efficiency, and accuracy within the industry. It will also facilitate interoperability and communication between buyers and sellers, ensuring a common understanding of the specific parameters and conditions associated with meat items.

Ultimately, the development of a standardized digital representation of the “To be specified” parameters will contribute to the digital transformation of the meat trade and support the overall goals of the UNECE standards, promoting harmonization and facilitating global trade in the meat industry.
