Product Image Specification Standard

establishes rules for the storage of digital images associated to products and provides details on all aspects of digital imaging storage.

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Log of Changes

Release	Date of Change	Changed By	Summary of Change
2006 06 29	2006 29 June	D. Buckley	Converted 'VICS Product Image Specification' into GS1-GSMP template format
2006 07 11	2006 11 July	R. Laur	Updated information for CR submission to GSMP
1	2006 08 December	GDSN/GSMP Imaging Specification Work Group	See analysis documentation.
2	2007 11 January	GDSN/GSMP Imaging Specification Work Group	See comment resolution document from GSMP Public Review
2.1	2007 07 February	GDSN/GSMP Imaging Specification Work Group	Errata to fix examples.
2.2	2007 13 February	GDSN BRG	Clarification of examples 4-2, 4-3, 4-4

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2.3	2008 26 February	D.Clark	Clarification to planogram naming structure 2.1.5
2.4	2013 08 30	GDSN/GSMP Imaging Specification Work Group	WR # 12-046; 12-244; 12-253; 12-254; 12-255; 12-256; 12-257; 12-258; 12-259; 12-310; 12-312; 12-313; 12-322; 13-018; 13-040; 13-105
2.5	2014 03 11	Errata	Corrections to wording and examples added
2.6	2014 10 01	GDSN/GSMP Imaging Specification Work Group	WR #14-076; 14-023; 14-038; 14-055; 14-099 ☐ OK
2.7	2015 03 02	GDSN/GSMP Imaging Specification Work Group	WR # 15-004 rendered images
2.8	Oct 2015	D.Buckley & D.Clark	Applied new GS1 branding prior to publication and WR # 14-071 (Metadata added); 14-184 (style sheet to identify facing level below each); 14-200 & 14-201 (GDTI Based Naming added); 15-154 (descriptions added to the image capture types for still shot single & multiple GTIN)

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Table of Contents

1 Introduction

This GS1 Standard establishes rules for the storage of digital images associated to products. The product identification number used is the Global Trade Item Number (GTIN) and this document provides details on all aspects of digital imaging storage. This document does not specify how the images should be delivered via electronic commerce. Image delivery is out of scope.

These rules are based upon the guidelines that were originally developed in July 2005 by Voluntary Interindustry Commerce Solutions Association (VICS), http://www.vics.org, so there would be consistency in the use of digital images for trade facilitation.

It is important to note that digital assets (e.g. images) are only one part of what is needed. Data, both meta and associated, are essential for the timely and accurate usage of the assets. Additional information on minimum data requirements are outlined in the TIIG (Trade Item Integration Guideline)

2 Planogram Image and Data Field Specifications

2.1 File Format

File formats must be as follows, 72 ppi – 150ppi

■ Targa 16-32 bit (If 32 then alpha must be I/O), no compression

■ JPEG, level of compression to be at 10 or above

■ PNG (must be alpha channel compatible)

Note: JPEG images are not alpha channel compatible with all imaging software.

2.2 Views

All products that are produced in a package should be represented with up to 6 views of the In-Package consumer pack, with 3 views as a minimum straight-on front, straight-on top, and straight-on left side views. Items that are not produced in a package, such as hammers, must be represented with the same above 3 views. An additional straight-on front view of an inner pack should be available when appropriate.

2.3 Backgrounds and Cropping

Images for contour products must appear with a transparent background. Images for contour and non- contour products must also be cropped to products' edge. No props or additional products are allowed within the primary image areas.

■ Boxes type products are cropped to the edge and represented on a white background

■ Hard corner boxes, were the cropped image leaves no background for close cropping alpha channel identification, shall be saved without a transparent layer level.

■ Rounded or odd shaped type products should be contoured and represented with a transparent background

■ Rounded or odd shaped type products can also be cropped to the products edge and represented on a white background.

2.4 Image Size

Minimum image size for all marketable face planogram images shall be 20kB minimum (50kB for Targa images)

2.5   File Name Construction

2.5.1   GTIN Based Naming

First 14 characters are the GTIN of the product (required). After the first period, the planogram view indicator will be present (required). GTINs with multiple graphic layouts that do not conflict with the GTIN allocation rules should be identified with 'A' for Alternative.

Examples:
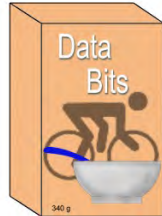
07541230123457.1   07541230123457A.1

Note: If the GTIN is unique to a display or tray the image will be named using the display/tray GTIN as well as the inner product GTIN followed by its appropriate identifier ('T' for tray , 'D' for display, and 'A" for alternate)
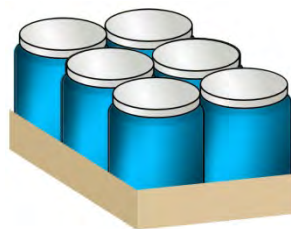
07541230123457T.1   07541230123457D.1

Note: For peg hole flat products: If the product side 2,3,8 and 9 are less than 1/2cm and have no viewable marketing information images may be omitted.

Valid image views are:

- straight on, front shot
- straight on, left view
- straight on, top view

Optional image views:

- straight on, back shot
- straight on, right view
- straight on, bottom view

The standard image naming indicators are:

- (GTIN) **.1** front face
- (GTIN) **.2** left of front
- (GTIN) **.3** top
- (GTIN) **.7** back
- (GTIN) **.8** right of front
- (GTIN) **.9** bottom

See Images below for visual reference

	TOP		
	.3		
LEFT	FRONT	RIGHT	BACK
.2	.1	.8	.7
	BOTTOM		
	.9		

FRONT .1

Back .7

TOP .3

LEFT .2

Heal Balm

FRONT .1

RIGHT .8

BACK .7

BOTTOM .9
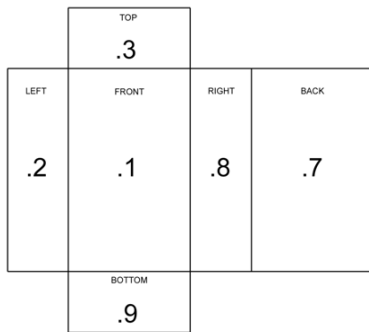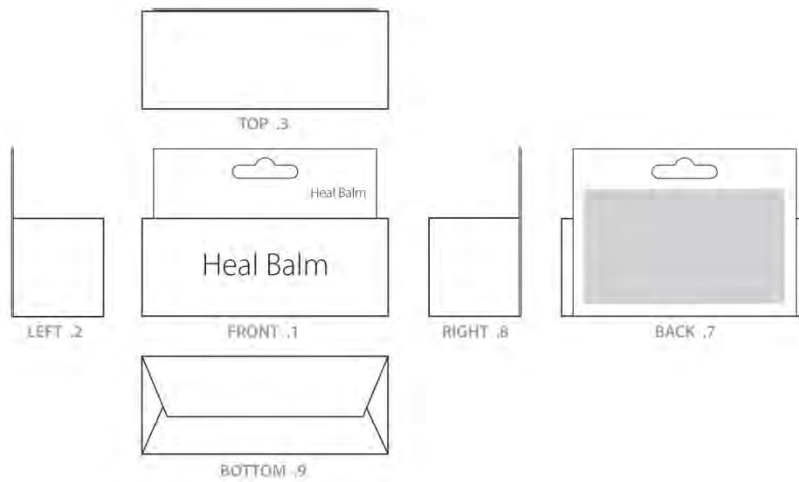
2.5.2   GDTI Based Naming

All application rules based on GS1 Keys apply to this naming convention.

- the first 13 digits are the GDTI

- (optional) the next 1-17 alpha numeric characters are the serial component

Note: Naming Planogram images with GDTI should be communicated and agreed upon by trade partners due to software application issues.

2.6   Determining the front face

2.6.1   Default Front Face

The front facing of the products is determined by the GDSN Package Measurement Rules (*Section 4.2 Determining the Default Front of an Item*). All other facings are taken in relation to the front face and are identified with a numerical extension identifying that face. Merchandisable facings are automatically captured as the numerical extension allows multiple images (and facings) for the same GTIN.

2.6.2   Alternate Language

Should there be alternate language facing on the packaging, there should be note of this in the data accompanying the images.
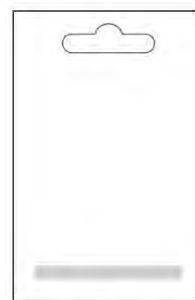
2.6.3   Consumer Display (not identified with GTIN)

Should the product be sold in a displayer/tray that does not bear its own unique GTIN, then the tray images should be captured using the unit GTIN appended with a "T" This will allow space management users to select either the unit or the tray when creating their planogram.

Examples:

- Unit: 00012345678905.1
- Tray: 00012345678905T.1

3   File Naming

The two naming methods are GTIN based and GDTI based.

- GTIN based naming should be used when the image contains a single item, which can be identified with a GTIN.

- GDTI based naming should be used for items not identified with a GTIN (e.g. RCN identified items in apparel, images containing multiple different GTINs) and where a single image can be applied to multiple products/items.

3.1   GTIN Based Naming

First 14 characters are the product specific GTIN.(Numeric)

- 15th Underscore spacer

- 16th File nature/type (simple designation AlphaNumeric). This section is dynamic (subject to frequent updates).

Note: Planogram images are exempt from this convention due to software application issues
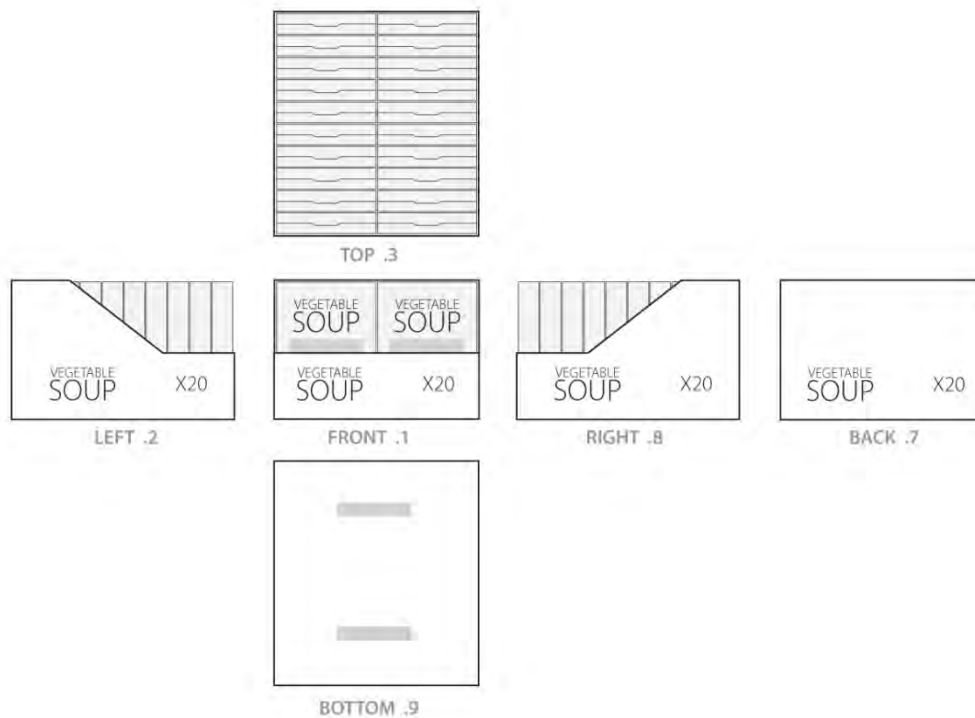
3.2   GDTI Based Naming

All application rules based on GS1 Keys apply to this naming convention.

- the first 13 digits are the GDTI

- (optional) the next 1-17 alpha numeric characters are the serial component

4   Marketing Image Specifications

4.1   Over all Supplied Photography Guidelines

It is understood that there will be instances where photography, other than "product" photography will be needed. Also, situations may arise where product shots are needed at a size or resolution that exceeds the above-mentioned standards. In these cases, it will be up to the customer to either originate the photography themselves, or work out arrangements with the vendor to supply said photography on an "as needed" basis. ALL supplied photography should conform to the guidelines listed below.

Note: Marketing Images applies to both digital images captured through use of a digital camera or other digital imaging devices as well as rendered images.

Note: Rendered images are computer generated images which can be comprised of graphic renderings and/or digital images to create a lifelike product semblance.

4.2   File Characteristics

No alpha channels or layers, guides or rulers. No bubbles, fingerprints or Newton rings from scans. No transfer functions or postscript colour management. No signatures, "finger printing" or visible watermarks. No compression artefacts. No interpolation ("resizing up"). No scanning from

printed pages. No evidence of dust or scratches. No manufactured shadows. Moiré Patterns should be minimised.

4.3 Guidelines for Image Colour and Quality

Recommendations for quality image capture and processing:

- No colour casts. Colour should be as rich, vibrant and eye-catching as possible. Colour should be balanced over-all and not "blown-out" in highlights. Flesh tones and grass should be realistic and life- like.

- Reflections should also be realistic.

- Shadows should be realistic and neutral.

- Retouching should be as seamless and undetectable as possible and be convincing at a minimum of 200% magnification (i.e. removal of expiration/best before dates.

- Colour should be matched to product PMS colours (list to be provided by designer). If PMS colour is not available or if colour is proprietary, users must either match as closely as possible to colour swatches or the actual RGB breakdown must be provided.

- The image should be photographed with large depth of field so that the whole product is sharp.

- The Image should not be over sharpened in the (digital) image processing

- The lighting of product should be uniform when the image is taken.

Note: Please see _section 2.5 File Name Construction_ for indication of new product or promotional tag rules.

4.4 End Usage Formats

It is recognised that due to the many potential combinations of format, resolution and size in end user applications, it is not possible to enumerate all possibilities in a standard. It is the understanding that the specifications recommended for advertising images are of sufficiently high quality that they will provide a source image that can be repurposed by the end user for their own specific applications. This includes different print media formats and items as well as Ecommerce (electronic) images.

4.5 Product Photography

Decisions as to whether products should be photographed in the package, out of package, or both, should be made based on the presentation of the product in a live sale scenario (i.e. box of cereal on a shelf vs. a lawnmower on display). If there are doubts as to which format is most appropriate both should be taken and appropriately identified. This decision should be communicated to the manufacturer. The image should be cropped close to the object.

Note: No props or additional objects should be in the frame (for this nature/type – _see section on File Name Construction_). This applies to still shots for products (single GTIN).

Backgrounds:

All backgrounds must be knocked out to white (RGB 255/255/255).

4.6 Clipping Paths

All images must contain one active clipping path, properly created, in order for the product to be silhouetted. It is very important for the purpose of batch image repurposing that the clipping path be named "Path 1." Default flatness setting should be 1-device pixels.

4.7   Image Size

Standard Resolution

Minimum image size 900 pixels (75mm (3.0 in.)

Maximum image size 2400 pixels (200mm (8.0 in.)

Image size to be a 1:1 square aspect ratio (i.e. 900 pixels X 900 pixels)

File resolution: 300 ppi

High Resolution

Minimum image size 2401 pixels (200.08 mm (8.003 in.

Maximum image size 4800 pixels (400mm (16.0 in.)

Image size to be a 1:1 square aspect ratio (i.e. 3000 pixels X 3000 pixels)

File resolution: 300 ppi

4.8   File Format and Colour Mode

File format: LZW Compressed TIFF Colour Mode: RGB

Delivery of the image will be at the minimum image quality and trading partner agreements can dictate the storage of the image in an alternate format, i.e., JPEG or PNG format

✅ **Note**: The ICC profile or exact colour space must be known and defined. The preference for storage of the source file is RGB 8 bit per channel.

4.9   Product Views

All products should have a maximum of 3 separate views when warranted per marketable face – a front view taken at 15 degrees top from centre is preferred for 3D images, however some products may require a steeper or shallower angle to display effectively. For 2D images (images of products with negligible depth properties) a 0 degree plunge angle is permitted.

Figure 4-1 Example Plunge Angle
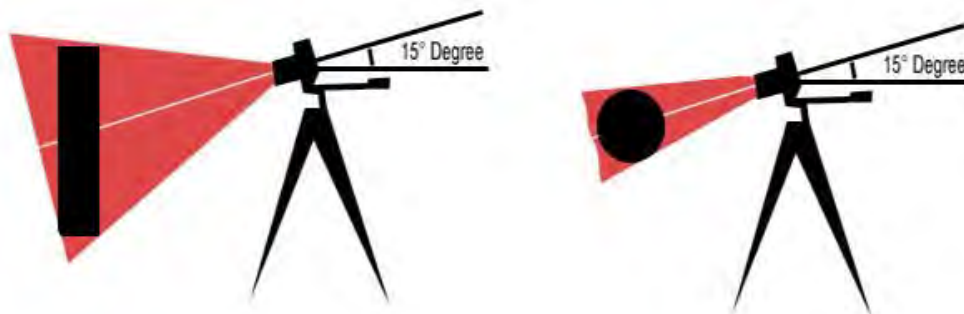
4.10   File Name

A significant portion of the Marketing image standard covers the naming conventions to identify the views represented by each image. There could be multiple languages on a product leading to exceptionally long file names. There could also be more than one marketing view available for a product. The same product in Country A with bilingual packaging will not have the same GTIN as the version sold in Country B which has another set of languages. The languages on the packaging will be unique to the specific product GTIN. When all merchandisable views contain all languages present on packaging, there is no need for a language indicator (Example default in-package,

primary merchandisable view). Only when alternate views exist unique language facings require a unique language indicator (Alternate side of same product with alternate language view - in this case the English view would add the "_en" to the file name).

This leads to the other key aspect of identification. When faced with multiple merchandisable faces, which is the primary. To resolve this, refer to the existing standards for determining the front face found in the GDSN Package Measurement Rules (see the following excerpt).

4.2. Determining the Default Front of an Item: Prior to any measurement capture, the Default Front of the trade item must be determined. For the purposes of this standard, the Default Front is the side with the largest surface area that is used by the manufacturer to "sell" the product to the consumer, in other words, the side with markings such as the product name.

Example:
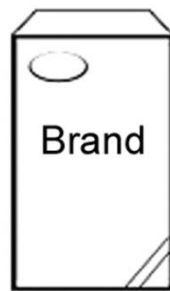
00012345678905_A1C1_1215_s01.jpg

GTIN	0012345678905
Image type	Still Shot Single GTIN
Facing	Front
Angle	Center
State	In package
Image End Date	Dec 2015
Sequence Number	01

4.11   GTIN Based File Name construction: Still Shot Single GTIN

Note: Note for digits 1-15 see *section* 3 *File Naming*.

16th File Nature/Type:

- A - Still shot product single GTIN

- C - Still shot product single GTIN (High Resolution)

- Z – Undetermined

17th Facing indicator: As with planogram images a front determination is required with all subsequent faces relative to the front face.

- 0 Not applicable

- 1 Front

- 2 Left

- 3 Top

- 7 back

- 8 right

- 9 bottom

18th Angle identifier: Angle reference relative to the face being represented

- (C) Centre

- (L) Left

- (R) Right

- (N) No Plunge

19ᵗʰ In/Out of packaging

- (1) In packaging

- (0)Out of packaging *(i.e., the product as it first arrives "out of packaging" not how it appears after it has been processed or prepared)*

- (A) Case – *A shot of the product in its case as it would appear to the operator upon delivery.*

- (B) Innerpack – *A shot of the product as it would appear inside its packaging inside the case.*

- (C) Raw/uncooked – *A shot of a product that has not been cooked or processed or that needs to be cooked or further prepared before it is considered edible.*

- (D) Prepared - *A shot of a product that has been taken from a raw or uncooked state to a cooked state according to the appropriate method of preparation (e.g., baked, fried, grilled or boiled).*

The following characters are optional additions to be used if the product being imaged requires them in the order in which they should appear.

- 20ᵗʰ Underscore to separate optional identifiers

- 21ˢᵗ ++ characters:

Note: Due to some operating system requirements (FAT32), it is recommended to limit the length of the file name to 32 characters, including the suffix.

- Language Indicator (2 character alpha):

  - ISO639 format - Example syntax for populating a country variation of a Language Code attribute: aa or optionally aa-BB where aa = ISO 639-1 code list, must be lower case where BB =ISO 3166-1 Country Code, 2 Alpha character representation, must be upper case to be used only if multiple faces of dissimilar languages occur

  - Image end date/promotional (4 character numeric)

  - MMYY that image is valid until (i.e. If good until 1206 (Dec 2006) then to be removed after 01 January 2007.

- Sequence Number (3 character alphanumeric):

  - lowercase 's' followed by 2 numeric digits for Sequence number will be added at the end of file name with the following format:

    xxxx_sNN (underscore, lowercase "s" and then 2 numeric mandatory)

Examples

Examples: Please note that (GTIN) in the examples represents the 14 digit product GTIN

Figure 4-2 Example default in-package, primary merchandisable view all angles

(GTIN)_A1L1   (GTIN)_A1C1   (GTIN)_A1N1 (No Plunge)   (GTIN)_A1R1
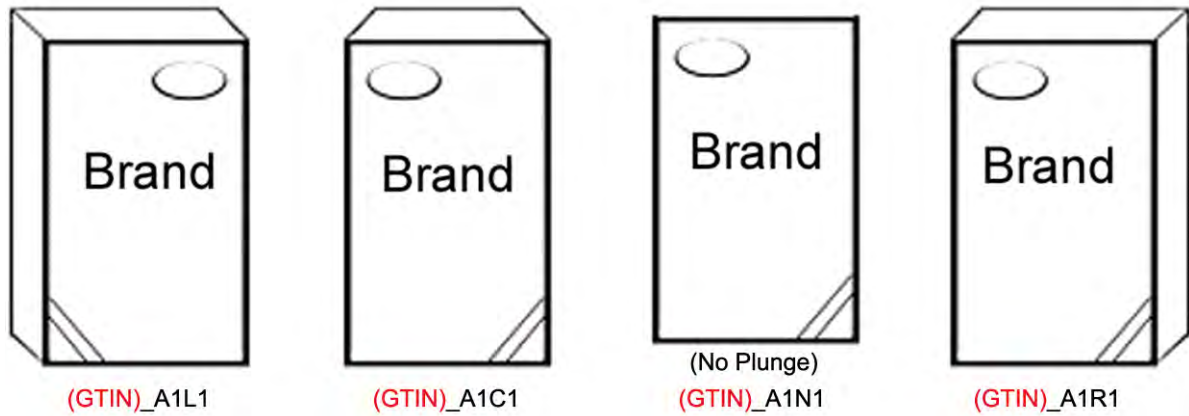
Figure 4-3 Product with alternate Marketable faces
*Note tallest vertical face is designated as face '1'

(GTIN)_A1C1   (GTIN)_A7C1
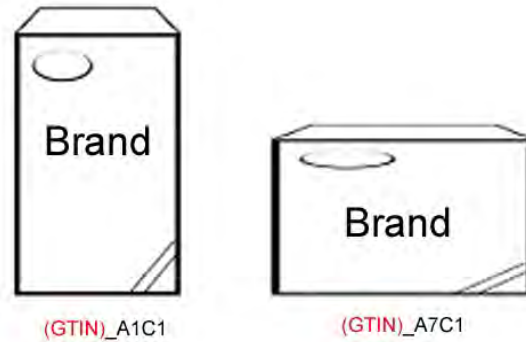
Figure 4-4 Same product with multiple marketable faces containing dissimilar languages

(GTIN)_A1L1_en   (GTIN)_A1L1_fr
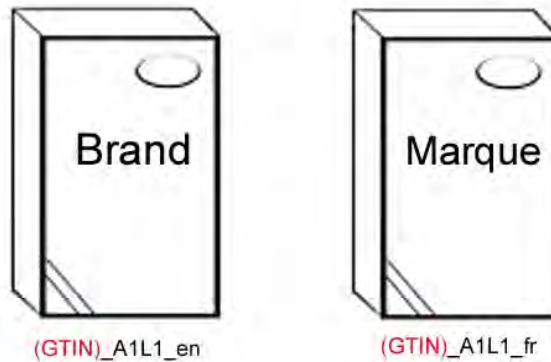
Figure 4-5 Promotional end date for time specific packaging

(GTIN)_A1L1   (GTIN)_A1L1_0109

4.12   GTIN Based File Name construction: Still Shot Single GTIN with Supporting Elements in Image

Note for digits 1-15 see File Naming section.

16th File Nature/Type:

- B - Still shot product single GTIN with Supporting Elements in Image
- D - Still shot product single GTIN with Supporting Elements in Image (High Resolution)
- Z - Undetermined

17th Facing indicator: As with planogram images a front determination is required with all subsequent faces relative to the front face.

- 1 Front
- 2 Left
- 3 Top
- 7 back
- 8 right
- 9 bottom

18th Angle identifier: Angle reference relative to the face being represented

- (C) Centre
- (L) Left
- (R) Right
- (N) No Plunge

19th In/Out of packaging

- (1) In packaging
- (0)Out of packaging *(i.e., the product as it first arrives "out of packaging" not how it appears after it has been processed or prepared)*
- (A) Case – *A shot of the product in its case as it would appear to the operator upon delivery.*
- (B) Innerpack – *A shot of the product as it would appear inside its packaging inside the case.*
- (C) Raw/uncooked – *A shot of a product that has not been cooked or processed or that needs to be cooked or further prepared before it is considered edible.*
- (D) Prepared - *A shot of a product that has been taken from a raw or uncooked state to a cooked state according to the appropriate method of preparation (e.g., baked, fried, grilled or boiled).*

- (E) Plated - *Prepared food arranged simply on a serving plate, dish or bowl for better visibility. May include an additional step, such as garnishing, icing, seasoning or other enhancement*

- (F) Styled - *Carefully and artfully arranged for an attractive visual presentation, and designed to suggest the taste, aroma and appeal of the actual dish. May include complementary items (e.g., an entrée and sides) to present the impression of a complete meal. May also include an additional step, such as garnishing, icing, seasoning or other enhancement. May be presented with different backgrounds and at different angles.*

- (G) Staged - *A shot of a product that has been arranged for display in such a way as to provide clear visibility. The product may be propped up if necessary for optimum viewing, but it should not be held or used in any way by a person.*

- (H) Held - *A shot of a product that has been held out for display by one hand or a pair of hands. When relevant, proper grip should be demonstrated. Apart from the hands and forearms, no part of the person holding the item should be visible.*

- (J) Worn - *A shot of a product, such as a protective item or article of clothing, which is worn by a person. The complete product should be visible inside the frame, but the individual wearing it should be cropped out as much as possible.*

- (K) Used - *A shot of a product as it is meant to be used in its appropriate environment. Small utensils may be held in a hand or hands and used for their intended purpose.*

- (L) Family - *A shot of a number of related products (e.g., matched sets, place settings) arranged together in a single picture.*

- (M) Open Case - *A shot of a case, flaps open, that shows how the product(s) would look when an operator receives the product and opens the case.*

The following characters are optional additions to be used if the product being imaged requires them in the order in which they should appear.

- 20th Underscore to separate optional identifiers
- 21st ++ characters:

Note: Due to some operating system requirements (FAT32), it is recommended to limit the total number of characters in the file name to 32 (including suffix).

- Language Indicator (2 character alpha):
  - ISO639 format - Example syntax for populating a country variation of a Language Code attribute: aa or optionally aa-BB where aa = ISO 639-1 code list, must be lower case where BB =ISO 3166-1 Country Code, 2 Alpha character representation, must be upper case to be used only if multiple faces of dissimilar languages occur
  - Image end date/promotional (4 character numeric)
  - MMYY that image is valid until (ie. If good until 1206 (Dec 2006) then to be removed after 01 January 2007.
- Sequence Number (3 character alphanumeric):
  - lowercase 's' followed by 2 numeric digits for Sequence number will be added at the end of file name with the following format:

    xxxx_sNN (underscore, lowercase "s" and then 2 numeric mandatory)

5 Interactive digital assets

360 imaging vs. 3D interactive imaging vs. 3D modelling

Although these terms can often be misapplied here is a general definition of these digital entities:

360 degree imaging is product photography on a single axis – the product rotates on a single axis while the camera takes pictures at specified degree intervals. The images taken of a product can be associated together in a viewer; to allow for an interactive image to be created that can be rotated by the user to replicate a sense of a physical product in a digital setting.

3-D product interactive photography is 360* product photography on more than one axis. When the images are edited, formatted, and associated to the viewer, the consumer can rotate the product along the sides and the top – this is a 3D interactive image.

3D modelling (also known as a 3D rendered model) is a process whereby a digital framework is created and then graphic layers are applied or created to 'build' a virtual object which, through software, can be rotated in any direction, to allow for an interactive object to be created that can be manipulated by the user.

5.1   360* Imaging

360 degree imaging is product photography on a single axis – the product rotates on a single axis while the camera takes pictures at specified degree intervals.

5.1.1   Overall Supplied Photography Guidelines

It is understood that there will be instances where photography, other than "product" photography will be needed. Also, situations may arise where product shots are needed at a size or resolution that exceeds the below-mentioned standards. In these cases, it will be up to the customer to either originate the photography themselves, or work out arrangements with the vendor to supply said photography on an "as needed" basis. ALL supplied photography should conform to the guidelines listed below.

5.1.2   File Characteristics

No alpha channels or layers, guides or rulers. No bubbles, fingerprints or Newton rings from scans. No transfer functions or postscript colour management. No signatures, "finger printing" or visible watermarks. No compression artifacts. No interpolation ("resizing up"). No scanning from printed pages. No evidence of dust or scratches. No manufactured shadows. Moiré Patterns should be minimised.

5.1.3   Guidelines for Image Colour and Quality

Recommendations for quality image capture and processing:

- No colour casts. Colour should be as rich, vibrant and eye-catching as possible. Colour should be balanced over-all and not "blown-out" in highlights. Flesh tones and grass should be realistic and life- like.

- Reflections should also be realistic.

- Shadows should be realistic and neutral.

- Retouching should be as seamless and undetectable as possible and be convincing at a minimum of 200% magnification (i.e. removal of expiration/best before dates.)

- Colour should be matched to product PMS colours (list to be provided by designer). If PMS colour is not available or if colour is proprietary, users must either match as closely as possible to colour swatches or the actual RGB breakdown must be provided.

- The image should be photographed with large depth of field so that the whole product is sharp.

- The Image should not be over sharpened in the (digital) image processing

- The lighting of product should be uniform when the image is taken.

**Please see the section on File Name Construction for indication of new product or promotional tag rules.

5.1.4 End Usage Formats

It is recognised that due to the many potential combinations of format, resolution and size in end user applications, it is not possible to enumerate all possibilities in a standard. It is the understanding that the specifications recommended for 360* images are of sufficiently high quality that they will provide a source image that can be repurposed by the end user for their own specific applications.

5.1.5 Product Photography

Decisions as to whether products should be photographed in the package, out of package, or both, should be made based on the presentation of the product in a live sale scenario (i.e. box of cereal on a shelf vs. a lawnmower on display). If there are doubts as to which format is most appropriate both should be taken and appropriately identified. This decision should be communicated to the manufacturer.

5.1.6 Backgrounds:

All backgrounds should be white, or have a white background applied if clipping paths are added.

5.1.7 Clipping Paths

Clipping paths are optional.

If used all paths should be named "Path 1"

5.1.8 File Name

There are two file naming parameters: GTIN based and GDTI based. Both naming structures follow the same basic parameters with regards to product orientation and identification of start point, specifically the product front. GDSN Package Measurement Rules cited below identify how the front facing is chosen.

6.8.1.3.2 "For the purposes of this standard, the Default Front is the side with the largest surface area that is used by the manufacturer to 'sell' the product to the consumer, in other words, the side with markings such as the product name."…

"Some product packages have more than one possible front with the same surface area. These products can be presented both vertically and horizontally on the shelves. If a product package has more than one possible front, the highest side is considered to be the Default Front"…

The two naming methods:

■ GTIN based naming can be used when the image contains a single item, which can be identified with a GTIN.

■ GDTI based naming must be used for items not identified with a GTIN (e.g. RCN identified items in apparel, images containing multiple different GTINs) and where a single image can be applied to multiple products/items.

5.1.8.1 GDTI Based Naming

All application rules based on GS1 Keys apply to this naming convention.

■ The first 13 digits are the GDTI
   -this identifies the type of digital asset

■ The next 1-17 alpha numeric characters are the serial component

   □ This component uniquely identifies the image

Specifications related to Image arc position; plunge angle, etc… **MUST** be transmitted along with the image set for accurate processing, either through embedded XML data, or through associated data tables/links.

5.1.8.2 GTIN Based Image Naming

When GTIN based image naming is used, the following naming structure shall be employed:

Position	Marking
1-14 (GTIN)	N_1.....................N_{14}
15 (separator)	_
16 (image type: 360)	E
17 (facing type)	N_1
18 (separator)	_
19-20	Plunge angle
21 (separator)	_
22-24	Arc position
25 (separator)	_
26-28 (serialisation)	sNN

(1-14) GTIN of product Imaged

(15) '_' used as a separator for manual identification

(16) 'E' image type identifier (E: 360* image)

(17) N_1 _ Numeric identifier to identify facing type

  1 – Front face (as per GDSN Package Measurement Rules)

  2 – Alternate view (horizontal/ secondary marketable face)
  **the Facing type identifier shall remain constant for the naming of the image series.

(18) '_' used as a separator for manual identification

(19-20) NN – numeric plunge angle (00-90) of capture source;

  '00' being the value attributed for no plunge angle

  '90' being the value for position of the capture source directly above the item.
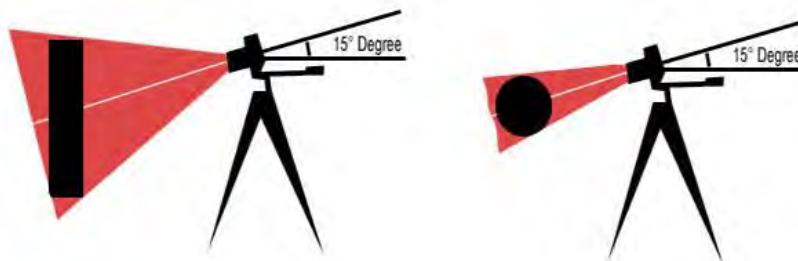
(21) '_' used as a separator for manual identification

(22-24) NNN – Numeric Arc position value (000-359)

(25) '_' used as a separator for manual identification
(only to be used in conjunction with Sequence Number)

(26-28) 'sNN' Sequence Number (3 character alphanumeric): lowercase's' followed by 2 numeric digits for Sequence number will be added at the end of file name **(Optional)**

GTIN Naming:
00012345678905_E1_15_045.jpg

24 Images (15*)
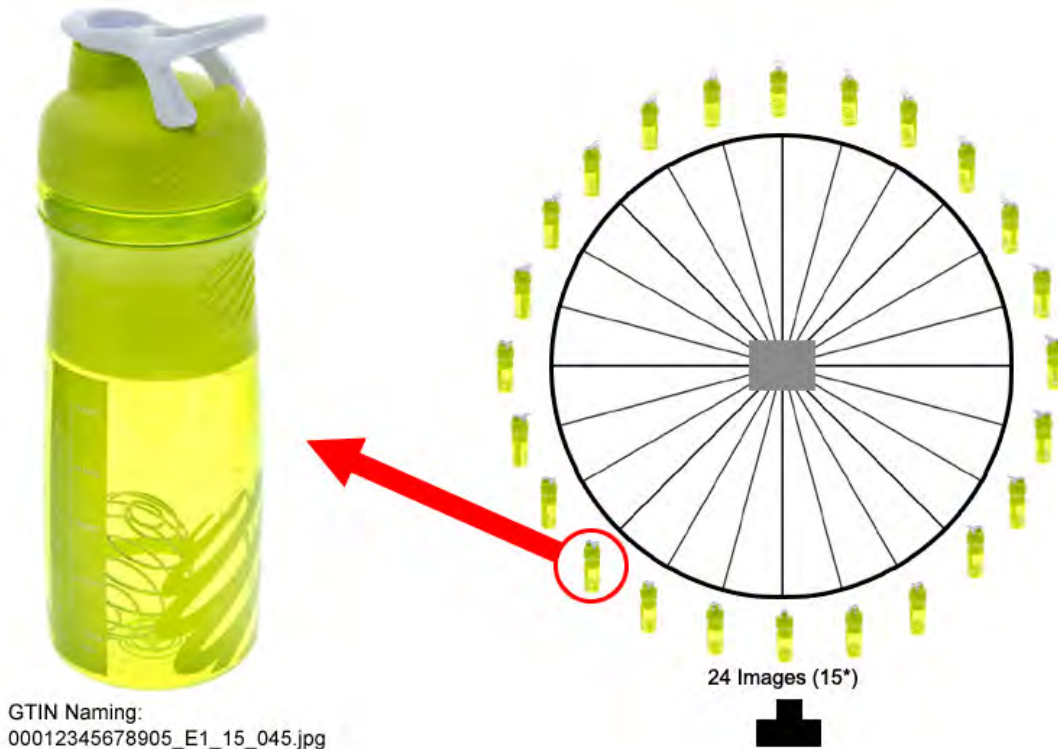
5.1.9   Image Size

Image size for all 360* images is to be 400 pixels minimum.

Image size to be a 1:1 square aspect ratio (i.e. 400 pixels X 400 pixels)

File resolution: 150 ppi

5.1.10   File Format and Colour Mode File format:

JPEG or PNG format Colour Mode: RGB
Delivery of the image will be at the minimum image quality.
Trading partner agreements can dictate the delivery of the image in an alternate format, i.e., HTML5 or FLASH format

✅ **Note**: The ICC profile or exact colour space must be known and defined. The preference for storage of the source file is RGB 8 bit per channel.

5.1.11   Number of images

Minimum of 24 images (Maximum 360)

✅ **Note**: Larger items would benefit from an increased number of images to ensure a fluidity of motion. Industry applications should be considered for total image count.

5.1.12   Direction of Rotation

The direction of rotation for image capture should be Clockwise.

Direction is determined from observing the sequence of images of the item from a centre top vantage point, looking down upon the object.

5.1.13 Image Sequence (Arc position)

The image sequence should be identified in the image name, or associated data, and should follow the stitching sequence used to complete the 360* pattern or mapping.

5.2 360* Image Meta-data

Meta data refers to those key image attributes which enable image Users to understand the properties of 360 images. It is recommended that meta-data be physically encoded within each image. This enables trading partners to identify and reference essential image information (carried by the image itself) when access to master image data details is not available.

5.2.1 Image File Name

Definition:

Unique file name based on the GS1 GDTI naming convention

5.2.2 Image Description

Definition:

Free-form text describing the image and how it is relates to other images

5.2.3 Direction of Capture Rotation

Definition:

The direction of travel following the rotation of an analogue clock in normal operation. (Clock-wise)
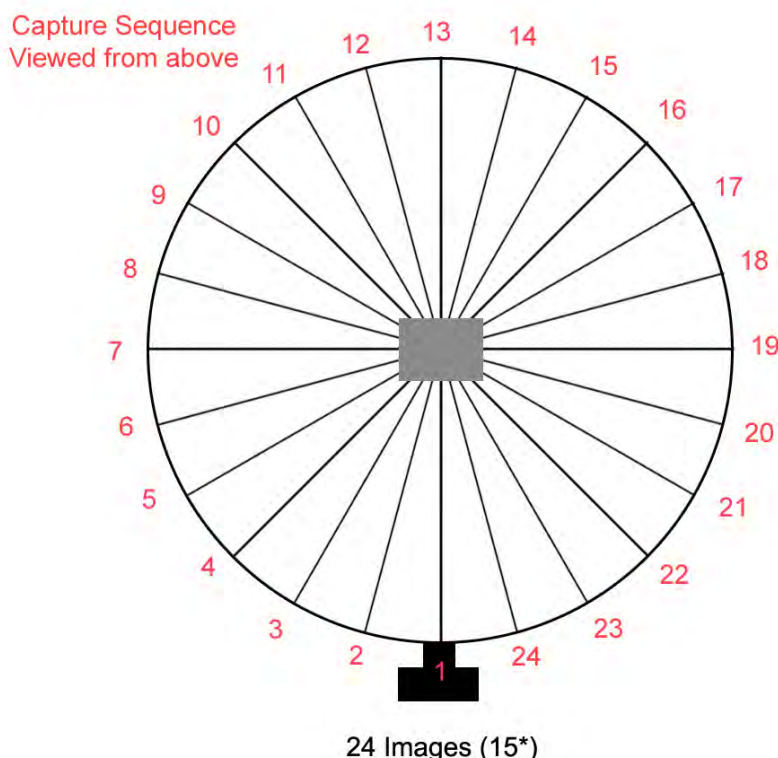
24 Images (15*)

5.2.4 Image Sequence/ Arc position

Definition: the logical identification of a series of images captured for a specific purpose with a defined start and end with the goal of simulating movement.

For the 360* image type, it is recommended that the image numbering should be relative to the degree of rotation. This value will be derived from the first image as 0* and continue in a clockwise fashion.

(i.e. 24 images: image 1: 0; image 2: 15; image 3 : 30; etc…)

This naming structure allows for the addition of images to a maximum of one image per degree of rotation.

6 Montage

A Montage is the physical over layering of distinct images to create a final digital image.

This process allows for a composite to be created with the future possibility of reconstruction without having to return to studio for correction, should an element be added or removed.

6.1 Montage Naming

Either a GDTI or GTIN based file name can be used to identify the image (see *section 3 File Naming*).

GDTI Based Naming

All application rules based on GS1 Keys apply to this naming convention.

■ The first 13 digits are the GDTI
-this identifies the type of digital asset

■ The next 1-17 alpha numeric characters are the serial component
- This component uniquely identifies the image

6.1.1 Additional Identifiers for GTIN Based Naming

For Montage Images, the GTIN used in the naming should be the GTIN the image is to be linked to.

✅ **Note**: Note for digits 1-15 see section *3 File Naming*.

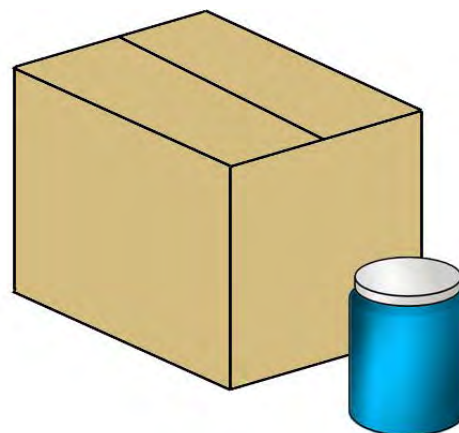16th File Nature/Type:

M – Montage Image

17th ++ Sequence Number

Underscore followed by a unique image reference.

Still Shot Single GTIN
00012345678905_A1C1.jpg

Montage Image
00012345678905_M_002.jpg

6.2 Image Size

Image size for all montages should be relative to the smallest image used in its creation. Over enlargement (or 'zooming') causes pixilation to occur.

Image size to be a 1:1 square aspect ratio

File resolution: 300ppi

6.3 Clipping Paths

All images must contain one active clipping path, properly created, in order for the product to be silhouetted. It is very important for the purpose of batch image repurposing that the clipping path be named "Path 1." Default flatness setting should be 1-device pixels.

6.4 Image Size

Standard Resolution

Minimum image size 900 pixels (75mm (3.0 in.)

Maximum image size 2400 pixels (200mm (8.0 in.)

Image size to be a 1:1 square aspect ratio (i.e. 900 pixels X 900 pixels)

File resolution: 300 ppi

High Resolution

Minimum image size 2401 pixels (200.08 mm (8.003 in.

Maximum image size 4800 pixels (400mm (16.0 in.)

Image size to be a 1:1 square aspect ratio (i.e. 3000 pixels X 3000 pixels)

File resolution: 300 ppi

6.5 File Format and Colour Mode File format: LZW Compressed TIFF Colour Mode: RGB

Delivery of the image will be at the minimum image quality and trading partner agreements can dictate the storage of the image in an alternate format, i.e., JPEG or PNG format

Note: The ICC profile or exact colour space must be known and defined. The preference for storage of the source file is RGB 8 bit per channel.

7 Detail Image

A detail image is a photo, line art or other graphic representation of a specific product characteristic. It is used to highlight a specific detail or characteristic of an item See examples:

(Insert image examples)

7.1 Image File Type

The image type can be any format, but should follow the common web based image types for general use (JPG; PNG; GIF)

7.2 Image Size

Minimum image size 300 pixels (25mm (1.0 in.)

Maximum image size 4200 pixels (400mm (16.0 in.)

Image size to be a 1:1 square aspect ratio (i.e. 900 pixels X 900 pixels)

File resolution: 300 ppi

7.3   Clipping Paths

Due to the nature of the image, a clipping path is not required; however excessive whitespace should be kept at a minimum.

7.4   File Name

Either a GDTI or GTIN based file name can be used to identify the image (see *section 3 File Naming*).

**It is important to note that if a single image is to be used as a Detail Image, it is preferable to use GDTI naming.

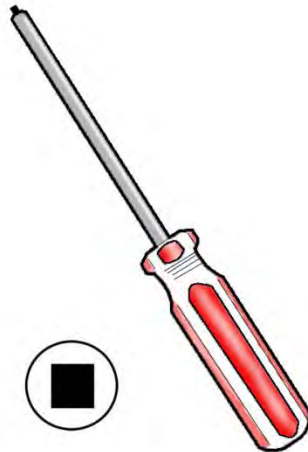### 7.4.1   Additional Identifiers for GTIN Based Naming

Note: Note for digits 1-15 see section *3 File Naming*.

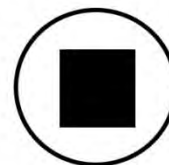**16th File Nature/Type**:

- o   F – Detail Image

17th ++ Sequence Number
Underscore followed by a unique image reference.

Montage Image
00012345678905_M_002.jpg

Detail Image
00012345678905_F_001.jpg

8   Meta Data

There are two designations for data: Associated and Meta-data.
Associated data is data referenced through the use of a key, held in a separate data system.
(e.g. GDTI identified in GDSN, and all the fields associated to the GDTI are located in that row of data)
Meta-data is data embedded in the structure of the digital file.
(e.g. 'saved on'; 'modified on' dates; created by; etc…)

The list below is the suggested meta-data attributes to ensure proper association to extended data pool attributes, as well as to ensure validation without needing to refer to an outside data source.

Metadata Attribute	Definition	M/O/D
GDTI	A GS1 GDTI, a unique document identifier for the digital asset. This may or may not be the same value as the filename.	Mandatory
Brand Name	The Brand Name of the product in the image	Mandatory
Product Name	The name of the product.	Mandatory
Valid From Date	Earliest date from when the image can be used or may be shown.	Mandatory
GTIN	Global Trade Item Number	Mandatory
Legal Owner Contact Information	Contact information for the legal owner	Optional
Filename	The filename of the digital asset. GDTI is preferred.	Dependent
File/Nature Type	Explanation of the type of image shot taken.	Optional
Facing Indicator	Value to denote which way the product is facing within the image.	Optional
Angle Indicator	Angle at which the image was taken when compared to the front face of the product.	Optional
Create Date		Mandatory
Description		Optional
Product URL	URL link to additional information. I.e. Detail page of the digital file.	Optional
Legal Owner	Owner of the digital file	Optional
Copyright		Optional
Expiration Date	After this time, the image is not be shown	Optional
Rights of Use	No Entry of the right to use means an unrestricted right to use the product image.	Optional
Special Rights	Special rights should be defined as free text	Optional
Article Variant		Optional
Packaging Type	** NEEDS DEFINITION **	Optional
Number of the image	e.g. "001V" for the front view of the promotional-optimised product image.	Optional
Version Number	A version number is assigned for each product image, starting with value 1	Optional
Indication Clipping Path Present		Optional
Clipping Path Name		Optional
GEO Coordinates	(Longitude,Latitude,Height)	Optional
Camera Data		Optional
Product Supplier	The Name of the product's supplier/manufacturer.	Optional
Product Net Content	Net Content of the product in text	Optional
Image Quality Assurance Date	The date when the image was verified to meet GS1 global standard.	Optional

Color Mode Colour Mode		Mandatory
Max Avail Height		Optional
Max Avail Width		Optional
In/Out of Packaging	Code to describe the placement of the product and its associated packaging.	Optional

A   Reserved for Future Development

Section	Heading	Description	16th Character	Date Added	Date Modified	CR Number
4.11	Still Shot Single GTIN	Image of one GTIN, regardless of multiple formats/designs, on a white background	A	1/10/2007		
4.12	Still shot product single GTIN with Supporting Elements in Image	Image of one GTIN with supporting elements, regardless of multiple formats/designs, on a white background	B	12/13/2012		12-256
4.11	Still shot product single GTIN (High Resolution)	Image of one GTIN, regardless of multiple formats/designs, on a white background (High Resolution)	C	30/08/2013		12-322
4.12	Still shot product single GTIN with Supporting Elements in Image (High Resolution)	Image of one GTIN with supporting elements, regardless of multiple formats/designs, on a white background (High Resolution)	D	30/08/2013		12-322
5.1	360* Imaging	360 degree imaging is product photography on a single axis – the product rotates on a single axis while the camera takes pictures at specified degree intervals.	E	18/07/2014		
7.0	Detail	A detail image is a photo, line art or other graphic representation of a specific product characteristic.	F	18/07/2014		
6.0	Montage	A Montage is the physical over layering of distinct images to create a final digital image.	M	18/07/2014		
-	Undefined		Z	1/10/2007		
	Line Art	Line art rendering of a single GTIN		TBD		
	Graphic Rendering	Line art rendering of a single GTIN C TBD		TBD		
	Safety Data Sheet	Safety specifications related to GTIN		TBD		
	Manufacturer Documentation	Safety specifications related to GTIN		TBD		
	3D Motion	A 3D representation incorporating movement		TBD		
	Audio/ Soundtrack	TBD		TBD		

	Movie/ Audio-visual	TBD		TBD		
	Interactive TBD G TBD	TBD		TBD		
	GTIN Certificates	Certification/Validation specific to the GTIN		TBD		

B   GS1 Glossary of Terms and Definitions

The following glossary was updated for the Jan 2015 publication of this document. Please refer to the *GS1 Glossary* for the latest version.

Term	Definition
Check Digit	A final digit calculated from the other digits of some GS1 Identification Keys. This digit is used to check that the data has been correctly composed. (See GS1 Check Digit Calculation.)
Global Document Type Identifier (GDTI)	The GS1 Identification Key used to identify a document type. The key comprises a GS1 Company Prefix, Document Type, Check Digit, and optional serial number.
Global Standards Management Process	GS1 created the Global Standards Management Process (GSMP) to support standards development activity for the GS1 System. The GSMP uses a global consensus process to develop supply chain standards that are based on business needs and user-input
Global Trade Item Number (GTIN)	The GS1 Identification Key used to identify trade items. The key comprises a GS1 Company Prefix, an Item Reference and Check Digit.
GS1 Check Digit Calculation	An algorithm used by the GS1 System for the calculation of a Check Digit to verify accuracy of data. (e.g. Modulo 10 check digit, Price check digit).
GS1 Company Prefix	Part of the GS1 System identification number consisting of a GS1 Prefix and a Company Number. The Company Number is allocated by GS1 Member Organisations. See also U.P.C. Company Prefix. GS1 Member Organisations assign GS1 Company Prefixes to entities that administer the allocation of GS1 System identification numbers. These entities may be, for example, commercial companies, not for profit organisations, governmental agencies, and business units within organisations. Criteria to qualify for the assignment of a GS1 Company Prefix are set by the GS1 Member Organisations.

C   GS1 Abbreviations

Abbreviation	Term
AI	Application Identifier
AIDC	Automatic Identification and Data Capture
GDSN	Global Data Synchronisation Network
GDTI	Global Document Type Identifier
GS1 Key	GS1 Identification Key
GSMP	Global Standards Management Process
GTIN	Global Trade Item Number