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| How to write GDSN Validation & submit a Validation work request. |
| Lists the rules and conventions to be used when developing or modifying GDSN Validation Rules and how to write a quality Validation work request. |
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# Document conventions

Like all GS1 standards and guidelines, the GDSN Validation Rules are written in UK English.

The keywords, SHALL, SHALL NOT, and MAY, when they appear in this document, are to be interpreted as described in in Annex G of the ISO/IEC Directives, Part 2, 2001, 4th edition, as defined here:

* **SHALL** means that all conforming implementations must do what the statement says, otherwise the implementation is not conforming. No deviation is permitted.
* **SHALL NOT** means that all conforming implementations must not do what the statement prohibits, otherwise the implementation is not conforming. No deviation is permitted.
* **MAY** (or CAN) means that a conformation implementation is allowed to do what the statement says, but it is not required to for conformance.

# Introduction

GS1 Validation Rules are a part of the GS1 system of standards and SHALL be followed by all the parties that intend to conform to the GS1 standards for which the Validation Rules have been defined.

Validation Rules SHALL be developed and maintained following the GSMP process.

This document provides rules on constructing Validation Rules covering the following GS1 domains:

* GDSN (Global Data Synchronisation Network): all messages currently used within the GDS Network within the business domains of Catalogue Item Synchronisation, Price Synchronisation, Item Authorisation and Party Synchronisation.
* Global Data Model.
* GEPIR (Global Electronic Party Information Registry).
* GLN (Global Location Number) Registries.

When new sets of Validation Rules are developed for other GS1 domains, they should follow rules provided in this document. As the GS1 standards evolve, this document may need to be revised.

# Rules for writing GS1 Validation Rules

## Validation Rule structure

[R01]

GS1 Validation Rules SHALL use the following constraint expressions (see full definitions [here](#_Document_conventions))

* SHALL – is a required expression to succeed.
* SHALL NOT – is not a permitted expression to succeed.

Example 1: I*f isTradeItemADespatchUnit equals 'true' and isTradeItemNonPhysical equals 'false' or is empty then grossWeight SHALL be greater than '0'*.

Example 2: *If tradeItemLicenseTitle is used, then it SHALL NOT exceed one iteration per languageCode*.

[R02]

GS1 Validations SHALL be composed of the following components:

* Rule identifier number.
* Structured rule.
* The Error message for Business Validations[[1]](#footnote-1) SHALL contain all criteria for the impacted attribute(s) and SHOULD use business friendly language which highlights information useful to a business user. It SHALL NOT repeat the structured rule itself.
* Affected attributes SHALL be listed in two separate categories:
* prerequisite attributes.
* impacted attributes.
* Business problem addressed by the rule - SHALL be included.
* Both pass and fail example SHALL be included for complex validation rules (see Rule R09).
* Geographical applicability
* Trade Channel applicability
* Affected context categories SHALL be included for Catalogue Item Notification messages. The full list of contexts can be found in the TradeItemContextCode code list: <http://apps.gs1.org/GDD/Pages/clHome.aspx?FilterField1=codeList&FilterValue1=TradeItemContextCode>
  + The Medical Device and Pharmaceutical Contexts SHOULD be excluded from most Business Validations.
  + If there is a business need to include both the Medical Device and Pharmaceutical contexts, then a business case SHALL be submitted to the GS1 Healthcare Leadership team.
  + Most CIN messages do not contain the attribute TradeItemContextCode. Therefore, the network relies on the context which is a list of GPCs. How a solution provider implements this is outside of the scope. But the process of validating a rule must include or exclude the list of GPCs for a Context(s).

[R03]

The Validation Rule identifier SHALL be a number assigned consecutively and SHALL NOT be reused (numbers of the deprecated rules SHALL remain unused). This number is assigned by GS1.

If a request is to update or delete an existing rule, you SHOULD have the validation rule identifier as part of the work request.

[R04]

The Structured rule MAY have a type of condition or statement.

The rules of condition type SHALL have the following structure:

* Conditional rule
* If + [condition clause]

Example 1: ***If*** *dataCarrierTypeCode equals 'EAN\_8'*

* then + [constraint: SHALL or SHALL NOT] written in capital letters + [consequence clause]

Example 2: *…****then*** *the first six digits of the TradeItem/GTIN SHALL equal '000000'.*

* alternative clause MAY be provided, if needed; if present, it SHALL begin with “else” followed by the alternative consequence
* Statement – requirement specification on attribute(s) - unconditional

Example 3: *There SHALL be at least one iteration of gtin, targetMarket gpcCategoryCode or dataSource/gln.*

[R05]

Every Validation Rule SHALL provide an error message to be displayed if the validation fails and explain why. The error message SHALL provide easily understandable business friendly error description and it MAY contain a placeholder where the incorrect value can be inserted.

Example 1: *descriptiveSizeDimension is repeatable for language only.*

Example 2: *tradeItem/gtin is <value>.* *If dataCarrierTypeCode equals 'EAN\_8', then the first six digits of the tradeItem/GTIN SHALL equal '000000'.*

[R06]

Every Validation Rule SHALL list all the impacted attributes from all the messages affected by this rule. For every affected attribute a full X-Path SHALL be provided by GS1.

Example 1: If isTradeItemADespatchUnit *equals 'true' and isTradeItemNonPhysical equals* 'false' or is empty then grossWeight shall be greater than '0'.

|  |
| --- |
| /catalogue\_item\_notification:catalogueItemNotificationMessage/transaction/documentCommand/catalogue\_item\_notification:catalogueItemNotification/catalogueItem/tradeItem/isTradeItemADespatchUnit |
| /catalogue\_item\_notification:catalogueItemNotificationMessage/transaction/documentCommand/catalogue\_item\_notification:catalogueItemNotification/catalogueItem/tradeItem/isTradeItemNonphysical |
| /catalogue\_item\_notification:catalogueItemNotificationMessage/transaction/documentCommand/catalogue\_item\_notification:catalogueItemNotification/catalogueItem/tradeItem/tradeItemInformation/extension/\*[namespace-uri()='urn:gs1:gdsn:trade\_item\_measurements:xsd:3' and local-name()='tradeItemMeasurementsModule']/tradeItemMeasurements/tradeItemWeight/grossWeight |

[R07]

If an attribute name has more than one instance possible and the rule applies only to one of them, then the distinguishing part of the X-Path SHALL be included in both rule and error message.

Example: *tradeItem/gtin*

[R08]

Validation Rules SHALL have a description of the business problem addressed by this rule, when needed.

Rationale: Structured rules tend to be written in technical language difficult for human readability and their business advantage may not be apparent. Business problem description can make the purpose of the rule clear.

Example: *There are changes in the definition for the isTradeItemAConsumerUnit attribute as part of the GDSN Major Release. The attribute will no longer be used to determine a POS unit. It will only refer to the unit of end consumption. As a result, this may cause a change in some of validations. Review all validations which reference or utilise the attribute isTradeItemAConsumerUnit to determine if they need to be reworked, changed, or deleted.*

[R09]

A Complex Validation Rule SHALL include an example of attribute values that will PASS and attribute values that will FAIL the validation.

Example:

*Structured rule: If (isTradeItemPackedIrregularly equals ‘false’ or is not used) and trade item is at top level and layerHeight is used and nestingIncrement is not used then tradeItemMeasurements/height SHALL equal or be greater than ((layerHeight* ***x*** *quantityOfCompleteLayersContainedInATradeItem)* ***+*** *platform height)*.*..*

*Error Message:*tradeItemMeasurements/height shall not be lower than the total height of the child items. layerHeight and nestingIncrement shall affect this height. If the trade item contains a platform the height of the platform is included in the height.

*nestingIncrement (Child Item) = 6 CMT*

*quantityOfCompleteLayersContainedInATradeItem = 3 EA*

*platform height = 6 CMT*

*FAIL: tradeItemMeasurements/height = 20 CMT*

*because (5x3)+6 = 21 CMT, so it is SMALLER*

*PASS: tradeItemMeasurements/height = 21 CMT*

*because (5x3)+6 = 21 CMT, so it is EQUAL*

Rationale:Some Validation Rules related to Business Rules may require some level of interpretation. Clear examples showing attribute data which passes or fails will help consistent interpretation by Data Pools and Solution Providers when coding the rule.

[R10]

All Validation Rules MAY be translated to pseudo-code, using the X-Path for affected attributes, structured rule and the error message. See [R02].

[R11]

Validation Rules SHALL specify the Constrained Party that the rule applies to.

Example: *Source Data Pool, Recipient Data Pool, Global Registry.*

[R12]

GDSN - Validation Rules SHALL specify the message name(s) the rule pertains to.

Example: *Catalogue Item Notification, All optional GDSN compliant messages.*

[R13]

If the Validation Rule applies globally, the Target Market Scope SHALL equal ‘Global’, if the rule applies to a specific Target Market or a specific Target Market is excluded, the form SHALL always be ISO country code 3166-1 (3-numeric) and ISO Country names in brackets which SHALL appear in the structured rule. The associated error message should only show the relevant Target Market name.

Example: *528 (Netherlands), 056 (Belgium), Global, Global excluding 056 (Belgium).*

[R14]

Each Validation Rule SHALL be classified as:

* ‘Technical’ – covering restrictions for repetition of language, measurement, or currency
* ‘Business’ – covering all rules other than ‘Technical’

[R15]

Validation Rules SHALL NOT be developed for conditions that are defined in XML schemas (by XML constrained data types).

Rationale: Compliance to XSD definitions are already validated when XML instance is checked against the standard GS1 XML Schema. Additional Validation Rules checking the same conditions unnecessarily complicates the standard, without adding any value.

Example: *The 13-digit GLN is defined in the GS1 schema as the xsd:string type with the following pattern facet: \d{13} It means that any element where the GLN type is applied, can only have a value that equals 13 numeric characters, no more and no less than this. Any other value will cause the XML instance to be not valid and rejected. Therefore, there is no need to create a Validation Rule stating that GLN should be 13 digits long*.

## Conventions for writing Validation Rules

Each Validation Rule SHALL respect the following conventions:

[R16]

Presence of a value in an attribute SHALL be referred to as ‘used’. Attributes that SHALL NOT have a value, SHALL be referred to as ‘not used’.

Example: *If attribute A is used, then attribute B SHALL NOT be used*

[R17]

All attributes in a structured rule SHALL be expressed in lower case and SHALL NOT be expressed as a business term. Business terms MAY be used in the business rationale section.

Example:

*Correct: tradeItem/gtin*

*Wrong: Trade Item GTIN*

[R18]

When expressing that an attribute has a certain value, the verb ‘equal’ SHALL be used.

Example: *…then the first six digits of tradeItem/gtin SHALL* ***equal*** *'000000'.*

[R19]

All values in both a structured rule and error message SHALL be between single quotes:’ ‘.

Example: *If dataCarrierTypeCode equals* ***'EAN\_8'***

[R20]

If multiple requirements on an attribute need to be included, brackets “()” MAY be included for readability.

Example: *If the datatype of an attribute equals* ***(Description, Description35, Description70, Description80, Description200, Description250, Description500, Description1000, Description2500 or Description5000)****,then the value of the associated @languageCode SHALL be a code from the Code List ISO 639.*

[R21]

If a choice between multiple values exists, they SHALL be separated with a comma “,” and before the last value ‘or’ SHALL be used.

Example: *If the datatype of an attribute equals (Description, Description35****,*** *Description70****,*** *Description80****,*** *Description200****,*** *Description250****,*** *Description500****,*** *Description1000****,*** *Description2500* ***or*** *Description5000) then the value of the associated @languageCode SHALL be a code from the Code List ISO 639.*

[R22]

In the structured rule, if a choice exists between a number of values, where values either both apply or one or the other value applies, this SHALL be denoted by “and/or”.

Example: *If individualUnitMinimumSize and/or individualUnitMaximumSize are used then isTradeItemABaseUnit SHALL equal 'true'*.

[R23]

If the data type of an attribute contains @languageCode, @measurementUnitCode, @currencyCode then repeatability for value, language, unit of measure or currency SHALL be indicated.

Example: *If maximumWeightOfAnimalBeingFed is used, then it SHALL not exceed one iteration per measurementUnitCode*.

[R24]

Attributes used in pair or groups:

* Attribute A and B SHALL be used together.
* Attribute A and B SHALL NOT be used.

Example: *grossWeight and netWeight SHALL be used together*.

[R25]

Boolean data type SHALL be expressed as ‘true’ or ‘false’.

Example: *If isTradeItemAnOrderableUnit equals* ***'true'*** *and isTradeItemNonPhysical equals* ***'false'*** *or is not used then grossWeight SHALL be greater than '0'*.

[R26]

Calculations: if A equals X then sum of B+C SHALL equal or be greater than Y:

* Multiplication SHALL be expressed using ‘x’
* Division SHALL be expressed using ‘/’
* Addition SHALL be expressed using ‘+’
* Subtraction SHALL be expressed using ‘-‘

Example: *If (isTradeItemPackedIrregularly equals ‘false’ or is not used) and trade item is at top level and layerHeight is used and nestingIncrement is not used then tradeItemMeasurements/height SHALL equal or be greater than ((layerHeight* ***x*** *quantityOfCompleteLayersContainedInATradeItem)* ***+*** *platform height)*.

[R27]

Date time comparison: SHALL be expressed using ‘before’ or ‘in the future’.

Example: *If cancelDateTime is used then value SHALL be* ***in the future*** *or equal to current date*.

[R28]

Constraints on iteration of an attribute SHALL be expressed using ‘maximum’.

Example: There SHALL be a maximum of one iteration of totalScreenArea per measurementUnitCode.

[R29]

The logical sequence of Validation Rule should be:

* Target Market SHALL be written as follows ‘ISO 3166-1 numeric’ (Country Name)
* Product (GPC or list of GPCs)

Example: *If* ***targetMarketCountryCode*** *equals ('528' (Netherlands), and isTradeItemABaseUnit equals 'true' and (****gpcCategoryCode*** *is in GPC Family '50202200' then percentageOfAlcoholByVolume SHALL not be empty*.

# Guidance for submitting a Work Request for a GS1 Validation Rule

The validation rule template is designed to provide minimal instruction.

Icon

Description automatically generated Note: The template contains 2 rows of examples and information. You SHALL NOT delete any rows in the template.

You SHALL start with row 5 for your entry.

The request for a new Validation Rule SHALL contain the following information:

**[WR1]** **Action** - to be performed on the requested rule SHALL always be provided. One of the following values SHALL be used:

* ADD – for new rules
* DELETE – for existing rules that need to be removed
* CHANGE – for existing rules that need to be modified

**[WR2]** **Validation Rule** - Rule number SHALL be provided for the requested modification (CHANGE) or deletion (DELETE) of existing rules. For new rules this field SHALL be left empty.

Example: *1410*

**[WR3]** **Structured Rule** - Proposed structured rule SHALL be provided for requested new and modified rules. For deleted rules this field SHALL be left empty. The new structured rule SHALL be consistent with [R04].

Icon

Description automatically generated **Note:** When writing a modification for a rule, you SHALL write the rule as requested. You SHALL NOT use strikethrough or colour fonts. These do not import into the work request system.

**[WR4] Proposed Error Message** – The error message should be “business friendly”. Ensure the user has the ability to understand the issue.

Use the dynamic approach “<…>” to specify when a value the user entered be returned to them in the error message.

Example: The nutrient contained quantity is mandatory when specifying a nutrient type.

Example: The marketing message must contain at least one statement in the <languageCode> language.

Icon

Description automatically generated **Note:** When writing a modification for an error message, you SHALL write the error message as requested. You SHALL NOT use strikethrough or colour fonts. These do not import into the work request system.

**[WR5]** **Example of data that will** pass - Requests for new rules and modification of existing rules SHOULD have example data that will pass the validation. See also [R09].

Example:

* dangerousGoodsRegulationCode = 'ADR'
* dangerousGoodsPackingGroup = ‘I’

**[WR6]** **Example of data that will fail** - Requests for new rules and modification of existing rules SHOULD have example data that will fail the validation. See also [R09].

Example 1:

* dangerousGoodsRegulationCode = 'ADR'
* dangerousGoodsPackingGroup = ‘VII’

**[WR7]** **Geographic** –

Requests for new rules and modification of existing rules SHALL have a geographical scope provided. See also [R13]

* Rules that are not target market specific SHALL have value ‘Global’
* Rules that are target market specific SHALL have value populated according to ISO country code 3166-1 (3-numeric) and ISO Country names in brackets, or GS1 extended codes for target market.
* Target market shall be part of the structured rule where applicable.

Example 1: *528 (Netherlands)*

Example 2: *Global*

**[WR8]** **Context**: used in all or exclusions

Requests for new rules and modification of existing rules related to Catalogue Item Notification message SHALL have a context scope provided, if the rule includes or excludes specific contexts. See also [R02]

Rules that affect all contexts SHALL have value ‘ALL’

Rules that affect specific contexts SHALL

* List an individual context that SHALL be excluded from the drop-down list
* When multiple contexts are included or excluded, select “MULTIPLE’ and the detail SHALL be included as part of Comments [WR9] in the template.

list all the affected context values from the tradeItemContextCode code list: <http://apps.gs1.org/GDD/Pages/clHome.aspx?FilterField1=codeList&FilterValue1=TradeItemContextCode>

Example 1: *DP006*

Example 2:  *All*

**[WR9] Comments** – This SHOULD contain if applicable

* Modification – CHANGE include the text being remove or changed
* Contexts should specify the contexts excluded or included [WR8]
* Trade Channel should specify the trade channel(s) excluded or included [WR11]

**[WR10] Business Rational for the request -**

Business Rational SHALL always be provided. It SHALL clearly explain the business problem to be addressed by the requested new rule or by the change in an existing rule. This business rationale will be included in the published rule, when the Work Requested is accepted (See: [R02] and [R08]).

Example 1: *The rule is blocking business process.*

Example 2:*There are changes in the definition for the isTradeItemAConsumerUnit attribute as part of the GDSN Major Release. The attribute will no longer be used to determine a POS unit. It will only refer to the unit of end consumption. As a result, this may cause a change in some of validations. Review all validations which reference or utilise the attribute isTradeItemAConsumerUnit to determine if they need to be reworked, changed, or deleted.*

**[WR11]** **Trade Channel**

Rules that all Trade Channels SHALL have value ‘ALL’

Rules that affect specific Trade Channels SHALL

* List an individual Trade Channel from the drop-down list
* When multiple Trade Channels are included or excluded, select “MULTIPLE’ and the detail SHALL be included as part of Comments [WR9] in the template.

1. Template to submit a Work Request for a GDSN Validation Rule

Graphical user interface, text, application

Description automatically generated

Graphical user interface, application, Word, email

Description automatically generated

1. For Technical Validation Rules the error message SHOULD include criteria. For example:

   IF documentCommandHeader type {(equals …) OR (is not equal to …)} - Action code type

   And IF target market name {(equals …) OR (is not equal to …)} - Target market

   And If gpcCategoryCode {(equals …) OR (is not equal to …)} - Classification

   And if preliminaryItemStatusCode {(equals …) OR (is not equal to …)} - Status code

   And if isTradeItemA… {(equals …) OR (is not equal to …)} - Boolean types

   Then attribute XXX {(equals …) OR (is not equal to …)} - Validation [↑](#footnote-ref-1)