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BSI Standards Publication

Packaging — Label material — Required information for ordering and specifying self-adhesive labels

bsi.

National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Packaging — Label material — Required information for ordering and specifying self-adhesive labels

Emballage — Matériau d'étiquetage — Informations exigées pour la commande et la spécification des étiquettes autocollantes

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 122, *Packaging*.

Introduction

Using and ordering label material of different kinds is not an easy task as what to use and how to use it depends on so many things, e.g. type of marking, surface, environment, treatment, information, printing technologies, etc.

Each label application is therefore unique and requires its own combination of ink, top coating, facestock and adhesive to serve its purpose. The label is to be seen as a vital and important part (component) of the product and there could be multiple labels on one product to serve different needs.

As there does not exists any standards in how to specify label materials, a guide was developed in order to provide useful information for those that are in need of a label material and those that are to supply the relevant label material.

This document can be used by both suppliers and users.

It provides guidance on what a supplier and user need to discuss and agree upon when specifying requirements of a label for a given application possibly to use as a request for a quote.

It also provides a harmonized template for specifying the parameters and characteristics of the label to enable information to be evaluated on common ground, possibly to use as a product specification.

Packaging — Label material — Required information for ordering and specifying self-adhesive labels

1 Scope

This document provides guidelines for users and suppliers providing the required information for requesting and specifying self-adhesive labels. This document provides what to consider when defining and specifying label materials to be used for a given application.

It will ensure that the relevant information is provided so that the right material for the intended application can be requested or recommended, as well as ensure that label parameters and characteristics are specified in a similar format to permit label materials to be requested, specified and compared in a consistent manner.

This document applies to labels with adhesive (also named as self-adhesive or pressure-sensitive).

How to work and specify with other types of labels and marking are not addressed in this document, but may be the topic of subsequent documents. Also excluded is the information related to regulatory compliance.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21067-1 and ISO/IEC 19762-1:2016 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
adhesive
substance capable of holding materials together by surface attachment

[SOURCE: ISO 19952:2005, 3]

3.2
adhesive strength
sum total of the forces of attachment between a dry film and a substrate

3.3
facestock
paper that is used for making self-adhesive labels

Note 1 to entry: It is called “facestock” because it is the top or “face” of the laminate from which these labels are produced.

Note 2 to entry: Specialized companies laminate the facestock paper to a release liner after the latter has been coated first with an ultra-thin layer of silicon and then with an adhesive.

Note 3 to entry: When the ready label is peeled off from the backing paper (=release liner), the adhesive transfers to the label because it is easily separated from the release liner because of the “non-stick” silicon.

3.4
final adhesion
force required to peel a strip of adhesive tape from a specified substrate at a specified angle and speed

Note 1 to entry: The force after at least 24 h.

3.5
imprint
local indentation caused by a foreign matter being pressed into a surface

[SOURCE: ISO 2074:2007, 6.7]

3.6
infringement
encroachment or trespass on a right

Note 1 to entry: Includes unauthorized use, use that exceeds the limitations stipulated in a licence, use that exceeds the parameters established for an exception, etc.

3.7
ink
material, which may or may not include colorant, designed for liquid state deposition on a substrate

[SOURCE: ISO/IEC 29142-1:2013, 3.28]

3.8
ink-jet
text and images formed on a substrate by electronically controlled formation and propulsion of liquid ink droplets

3.9
label
sign carrier made from flexible material

Note 1 to entry: The purpose of a label is to convey the necessary information (text or graphics) to the user.

Note 2 to entry: Information on other identification methods in relation to labels, such as tag, ticket, tape, mark and marking, are given in Annex D.

[SOURCE: ISO 9244:2008, 3.11, modified, Note 1 to entry and Note 2 to entry added]

3.10
mark
inscription, name, stamp, *label* (3.9), or seal placed on an article to signify ownership, quality, manufacture, or origin

3.11
marking
act of making *marks* (3.10), *signs* (3.20), texts, etc., visible on a surface of something

EXAMPLE Using a ribbon, label, tag, tape or other printing technology.

3.12
maximum application temperature
highest temperature at which the *label* (3.9) may be applied to the surface of the product, in order for the label material, in particular the *adhesive* (3.1), to perform to its given specification and correctly adhere to the product

3.13
minimum application temperature
lowest temperature at which the *label* (3.9) may be applied to the surface of the product, in order for the label material, in particular the *adhesive* (3.1), to perform to its given specification and correctly adhere to the product

3.14
multilayer product
multiple layers attached to each other

3.15
peel adhesion
force required to peel a strip of adhesive tape from a specified substrate at a specified angle and speed

Note 1 to entry: The force after minutes or hours.

[SOURCE: ISO 29862:2007, 3.1, modified, Note 1 to entry added]

3.16
pressure-sensitive adhesive
adhesive (3.1) applied to create a bond between two surfaces by a simple application of pressure

[SOURCE: ISO 17398:2004, 3.4]

3.17
print direction
orientation of the printed information (text and graphics) on the *label* (3.9)

Note 1 to entry: Printing "with the web" is image production in the same direction as web movement.

Note 2 to entry: Printing "across the web" is image production at a 90° angle to the direction of web movement.

3.18
printer
output unit that produces a hard copy record of data mainly in the form of a sequence of discrete graphic characters belonging to one or more predetermined character sets

Note 1 to entry: Graphic characters can also represent graphic elements.

[SOURCE: ISO/IEC 2382:2015, 2125683, modified, Note 1 to entry added]

3.19
remaliner
sprocket hole punching

3.20
sign
message conveyed utilizing pictorial or textual media or both

[SOURCE: ISO 6707-1:2014, 5.5.67, modified, Note 1 to entry removed]

3.21
storage temperature
recommended temperature (range) at which the label material and/or finished labels should be held before usage, in order to retain their specified properties

3.22
service temperature
temperature range at which the label material can be used without compromising its properties for its intended usage when applied

3.23
tack adhesion
force required to peel a strip of adhesive tape from a specified substrate at a specified angle and speed

Note 1 to entry: The force after contact or seconds.

3.24
tag
identification *label* (3.9) attached to a container or container-related equipment which, among other things, gives the unique owner's code and serial number and which can be remotely read by electronic sensing devices

[SOURCE: ISO 830:1999, 8.3.4, modified, *inter alia* replaced by *among other things*]

3.25
tape
long narrow strip of a flexible material with *adhesive* (3.1) used for sealing, binding, tying, etc.

3.26
thermal printing
inkless thermochemical process using a print head consisting of heated elements, controlled by digital data to reproduce image areas onto heat-sensitive substrates

[SOURCE: ISO 12637-1:2006, 71]

3.27
thermal-transfer printing
system employing donor sheets or ribbons coated with wax based inks or coloured dyes that are transferred by heat and pressure produced by thermal print heads to reproduce images onto a coated substrate using thermal wax transfer and thermal dye transfer printing processes/methods

Note 1 to entry: Other ribbon types are available such as resin and wax/resin, etc.

[SOURCE: ISO 12637-1:2006, 72, modified, Note 1 to entry added]

3.28
ticket
piece of paper, cardboard, etc., showing that the holder is entitled to certain rights, such as travel on a train or bus, entry to a place of public entertainment, etc.

3.29
web
continuous length of paper, foil, film, or other flexible material that comes from a roll as it moves through a machine in the process of being formed, converted, or printed

4 Abbreviated terms

CMYK	cyan, magenta, yellow, key colour (black)
RFID	radio frequency identification
TT	thermal transfer
TTI	time temperature indicator

5 Requirements

5.1 General

It is permitted to make copies of the sheets in Annex A and Annex C.

Electronic versions of the checklists presented in Annex A and Annex C are available at http://standards.iso.org/iso/18614.

5.2 Specification checklists for self-adhesive labels (end-user created)

The checklists in Annex A shall be used by the end-user to specify the requirements of the label(s) to be purchased. The output of Annex A will allow the responses from various suppliers to be compared on an equal basis.

Annex C shall be used by the supplier when replying to a received request (the output from Annex A).

5.3 Label material specification form (supplier response)

The checklists and specifications in Annex C shall be used by the supplier to provide response to the end-user request (output from Annex A). The output from Annex C will enable responses from various suppliers to be compared on an equal basis. By this means, misunderstandings and misinterpretations can be eliminated.

6 Considerations

6.1 Order request of label material

The questions in Annex A that need to be asked by the end-user (and answered by the supplier via Annex C) in order to get the label for the intended application.

Annex A is grouped as follows:

— application (how material will be used; see A.2.1);

— label characteristics (shape and size of label; see A.2.2);

— adhesive (characteristics for desired application; see A.2.3);

— print (when and with what to be printed; see A.2.4);

— facestock (characteristics of material and composition; see A.2.5);

— resistance (what environmental aspects are to be considered; see A.2.6);

— special features (security, special function, etc., requirements; see A.2.7);

— finishing (how is the label to be configured for use; see A.2.8);

— quotation (how to order and deliver; see A.2.9);

— other (see A.2.10).

Annex A should not be considered all inclusive.

Annex B can be used in support of completing Annex A.

6.2 Specifying of label material

Information to help in filling out Annex C is provided in Annex G and Annex H.

If there is any variance to the original end-user request, a new end-user request shall be issued allowing suppliers to respond to the new request.

The material is to be tested and approved according to the methods given in Annex I.

Observe that given values in Annex C may change after de-lamination or re-lamination.

Annex C is grouped as follows:

— general purpose (see C.2);

— measurement tolerances (see C.3);

— characteristics (see C.4):

  — physical size and shape (see C.4.1);

  — properties (see C.4.2);

  — attributes (see C.4.3);

— printed text or graphics (symbols) (see C.5);

— finishing (see C.6):

  — placement and orientation (see C.6.1);

  — identification and quotation (see C.6.2);

— regulations/certificates (see C.7).

Annex A
(normative)

Checklists for specification of characteristics for self-adhesive labels

A.1 General

An electronic version of the form presented in Annex A is available at http://standards.iso.org/iso/18614.

The form in its original format without any modifications can be used by the user for the purposes specified in this document.

A.2 Questions to be answered for specifying and ordering self-adhesive labels

The following set of questions is not in any particular order. If the question cannot be answered, state "not applicable" (N/A) or use "—" to mark that each question has been considered.

A.2.1 Application

Additional information is provided in Annex F and Annex H.

Table A.1 — Application

Question	Answer	Remark
What application is the label intended for, e.g. product decoration, logistic, other?		
Where will the label be applied (surfaces like plastic[a], metal[a], glass, corrugated, wood, aluminium[a], etc.)?		
What are the surface conditions (smooth or textured, flat or curved, clean, oily, etc.)?		
Applying conditions (temperature, moisture, etc.)?		
Dispensing conditions (manually or automatically, labelling speed, etc.)?		
Do you have a sample? If yes, do you want us to match your sample?		
Do you have a drawing (blueprint)? If yes, please provide.		
Is your application under some kind of regulation? If yes, please specify.		

[a] Not all surfaces can be mentioned so the actual surface to which the label is to be affixed shall be specified in more detail.

A.2.2 Label characteristics

Additional information is provided in F.2 and H.2.

Table A.2 — Label characteristics

Question	Answer	Remark
Specify the size and shape of the label (length, width, height, corner detail; if label is an odd shape, all shape details shall be provided), minimally in text or by graphic and text (preferred).		
Is the size and shape fixed or can alternative configurations be provided?		
Is the label material already specified? If not, please specify adhesive, facestock, liner.		

A.2.3 Adhesive

Additional information is provided in F.3.

Table A.3 — Adhesive

Question	Answer	Remark
Does the label need to stick permanent or should it be repositionable or removable?		
Special type of adhesive (wash off, deep freeze, etc.)		

A.2.4 Print

Additional information is provided in F.2.3 and H.3.

Table A.4 — Print

Question	Answer	Remark
Blank or printed label?		
If anything printed (graphics, words, etc.), details shall be provided.		
How many colours? Spot colour, RGB, CMYK, etc.		
Are special printing methods (flexo, offset, screen, gravure, inkjet, etc.) required?		
Is print finishing (foiling, varnishing, overlaminate, laminating, embossing, etc.) required?		
Is variable information to be printed, e.g. barcodes, consecutive numbering, personalization, etc.?		
Is there any imprinting? If “Yes”, what method (thermal transfer, thermal, laser, inkjet, etc.) is being used?		

A.2.5 Facestock

Additional information is provided in F.2.

Table A.5 — Facestock

Question	Answer	Remark
Type of facestock material (paper, film, etc.)?		
Type of facestock surface (matt, glossy, colour, etc.)?		

A.2.6 Resistance

Additional information is provided in F.2 and Annex I.

Table A.6 — Resistance

Question	Answer	Remark
What environment will the label be exposed to (outdoor, direct sunlight, indoor, temperature range, humidity, etc.)?		
Is special protection for the facestock required?		
Which solvents or chemicals does the label need to withstand?		
Will there be physical handling or abrasion?		

A.2.7 Special features

Additional information is provided in B.1 and F.2.

Table A.7 — Special features

Question	Answer	Remark
Are there any security aspects (tamper evident features, authentication, etc.)?		
Are functional features (RFID tag, TTI, etc.) required?		
Is printing on the adhesive required (may require de-lamination and re-lamination)?		
Is multilayer construction required/needed, e.g. multipurpose label?		

A.2.8 Finishing

Additional information is provided in H.1 and H.5.

Table A.8 — Finishing

Question	Answer	Remark
What's the "finishing style" (roll, sheet, fan-folded, etc.)?		
Number of labels per roll or fan-folded stack?		
Required width of roll?		
Maximal diameter of roll?		
Inside diameter of core?		
Maximum height of fan-folded stack?		
Minimum or maximum gap between the labels?		
Winding direction (inside/outside, positioning of label)?		
Type of liner (glassine, film, etc.)?		
Converting of liner (perforated, remaliner, etc.)?		
Is printing on liner (register mark, barcodes, numbering, etc.) required?		

A.2.9 Quotation

Additional information is provided in Annex H.1.

Table A.9 — Quotation

Question	Answer	Remark
Total annual volume?		
Number of different versions? Size of splits?		
Number of shipments per year?		
Special transport packaging required?		

A.2.10 Other

Additional information is provided in Annex B and Annex H.

Table A.10 — Other

Question	Answer	Remark
Any additional requirements?		

Annex B
(informative)

Considerations per application

B.1 Overview of typical considerations per some type of applications

Table B.1 does not provide an exhausted list of considerations or applications. It gives some basic information on how different applications relates to one or many considerations. What the application is will be based on discussion between supplier and user.

Table B.1 — Overview of main considerations and some intended type of applications

	Type of surface							Characteristics				Adhesive	Print				Facestock				Resistance					Special features				Finishing				Quotation		
	Wood	Paper	Plastic (high/low energy)	Metal	Glass	Curved	Rough	Indoor/outdoor/temperature range	Size	Fixed	Specification	Permanent/removable/washable	Blank/printed	Data, imprinting/fixed/variable	Colour	Print method	Print finishing	Paper	Vinyl	Polyester/polyimide/polypropylene	Coated	Lamination (inlay of component)	Moisture	Solvent	Abrasion	Tearing	Direct sun light	Warranty	Tamper evident	Authenticity	RFID/sensor	Roll/sheet/fan-folded	Quantity/roll or stack	Dimension	Winding	Liner	Total volume	Number of shipments	Transportation
Identification																																						
Information																																						
Inventory																																						
Logistic																																						
Location																																						
Ticketing																																						
Authentication																																						
Protection																																						
Marketing																																						
Regulation																																						
etc.																																						

B.2 Overview of typical considerations per some type of materials

Table B.2 does not provide an exhausted list of considerations and type of materials. It gives some basic information on how different materials depend on other considerations (aspects). What the application is will be based on discussion between supplier and user.

Table B.2 — Overview of main considerations related to some label component materials

		Surface								Characteristics			Print					Resistance					Special features				Quotation		
		Wood	Paper	Plastic (high/low energy)	Metal	Glass	Curved	Rough	Indoor/outdoor/temperature range	Size	Fixed	Specification	Blank/printed	Data, imprinting/fixed/variable	Colour	Print method	Print finishing	Moisture	Solvent	Abrasion	Tearing	Direct sun light	Warranty	Infringement	Authenticity	RFID/sensor	Total volume	Number of shipments	Transportation
Facestock	Paper																												
	Vinyl																												
	Polyester																												
	Polyimide																												
	Polypropylene																												
	Coated																												
	Lamination (inlay of component)																												
Adhesive	Permanent																												
	Removable																												
	Washable																												
Finishing	Roll/sheet/ fan-folded																												
	Quantity/ roll or stack																												
	Dimension																												
	Winding																												
	Liner																												

Annex C
(normative)

Label material specification

C.1 General

An electronic version of the form presented in Annex C is available at http://standards.iso.org/iso/18614.

The form in its original format without any modifications can be used by the user for the purposes specified in this document.

C.2 General purpose

This annex provides general purpose information in response to the end-user, e.g. if there is a certain way the specification is outlined to answer on the request (additional information in G.1).

C.3 Measurement tolerances

The dimensions for the label material are specified in millimetre. Conversion between mm, inch and micron is shown below. (Additional information in G.2.)

1 micron = 0,001 mm, 1 inch = 25,4 mm

The measurements given in this document uses tolerances as given below.

Table C.1 — Measurement tolerances

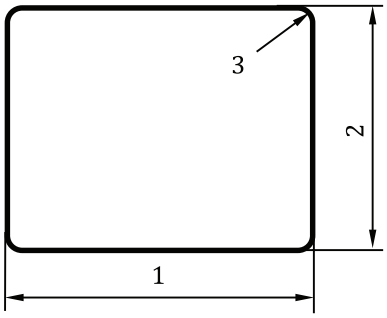
Tolerance	**Value** (%)
Physical size	
Component thickness	
Liner	
Placement on liner	
Effective printable area	

C.4 Characteristics

Additional information in G.3.

C.4.1 Physical size and shape

Figure C.1 provides information about size and shape of the label material; it may not be in scale.



NOTE For guidance, see Figure H.4.

Figure C.1 — Shape and size of specified label material

C.4.2 Properties

Table C.2 — Label properties

Component	Specification	Width mm	Height mm	Radius mm	Thickness mm
Facestock					
Adhesive					
Liner					

C.4.2.1 Facestock

Table C.3 — Facestock properties

Component	Specification	Thickness microns
Protective coating (if printed)		
Ink (if printed)		
Top coating		
Substrate		

C.4.3 Attributes

C.4.3.1 Performance

Table C.4 — Performance attributes

Parameter	Value (N/25 mm)
Tear force	
Peel adhesion 1 min 180°, speed 300 mm/min	
Peel adhesion 24 h 180°, speed 300 mm/min	
Loop tack	
Abrasion resistance	
Insulation resistance	
Environmental resistance	

NOTE Observe that given values in Table C.4 can change after de-lamination or re-lamination.

C.4.3.2 Usage

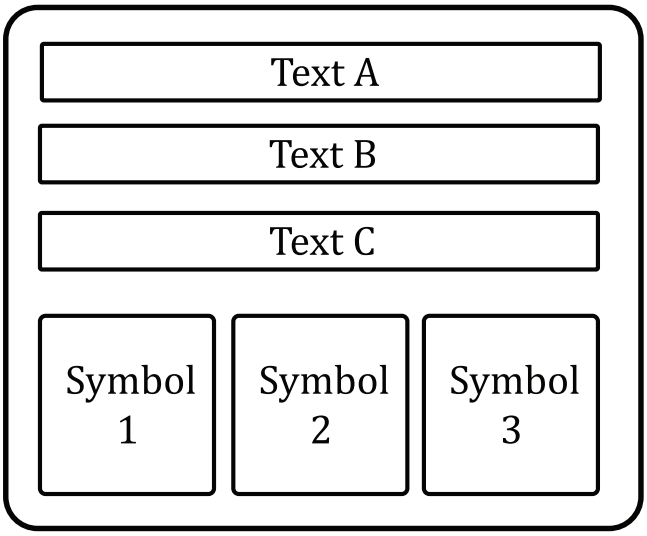
In this subclause, typical applications for the given material can be given and needs to be tested for the given application in order to be approved.

Table C.5 — Usage attributes

Parameter	Value
Ink ribbon	
Application temperature and humidity	
Service temperature and humidity	
Storage temperature and humidity	

C.5 Printed text or graphics (Symbols)

Figure C.2 provides information about contents position on the label material; it may not be in scale (additional information in G.4).



NOTE For guidance, see Figure H.3.

Figure C.2 — Information about text and graphics positioning on label material

Table C.6 — Printed text or graphics positioning on label

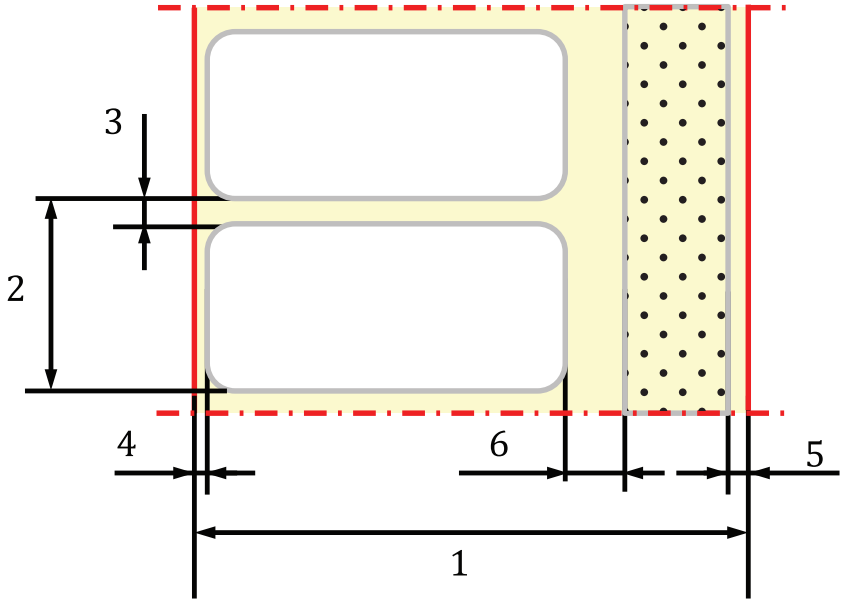
Text/graphics (see Figure C.2)	Position of text/graphics		Content/comment
	X (mm)	**Y** (mm)	

C.6 Finishing

Additional information in G.5.

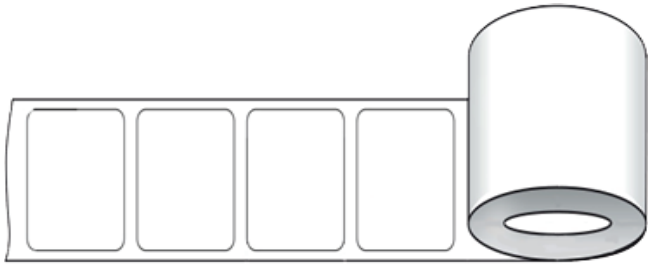
C.6.1 Placement and orientation

The label is provided, placed on liner, with the orientation on carrier as given in Figures C.3 and C.4.



NOTE For guidance, see Figure H.7.

Figure C.3 — Label materials placement on liner



NOTE For guidance, see Figures H.1 and H.2.

Figure C.4 — Carrier format of label material and its winding

C.6.2 Identification and quotation

The label material is provided as of below.

Table C.7 — Label identification and information for quotation

Label identification (part number, etc.)	Quantity	Carrier format (roll, sheet, etc.)	Winding (in/out)

C.7 Regulations/certificates

This material complies with the following certificates.

Table C.8 — Regulations/certificates

Area	Regulation

Annex D
(informative)

Different identification methods and purposes

D.1 Label, tag, ticket and mark

Almost everything has the capability of being marked, by someone marking it, to provide information relevant at time of usage, location, etc., to serve a given purpose.

But depending on its application, different terms could be used for the purpose of providing the information. Figure D.1 is an illustration of showing this.

Label Tag Ticket Mark

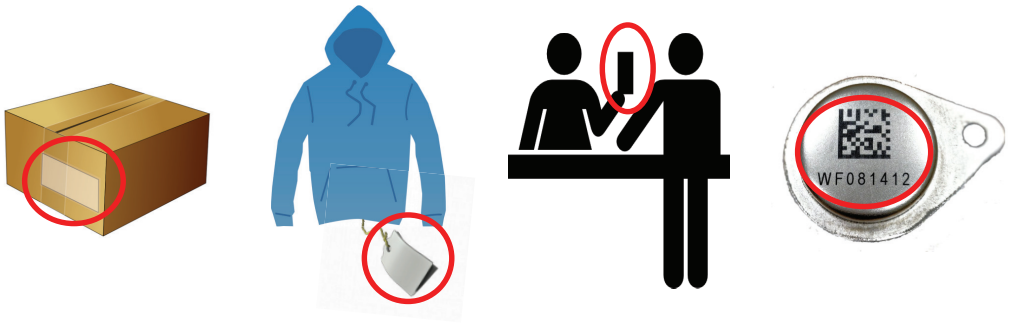


Figure D.1 — Example of different types of identification methods

D.2 Label components applicability per identification method

Table D.1 provides information on the difference between the typical “naming” of different types (means) of providing information on an object.

Table D.1 — Example of components applicability per type of identification

	Facestock	Adhesive	Liner coating	(Release) liner	Other means of attachment	Type of printed information	Type of print technology
Label	X	X	X	X		Variable, fixed	Thermal-transfer, direct thermal, etc.
Tag	X			(X)	Clamb, etc.	Fixed	Direct thermal, ink jet, etc.
Ticket	X	(X)	(X)	(X)	Neck string, etc.	Variable, fixed	Direct thermal, ink jet, etc.
Mark	N/A	N/A	N/A	N/A	Direct part marking	Variable, fixed	Ink jet, laser, etching, etc.

X To be used.

(X) May be used.

N/A Not applicable.

Annex E
(informative)

Different identification methods and purposes

E.1 General

There are four main parties involved in discussions around label material: the label raw material manufacturer, the converter, the reseller and the user. Often, it is most the converter or reseller that is having contact with the raw material manufacturer and needs to understand the user's needs.

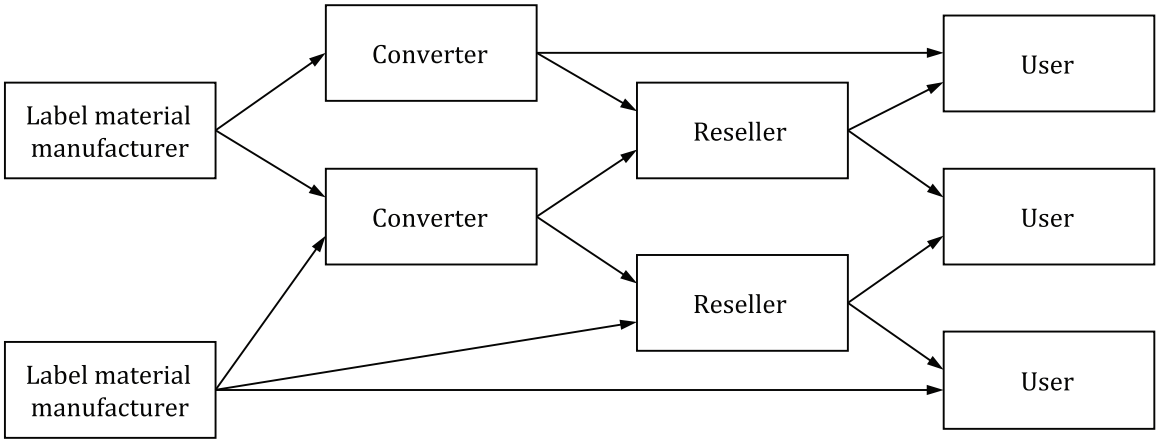


Figure E.1 — Example of simplified relations between parties dealing with labels

E.2 Label material manufacturer

A manufacturer produces label materials that are used as base for further processing into specific labels of different shapes, sizes, etc. The manufacturer usually does not have contact with the users of the processed label material, although some manufacturers are increasing their presence at users to better understand the market requirements and aid new product development.

E.3 Converter

A converter is processing a label material into specified label shapes, sizes, etc., either based on their own or on users' specified needs. A processed label material can be with or without print. The converter is the one that has the most knowledge of the user's application and acts as a broker between the manufacturer, reseller and user.

E.4 Reseller

A reseller is a provider of produced labels and can sometimes be a user's single point of contact for labels, as well as associated products such as ribbons, printers and software to form a complete print solution, and the one that has contact with several converters.

E.5 User

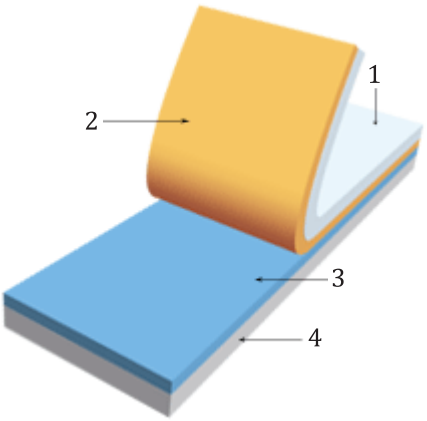
A user is using labels of different shapes and sizes for different applications. The user orders printed or non-printed labels of which the latter can be variably printed by the user to be applied on its products for their specific applications.

Annex F
(informative)

Label components

F.1 Overview

A label consists of several components (see Figure F.1), of which the facestock, adhesive and liner often are seen as the label material. The label is then placed on a surface (see Figure F.2).

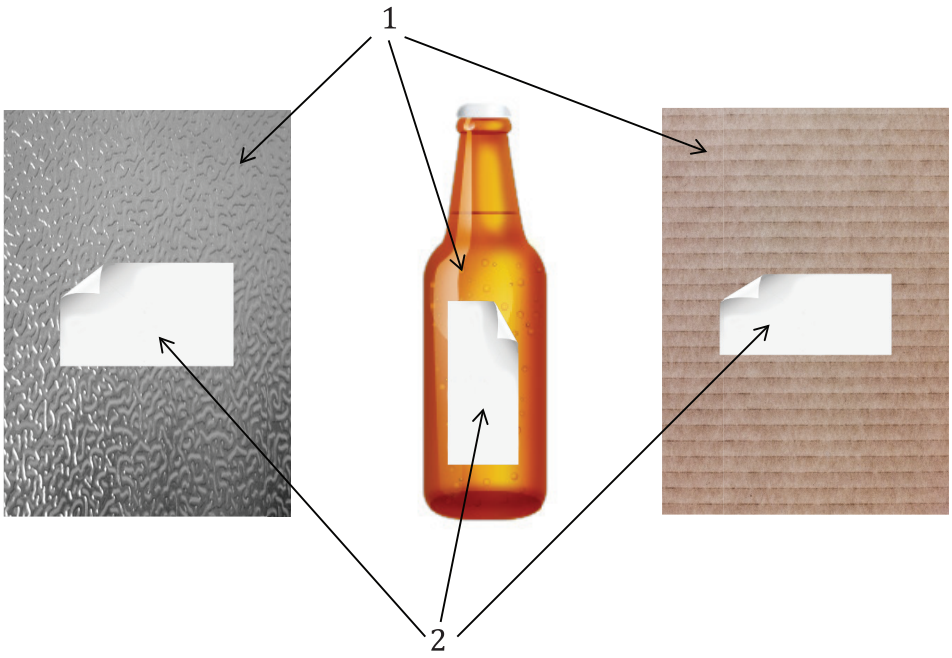


Key

1 facestock (film/material; see F.2)
- protective coating/over lamination (see F.2.2)
- ink (if pre-printed; see F.2.3)
- top coating (see F.2.4)
- substrate (as defined in this document; see F.2.5)

2 adhesive (see F.3)
3 liner coating (see F.4)
4 (release) liner (see F.5)

Figure F.1 — Components of a label



Key

1 surface

2 label

Figure F.2 — Different types of surfaces for placing labels

The object surface (see Figure F.2) is not part of the actual label but is a label component that may put requirements on the other label components (see Figure F.1) so that the label can be used in its intended application. The label itself consists of up to two components, the facestock (see key 1 of Figure F.1) and adhesive (see key 2 of Figure F.1), and depending on its specification and intended application, the facestock can consist of one to four subcomponents.

F.2 Facestock

F.2.1 General

The facestock to be used depends on intended application as what type to use depends on how and for what purpose the actual label shall be used, e.g. label shall last for a limited time versus the life time of an item, needs to withstand chemical substances, provide a security function (e.g. warranty seal), etc.

The facestock could also be of one or more subcomponents depending on intended application, e.g. RFID labels require an inlay of an RFID tag, partly coloured labels aimed for overprinting, etc.

F.2.2 Protective coating/over lamination

A physical protective coating/over lamination can be used when there is a need to protect applied (imprinted) information/image on a final pre-printed label.

F.2.3 Ink (if pre-printed or direct printing)

Depending on print method, the appropriate type of ink needs to be used, e.g. pre-printing using screen print requires a fluid ink while thermal-transfer printing requires an ink ribbon.

F.2.4 Top coating

A physical surface coating can be applied to promote or increase ink adhesion with conventional and digital print technologies or to modify gloss.

F.2.5 Substrate

A physical media, e.g. film, paper, polyester, etc., can be coated, printed or laminated in order to be able to provide the needed function.

F.3 Adhesive

Type of adhesive is to be selected depending on intended application, e.g. if the label shall be permanent fixed to the surface, if the label shall fall of from surface when the item is being washed or if the label shall be manually removable.

F.4 Liner coating

The liner coating (e.g. silicone coating) is part of the release liner and enables the separation of the adhesive label from the release liner when applied to a surface.

F.5 (Release) liner

The liner is used to protect and transport labels and to ease release (removing) labels for use. The liner can be continuous or perforated depending on which application the actual label is to be used, e.g. print and apply using a label applicator or print in desk top printer and tear off the label for manual application.

F.6 Surface

The surface is onto where the label is to be applied and could be of different types (e.g. cardboard, metal, plastic, glass, etc.) and shapes (e.g. flat, curved, etc.).

Annex G
(informative)

Content in label material specification

G.1 General purpose

This annex lists general information about the label material to give guidance on how and for what purpose the specified label material is possible to use.

G.2 Measurement tolerances

Measure tolerances for label size, total thickness, liner, placement on liner and the effective printable area shall be given as only one tolerance cannot be given for all measures in the specification.

G.3 Characteristics

G.3.1 Physical size and shape

Figure C.1 provides information about shape and size of the specified label material.

More information about specifying size can be found in Annex H.

G.3.2 Properties

G.3.2.1 Facestock

Label component information that defines the composition of the facestock of the label material, which enables comparison between defined need and other materials.

More information about label components can be found in Annex H.

G.3.3 Attributes

G.3.3.1 Performance

Result of performed tests, which are applicable to the label material, which enables comparison between defined need and other materials.

More information about applicable test methods can be found in Annex I.

G.3.3.2 Usage

For proper function of the specified label or label material, the following shall be given:

a) application temperature and humidity (when a label is applied);

b) service temperature and humidity (when a label is used);

c) storage temperature and humidity (when a label is stored).

G.4 Printed text or graphics (Symbols)

For text and graphics, like symbols, their position and size, etc., needs to be provided based on the physical available size after taking any effective printable area into account.

More information about specifying size can be found in Annex H.

G.5 Finishing

G.5.1 Placement and orientation

Information about how the label material, label or ribbon is provided for delivery, storing and usage.

More information about specifying size can be found in Annex H.

G.5.2 Identification and quotation

Information about the following shall be given:

a) identity;

b) quantity;

c) how the material is provided:

   1) sheet, format;

   2) core, material and size;

   3) fan-folded, size;

d) winding (inside or outside).

G.6 Regulations/certifications

Provide information about which regulatory or standard requirement that the label material is certified against and complies to.

Annex H
(informative)

Label material measurements

H.1 Means of distribution of labels

H.1.1 Type of finished formats (carriers)

Labels could be distributed in different ways depending on its printing and usage capabilities or needs.

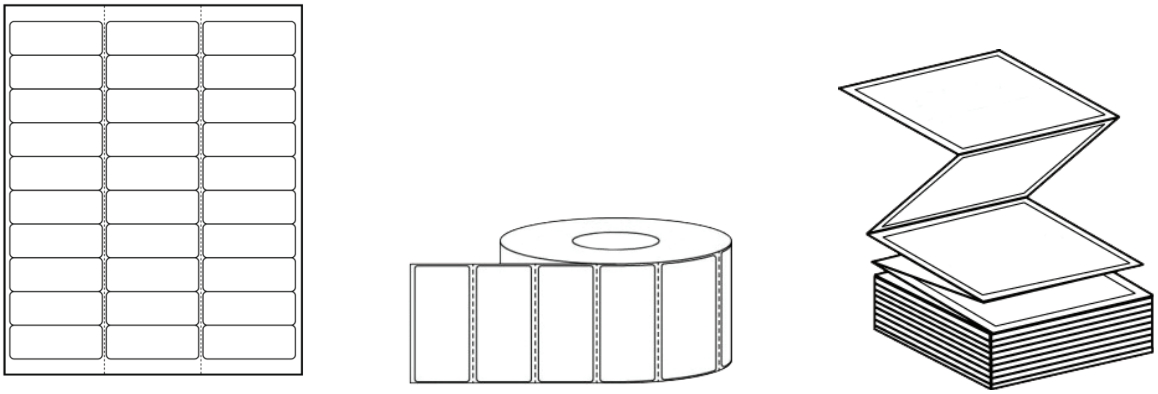


Figure H.1 — Labels distributed on sheet, roll or fan-folded

H.1.2 Winding of rolls

Labels could be wounded in two ways depending on printing technique and size of label.

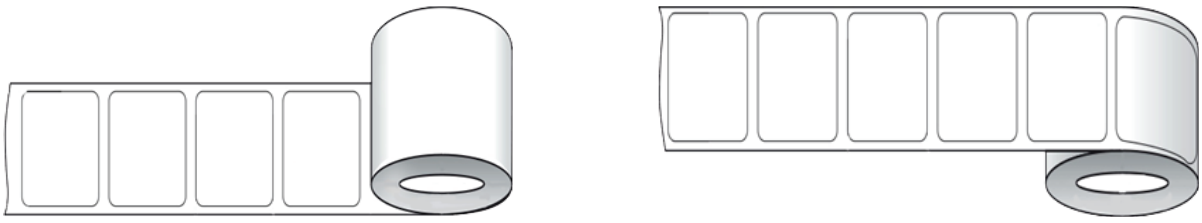


Figure H.2 — Labels placement on liner, wound-in (labels on inside) or wound-out (labels on outside)

H.1.3 Direction and orientation of print on label

There are several possible orientations for text and graphics to be printed on a label as shown in Figure H.3 which also can be printed in different paths depending on labels placement on liner, e.g.

a) direction of text and graphics:

   1) horizontal;

2) vertical;

3) diagonal;

b) print path:

1) with web;

2) cross web.

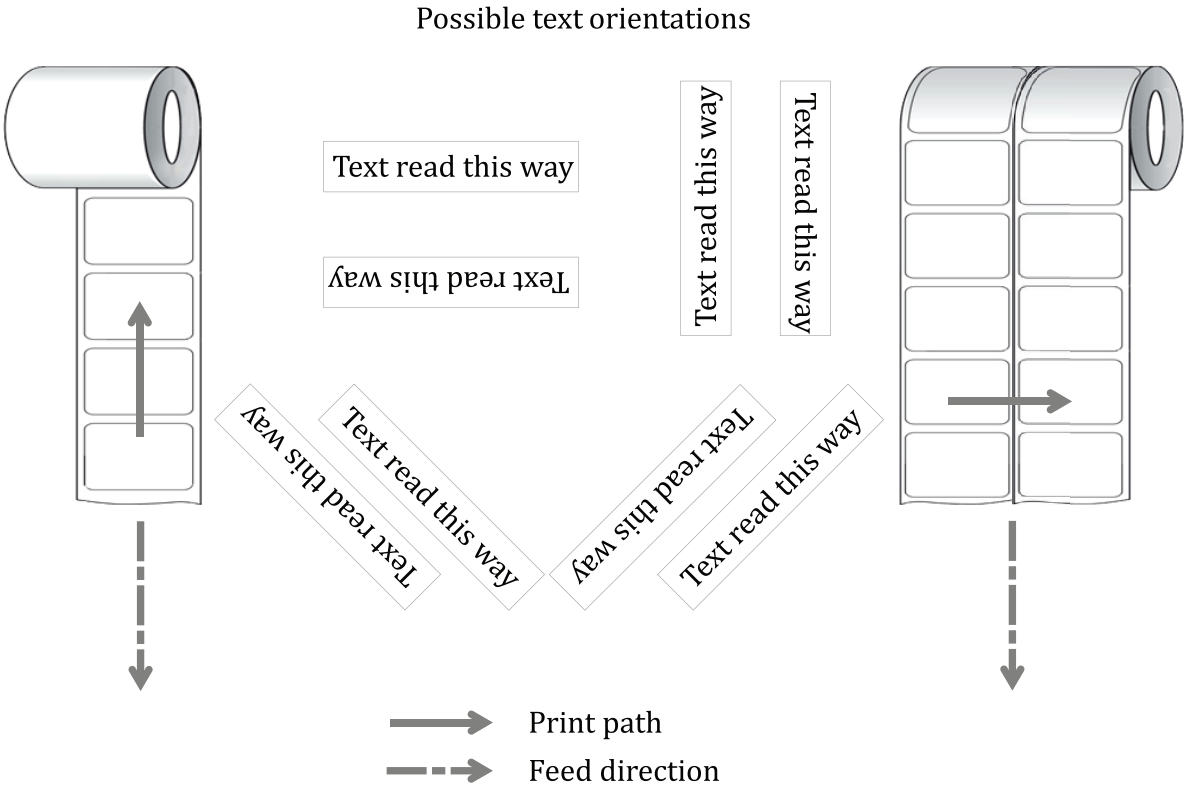


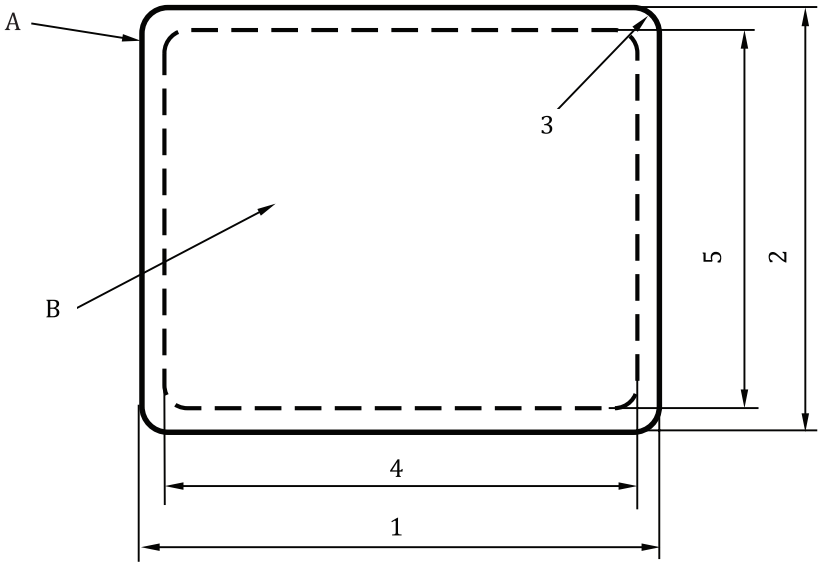
Figure H.3 — Labels direction and orientation

H.2 Specifying label size

Measurement of the labels size as given in or to be drawn into label specifications shall be done according to Figure H.4.

In Figure H.4, there are two dimensions mentioned: the label and the safe printable area of the label.

The safe printable area could be mentioned if there is a need to inform that the whole label is not printable due to shape, inlay, etc.



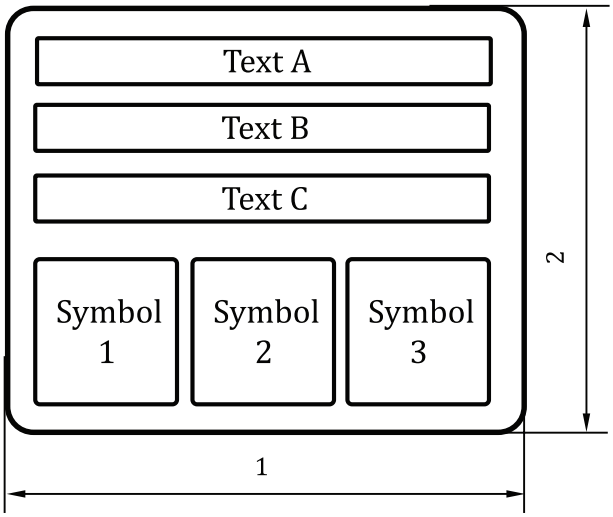
Key

A	label	1	label width (mm)
B	safe printable area	2	label height (mm)
		3	label radius (mm)
		4	safe printable area width (mm)
		5	safe printable area height (mm)

Figure H.4 — Drawing measurements that specifies the size of label

H.3 Specifying printed text and graphics (symbols)

Figure H.5 provides information about text and graphics positioning, as well as size and shape of the label; it may not be in scale 1:1.



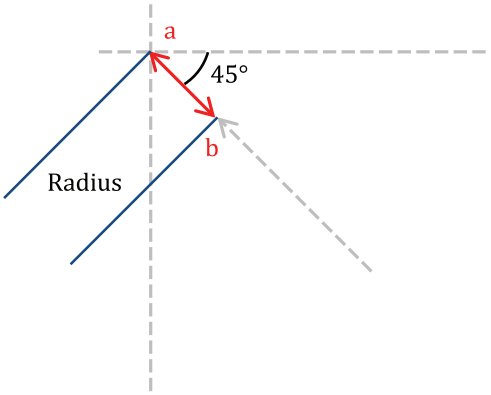
Key

1	label width (mm)	Text A	text element in position X, Y (mm)
2	label height (mm)	Text B	text element in position X, Y (mm)
		Text C	text element in position X, Y (mm)
		Symbol 1	symbol in position X, Y (mm)
		Symbol 2	symbol in position X, Y (mm)
		Symbol 3	symbol in position X, Y (mm)

Figure H.5 — Information about text and graphics positioning on label

H.4 Specifying corner radius

Measurement of the label or label material corner radius as given in or to be drawn into label specifications shall be done according to Figure H.6.

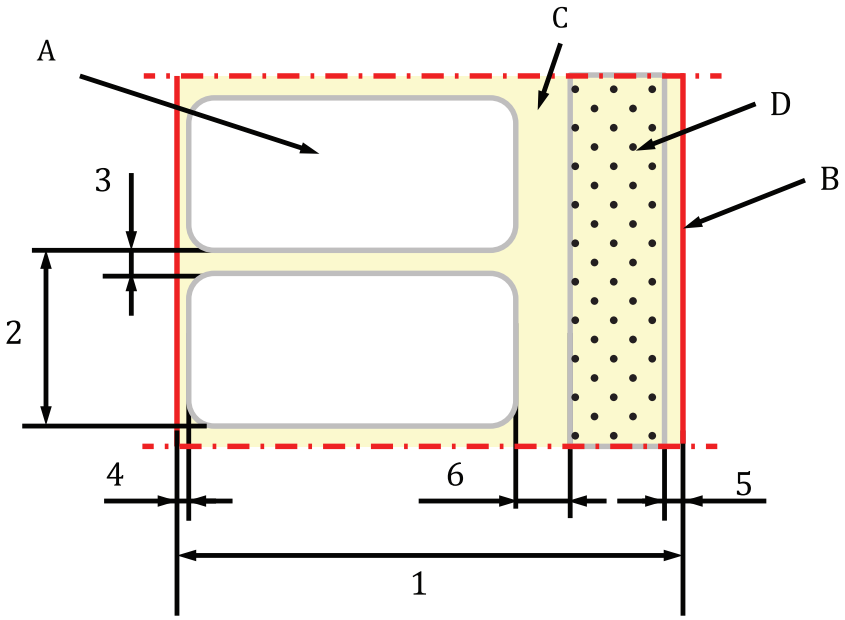


NOTE The measurement for the radius is done between point “a” and “b”.

Figure H.6 — How to measure the corner radius (red line)

H.5 Placement on liner/web retain

In Figure H.7, the placement of label and retained web on the liner is given. Retained web is label material that is left when other label material is removed after die cut of the actual label.



Key

A	label	1	liner width (mm)
B	line	2	length between labels (mm)
C	web removed (liner visible)	3	gap width between labels (mm)
D	web retained	4	distance between liner and liner edge (mm)
		5	distance between web and liner edge (mm)
		6	distance between label and web (mm)

Figure H.7 — Label and web positioning on liner

Annex I
(informative)

Test methods

I.1 Test methods given per performance test

Numerous test methods are available below, but are just examples and do not provide a complete list of available test methods that are applicable for self-adhesive labels not only tapes.

For each attribute, specific test methods are to be chosen so that comparable test results can be evaluated between different suppliers.

I.1.1 Tear strength

Table I.1 — Standards for tear test

Test	Standard
Tear strength	ISO 34-2, *Rubber, vulcanized or thermoplastic — Determination of tear strength — Part 2: Small (Delft) test pieces*
	ASTM D5486/D5486M, *Standard specification for pressure-sensitive tape for packaging, box closure, and sealing*
	PSTC-38, *Tear resistance of pressure sensitive tapes*
	PSTC-39, *Tear resistance of plastic film tapes*

I.1.2 Peel and tack adhesion

Table I.2 — Standards for peel test

Test	Standard
Peel adhesion	ISO 813, *Rubber, vulcanized or thermoplastic — Determination of adhesion to a rigid substrate — 90 degree peel method*
	ISO 814, *Rubber, vulcanized or thermoplastic — Determination of adhesion to metal — Two-plate method*
	ISO 29862, *Self-adhesive tapes — Determination of peel adhesion properties*
	EN 1939, *Self -adhesive tapes — Determination of peel properties*
	JIS Z 0237, Clause 10
	ASTM D3330/D3330M, *Standard test method for peel adhesion of pressure-sensitive tape*
	PSTC-101, *International standard for peel adhesion of pressure sensitive tape*
	Afera 5001, *Self-adhesive tapes — Measurement of peel adhesion from stainless steel or from its own backing*
	FTM 1, *Peel adhesion (180°) at 300 mm per minute*
	FTM 2, *Peel adhesion (90°) at 300 mm per minute*
Tack adhesion	FTM 9, *Loop tack measurement*

I.1.3 Abrasion resistance

Table I.3 — Standards for abrasion test

Test	Standard
Abrasion resistance	ISO 4649, *Rubber, vulcanized or thermoplastic — Determination of abrasion resistance using a rotating cylindrical drum device*
	ASTM D5264–98, *Standard practice for abrasion resistance of printed materials by the Sutherland rub tester*
	ASTM D4060–10, *Standard test method for abrasion resistance of organic coatings by the Taber Abraser*
	FTM 27, *Ink rub test for UV printed labels, ink surface against substrate or ink surface*
	FTM 29, *Scratch resistance of an UV ink film on different print materials*

I.1.4 Insulation resistance

Table I.4 — Standards for insulation test

Test	Standard
Insulation resistance	ISO 2878, *Rubber, vulcanized or thermoplastic — Antistatic and conductive products — Determination of electrical resistance*
	IEC 60454–3, *Pressure-sensitive adhesive tapes for electrical purposes — Part 3: Specifications for individual materials*
	ASTM D1000, *Standard test methods for pressure-sensitive adhesive-coated tapes used for electrical and electronic applications*
	PSTC-58, *Insulation resistance at high humidity (indirect electrolytic corrosion)*

I.1.5 Dimension measurement

Table I.5 — Standards for dimension test

Test	Standard
Dimension measurement	EN 1942, *Self adhesive tapes — Measurement of thickness*
	JIS Z 0237, Clause 5
	ASTM D3652/D3652M-01, *Standard test method for thickness of pressure-sensitive tapes*
	ASTM D5750/D5750M-95, *Standard guide for width and length of pressure-sensitive tape*
	PSTC-71, *Guide for width and length of pressure sensitive tapes*
	PSTC-133, *International thickness (caliper) of pressure sensitive tapes*
	Afera 5006, *Self-adhesive tapes — Measurement of thickness EN 1942 2002*
	FTM 14, *Dimensional stability*

I.1.6 Static shear

Table I.6 — Standards for static shear test

Test	Standard
Static shear	ISO 29863, *Self adhesive tapes —Measurement of static shear adhesion*
	EN 1943, *Self adhesive tapes —Measurement of static shear adhesion*
	JIS Z 0237, Clause 13
	ASTM D-3654/D 3654M-02, *Standard test methods for shear adhesion of pressure-sensitive tapes*
	PSTC-107, *International standard for shear adhesion of pressure sensitive tape*
	Afera 5012, *Self-adhesive tapes — Measurement of static shear adhesion EN 1943 2002*
	FTM 8, *Resistance to shear from a standard surface*

I.1.7 Breaking strength and elongation

Table I.7 — Standards for breaking strength and elongation test

Test	Standard
Breaking strength and elongation	ISO 29864, *Self adhesive tapes —Measurement of breaking strength and elongation at break*
	EN 14410, *Self adhesive tapes —Measurement of breaking strength and elongation at break*
	JIS Z 0237, Clause 8
	ASTM D-3759M, *Standard test method for breaking strength and elongation of pressure-sensitive tape*
	Afera 5004, *Test method for breaking strength and elongation of pressure sensitive tape EN 14410 2003*
	PSTC-131, *International breaking strength and elongation of pressure sensitive tapes*

I.2 Overview of tests and test methods per organizations

Numerous tests and test methods are available below, but are just examples and do not provide a complete list of available test methods and organizations.

Table I.8 — Example of test methods and standards per organization

	Tear strength	Peel adhesion	Tack adhesion	Abrasion resistance	Insulation resistance	Dimension measurement	Static shear	Breaking strength and elongation
ISO	34–2	29862	/	4649	2878	543	29863	29864
IEC	/	/	/	/	60454–3	/	/	/
CEN	/	EN 1939	/	/	/	EN 1942	EN 1943	EN 14410
JIS	/	Z 0237 Clause 10	/	/	/	Z 0237 Clause 5	Z 0237 Clause 13	Z 0237 Clause 8
ASTM	D-5486, D-5486M	D-3330M-02	/	D5264–98, D4060–10	D-1000	D-3652M-1	D-3654M-02	D-3759M

Table I.8 *(continued)*

	Tear strength	Peel adhesion	Tack adhesion	Abrasion resistance	Insulation resistance	Dimension measurement	Static shear	Breaking strength and elongation
PSTC	38, 39	101	/	/	58	133	107	131
Afera	/	5001	/	/	/	5006	5012	5004
FINAT	/	FTM 1, FTM 2	FTM 9	FTM 27, FTM 29	/	/	FTM 8	/

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[5] ISO 9244:2008, *Earth-moving machinery — Machine safety labels — General principles*

[6] ISO 12637-1:2006, *Graphic technology — Vocabulary — Part 1: Fundamental terms*

[7] ISO 17398:2004, *Safety colours and safety signs — Classification, performance and durability of safety signs*

[8] ISO 19952:2005, *Footwear — Vocabulary*

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[16] [3)]http://www.finat.com/Knowledge/FINAT-publications/Technical-Handbook.aspx

[17] ANS MH10.8.13, *Performance requirements and test procedures for labels incorporating linear bar code and two-dimensional (2D) symbols — Part 1: Pressure-sensitive label*

1) To be published. (Revision of ISO 21067:2007)

2) List of paper standards and packaging standards developed by ASTM, available at the link provided.

3) FINAT Technical Handbook - Test methods, 9th edition, available at the link provided.

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