



LUX-IDent
RFID Inlays & Labels Manufacturer

General RFID label Delivery and Packaging specification

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...tuned to your frequency



General RFID label Delivery and Packaging specification

Dear Customer,

Thank you for choosing LUX-IDent as your supplier for high quality RFID labels.

This document provides important information and technical data about packaging, shipping and compliances.

Content

1	Product description	3
2	RFID Label specification	3
3	RFID label product code	3
4	Tape configuration	4
4.1	Leader and trailer tape	4
4.2	Splices	4
5	RFID Label testing and marking	6
5.1	RFID Label testing	6
6	Technical data	7
7	Shipping and Packaging	7
7.1	Reel	8
7.2	Packaging for shipment	9
8	Reel and box labeling	10
9	Storage and handling	12
10	Warranty, Liability and Compliances	13
11	Document revisions	14



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1 Product description

LUX-IDent RFID labels are mostly customized and application specific products which have been designed for a particular applications. Beside these specialized RFID labels LUX-IDent offers also a variety of standardize RFID labels.

2 RFID Label specification

LUX-IDent provides a technical specification drawing for each type of RFID label. The drawing contains detailed information about the label dimensions, positioning of the RFID label on the liner and the RFID label construction. Additional information about the roll configuration and unwinding direction are also given.

The technical drawing will be provided during the product definition phase or can be requested from the LUX-IDent customer service via email sales@lux-ident.com or smart-inlay@lux-ident.com.

3 RFID label product code

Each LUX-IDent RFID label has its unique product code for the particular definition of its characteristics and features. The following explanation shows the setup of the product code:

L3x-CDDMDD-CHP-REFER-ECCXX

Product group L3x HF, UHF or combi label	Dimensions CDDMDD RFID label dimension and orientation	CHP Chip type used for this label	REFER Reference to label construction	ECCXX Optional information about encoding
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4 Tape configuration

RFID labels are delivered on reels.

4.1 Leader and trailer tape

For standard deliveries, no leader and trailer tape is added to label liner. One layer of empty liner material is wrapped around the outer label winding to protect the labels against contamination and keep the roll closed.

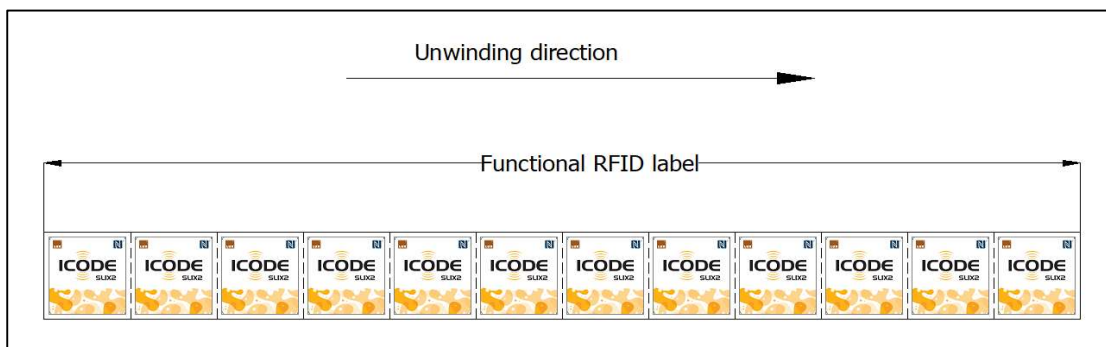


Figure 1: Example of standard RFID label delivery on roll

4.2 Splices

RFID label tapes may have splices within a roll. Splices at the end of raw materials are made by the suppliers of the raw material or by LUX-IDent during the label production process. Splices made by our suppliers are out of our control and are made by the internal rules of our suppliers. Therefore the type or the splicing tape may differ to our internal specification.

The following rules apply to the splicing of label tapes made by LUX-IDent:

- Splicing is done at a non-specific position at the raw materials. Due to the nature of the production process a splice can't be made at a defined position. Depending on the RFID label size and RFID label pitch in machine direction, one or more RFID labels are affected by the splice.
- LUX-IDent uses a 82 µm thick, green splicing tape to join the materials. A specification of the splicing tape can be provided on request.

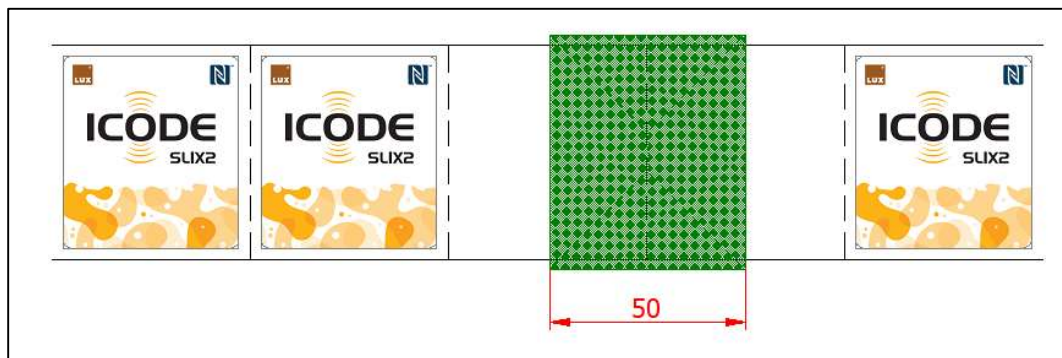


Figure 2: Splice of liner with test option "Removal of defect labels"

General RFID label Delivery and Packaging specification

The splicing tape is applied on:

- Liner material: only on back side
- Faces stock material: only on top side
- Other materials: on both sides of the material

- The static pull force of a splice is specified at minimum of 50 N for a 50 mm wide tape at room temperature. The characteristics of splices made by our raw material suppliers may differ.
- Splicing tape edge cutting:

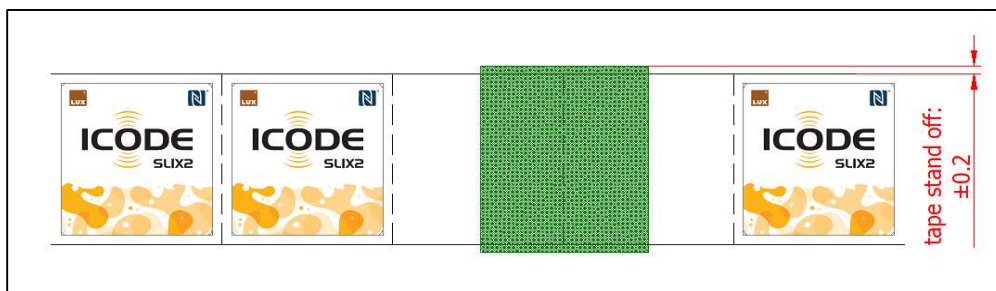


Figure 3: Splicing tape maximum stand off

- Pitch tolerance

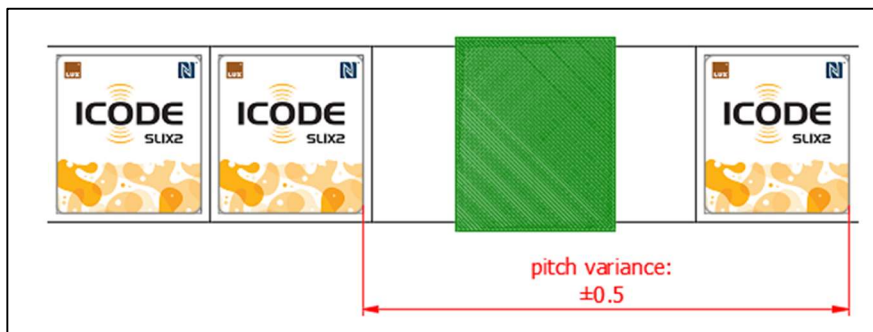


Figure 4: Pitch tolerance at splicing positions

- Maximum allowed angular failure

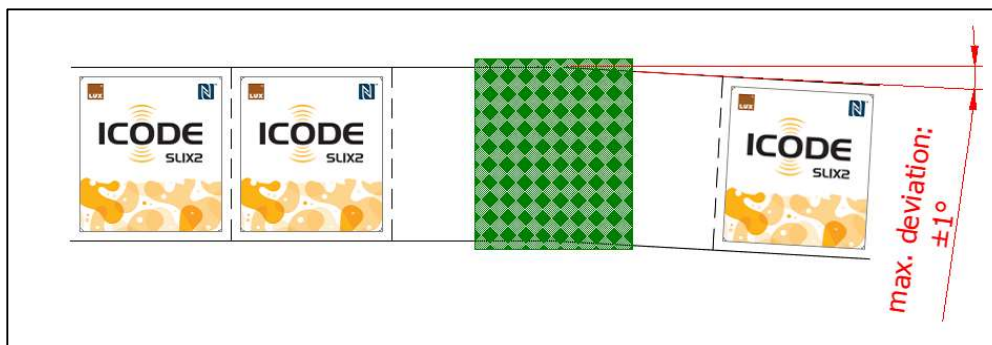


Figure 5: Maximum angular failure at splicing position

LUX-IDent takes care that labels at splicing positions are removed. This will create empty positions on the liner- Due to the nature of the R2R production process and the type of splicing tape used by our raw material suppliers it can happen that some splicing positions are not detected and therefore labels will not be removed.

5 RFID Label testing and marking

5.1 RFID Label testing

LUX-IDent RFID labels undergo a 100% inline Go/NoGo test during the label production process or in an extra off-line test run. Treatment of non-functional RFID labels is defined in the respective RFID label drawing. LUX-IDent offers the following options:

- Marking with a black dot or text



Figure 6: Marking of non-functional RFID labels

- Removal of non-functional RFID labels where empty positions remain on the liner

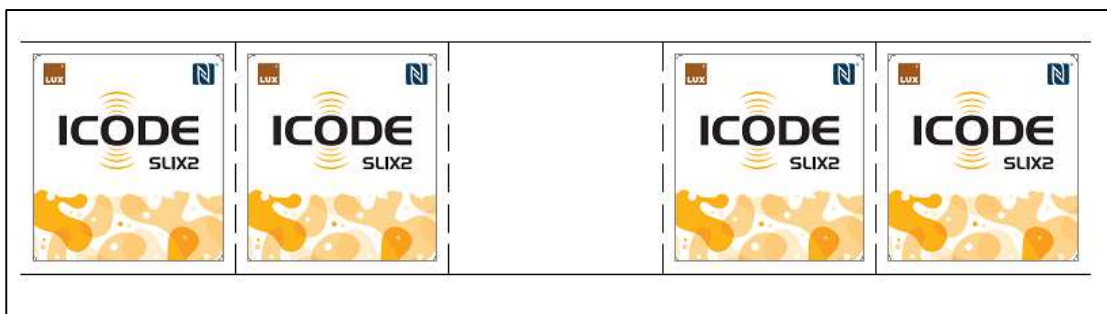


Figure 7: Removal of non-functional RFID labels

- Replacement of non-functional labels by functional labels. This requires larger positioning tolerances of the labels on the liner and will be noted on the label specification drawing.

6 Technical data

Technical data of RFID label are always product specific and depend on the materials involved. Please refer to the technical drawings for detailed information about the RFID label.

7 Shipping and Packaging

RFID labels from LUX-IDent are produced in a Reel-to-Reel conversion process and delivered on cores made of cardboard. All rolls are hanging on a core tube and are protected by corrugated paper side walls. This protects the RFID labels from damage during transport and handling. The RFID label rolls and the protective packaging is placed inside a closed PE bag together with some silica gel bags for moisture absorption. The rolls are packed in sturdy corrugated paper shipping boxes for safe transport from factory to customer.



Figure 8: Label rolls packed into PE bag and shipping carton

7.1 Reel

RFID labels will be delivered as roll on a cardboard core with 3" inner diameter. The outside diameter is depending on the number of RFID labels on one roll and is limited to 350mm.

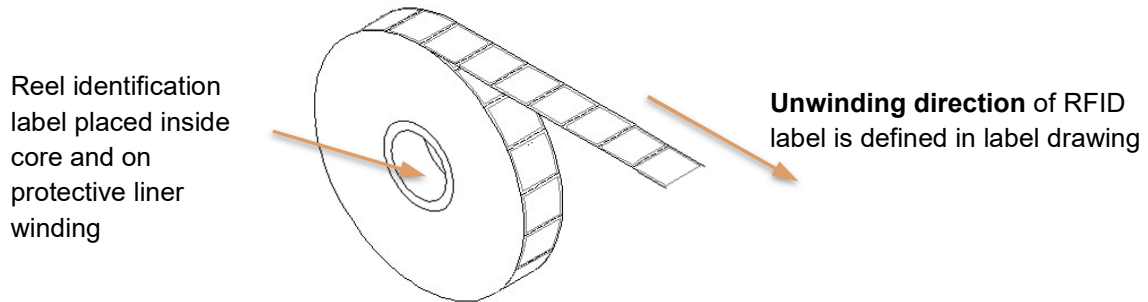


Figure 9: RFID Label roll without flanges

RFID labels on a narrow liner or with asymmetric construction will be delivered on reels with flanges. This gives additional protection to the RFID labels and prevents collapsing of the roll.

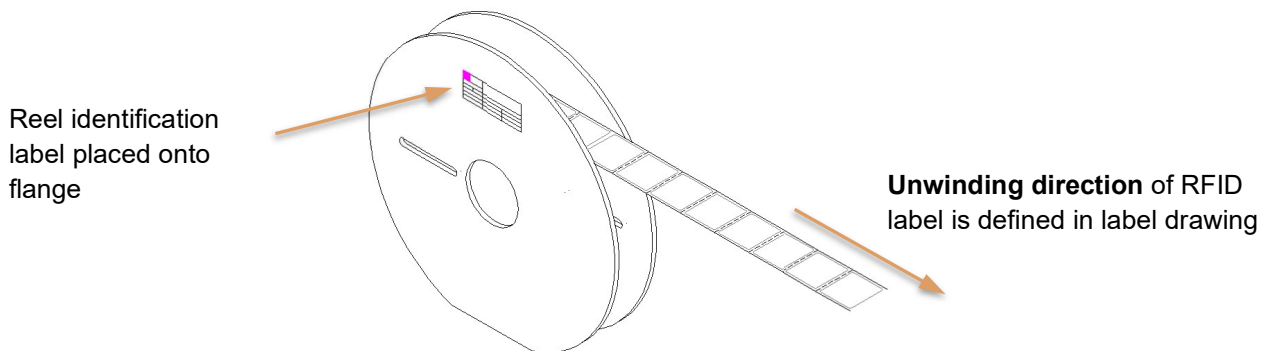


Figure 10: Label delivery on reel with flanges

7.2 Packaging for shipment

Depending on RFID label size, chip size and customer requirements the quantity of RFID labels per reel will vary. The amount of good RFID labels per reel is specified in the according technical drawing and belongs to all reels of a production batch, except the last one. The last reel is used to finish the production order and volumes will vary. Please note, that due to the Reel-to-Reel production process LUX-IDent is not able to deliver the exact quantity as ordered. LUX-IDent reserves the right to over / under deliver max. 10% of the total ordered volume as mentioned in the General Terms and Conditions.

Reel dimension	The outside diameter of the label roll is depending on the number of labels per roll and is specified at the label drawing.		
Reel core diameter	76,2 mm (3") , see also technical drawing		
Minimum winding diameter	110 mm		
Reel width	Equal to the specified liner width. The paper core width corresponds to the liner width with a tolerance of ± 1 mm. For RFID labels delivered on rolls with flanges the reel widths equals liner width plus 15 mm ± 2 mm		
Cardboard shipping box dimension	Max. reel diameter	Multi box with max. 6 reels	Shipping weight
	Ø 250 mm	400 x 300 x 315 mm	max. 15 kg
	Ø 350 mm	400 x 400 x 415 mm	max. 25 kg
Minimum yield:	> 98% average yield per production batch of more than 20.000 inlays.		

8 Reel and box labeling

Each RFID **label reel** is labeled with an identification label showing all relevant data. If reel with flanges are used then the larger label with barcodes will be applied. Narrow web reels without flange will show a smaller label without barcodes. The labels contain the import information about the product like:

- Product description and article code
- Batch number and reel number
- Production date
- Quantity of good and bad inlays on reel







	Article name: HF-Label 24x11mm, Pitch 25,4mm, NXP ICODE SLIX2, no artwork		
	Article code:  570 / L35-024011-NI8-LUX00		
Batch No.	 19/2589		
Reel No.:	 01		
Quantity good pcs:	 5000	Yield (%):	99.70
Quantity bad pcs:	 15	Date:	21.7.2020

Figure 12: Example of reel label showing information with additional bar codes


	Article name: HF-Label 24x11mm, Pitch 25,4mm, NXP ICODE SLIX2, no artwork		
	Article code: 570 / L35-024011-NI8-LUX00		
Batch No.	Reel No.:	19/2589	01
Date:		21.7.2020	
Quantity good pcs:		5000	
Quantity bad pcs:		15	

Figure 11: Example of reel label for narrow web reels without bar codes

Each **shipping box** is marked with a label showing the following information of the reels contained in the box:

- Product description and article code
- Batch number and reel numbers inside box
- Production date
- Box number of whole shipment
- Quantity total of good and bad inlays/labels contained in box.







	Article name: HF-Label 24x11mm, Pitch 25,4mm, NXP ICODE SLIX2, no artwork				
Article code:	 570 / L35-024011-NI8-LUX00				
Batch No.:	 19/2589				
Box No.:	 01	Reel No.:	01	02	03 04 05
Quantity good pcs:	 25000	Yield (%):	99.82		
Quantity bad pcs:	 45	Date:	21.7.2020		

Figure 13: Example of label on shipping box

Additionally each reel is labeled with an information label about correct storage of RFID labels. The data shown on these labels might differ from the data in the technical specification. Binding are only data on the technical specification because these consider the different materials used for the specific RFID label.

9 Storage and handling



Please note:

RFID labels are electronic devices which are sensitive to mechanical shocks and electrostatic discharge. Handle the reels with care and don't drop them.



Figure 14: ESD warning label

LUX-IDent is adding an ESD warning label onto each Smart inlay reel and on the shipment boxes to make operators aware that these goods are sensitive to electrostatic discharge. It is advisable to unpack and handle the Smart Inlay reels in an ESD protected area. Special care has to be taken at unwinding of the inlays. Without any protective measures, this can create high static charges which may damage the chips on the Smart Inlays.

Always keep the RFID labels in their original box to protect them against pollution and damage. Before usage, the RFID labels should be acclimated to the room conditions.

Specific recommendations

- Take care of electro static charging during unwinding of the label rolls. The unwinding process can generate high voltages which might damage the integrated circuit
- Avoid any high pressure onto the chip. The chip is made out of silicon, which breaks easily when punctual pressure is applied.
- To press the label onto the plastic part use a rubber made tool. Soft rubber (Shore 60A) or rubber foam has been proven to protect the chip best
- The area where the label and especially the chip is attached to, should be flat
- Take care that no air is trapped below the label and the label is fully attached to the plastic part.
- It is not recommended to remove and replace a label once it is applied. The adhesive might have a high initial tack, which will create significant bending and peel stress to the chip-antenna connection when the label is removed.



General RFID label Delivery and Packaging specification

10 Warranty, Liability and Compliances

LUX-IDent RFID labels are thoroughly tested. It is the responsibility of LUX-IDent's customers to evaluate their use case for compatibility with the LUX-IDent RFID label properties and to ensure through appropriate process controls that the determined machine and material parameters are met on an ongoing basis. LUX-IDent does not accept warranty claims for material that has already undergone further processing.

The technical performance of LUX-IDent RFID labels in regards to read/write distance, memory size and security functions is depending on the selected chip. LUX-IDent assumes neither liability nor responsibility for the technical performance and specification of the RFID chip used in the RFID label.

LUX-IDent reserves the right to make changes to its products or services or to discontinue any product or service at any time without notice, as long as there are no specific obligations with specific customers.

LUX-IDent provides customer assistance in various technical areas, but does not have full access to all data concerning the use and applications of customer products. Therefore LUX-IDent assumes no liabilities and is not responsible for customer applications or product or performance relating to systems or applications incorporating LUX-IDent products.

LUX-IDent assumes no liability and is not responsible for infringement of patents and/or any other intellectual or industrial property rights of third parties, which may result from assistance provided by LUX-IDent.

LUX-IDent products are not designed, intended, authorized or warranted to be suitable for life support applications or any other life critical applications which could involve potential risk of death, personal injury or severe property or environmental damage.

LUX-IDent products are fully compliant to actually set industry rules, like RoHS, REACH and RED. Actual versions of the compliances certificates are available on request.

11 Document revisions

Date	Revision	Status, modifications
22.05.2019	1.0	Initial release
25.06.2019	1.1	Standard tape configuration without empty positions Update at splicing positions Failure correction at reel drawings
20.01.2020	1.2	Change to new company logo Labels are removed at splicing positions (chapter 4.2) Change in reel label and box label layout (chapter 8) Adding handling recommendations for labels (chapter 9)
21.07.2020	1.3	Replacement of examples for box and reel labels containing new company logo
03.04.2023	1.4	Chapter 9: Add info about new ESD warning label



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