

Avery Dennison
Smartrac
Quick Guide

January 2023

RFID labels for Food and Beverage



**Farm Fresh
Seafood Rice Bowl
& Fresh Fruit**

net w



rfid.averydennison.com

Why RFID?

Track and manage food waste

- 20% reduction in food waste*
- 50% reduction in labor costs*
- Improved utilization of returnable trays
- High-speed retail checkout (up to 15 times faster)*
- Increased food traceability and supply chain visibility (e.g. US Food Safety Modernization Act (FSMA) and UK Food Safety Act).
- Increase in fresh food margins
- Accurate Global Data Synchronization (GDS) from supplier to retailers as well as to distributors to increase efficiency of electronic data interchange (EDI) and other collaborative activities

*Internal pilots and retailer feedback. Independent results may vary.

Why Avery Dennison?

The broadest range of RFID solutions

- Global manufacturing footprint with the largest product portfolio
- Customized inlay and label products available
- Sustainable paper-based SmartFace® technology

Reliable and durable products for consistent quality and performance


















- Proprietary chip strap-attach technology for the most durable RFID tags
- 100% quality control to ensure 99%+ functioning tags to achieve maximum ROI
- Limited malfunctioning tags after conversion
- Reduced machine down time and wastage during label converting and application

Valued services that enable you to grow your business












- MOQs as low as 1 roll
- Free sampling program and services
- Stock items shipped within 24 hours
- Fast response from your local technology and sales team
- Expert product qualification and POC support





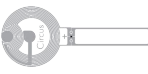


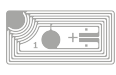


Our RFID product recommendations

Product Name	Design (not to scale)	Antenna Dimensions	Chip	EPC and User Memory	TID Memory	Delivery Format	Applications
AD-163		60 x 4 mm 2.36 x 0.16 in	NXP UCODE 8	128-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Supply Chain Management Inventory Asset Tracking
AD-183		Ø 26 mm 1.02 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Supply Chain Management Inventory Asset Tracking
AD-226		95 x 8.15 mm 3.74 x 0.32 in	NXP G2iM	256-bit and 512-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay	Supply Chain Management Inventory Asset Tracking
AD-23x		70 x 14.5 mm 2.76 x 0.57 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Brand Protection Supply Chain Management
AD-23x Pure		70 x 14.5 mm 2.76 x 0.57 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Brand Protection Supply Chain Management
AD-23x Slim		70 x 10.5 mm 2.75 x 0.41 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Brand Protection Supply Chain Management
AD-251 ETSI		95 x 15 mm 3.74 x 0.57 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Label	Microwave Safe Asset Tracking Supply Chain Management
AD-251 FCC		95 x 13 mm 3.74 x 0.52 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Label	Microwave Safe Asset Tracking Supply Chain Management
AD-324 FCC		41 x 16 mm 1.63 x 0.63 in	NXP UCODE 8	128-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-325 FCC		42.5 x 17 mm 1.67 x 0.67 in	Impinj M730 Impinj M750	128-bit EPC 96-bit EPC and 32-bit user memory	96-bit / 48-bit unique serial number	Dry+ inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-327 ETSI		41 x 16 mm 1.63 x 0.63 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-327 ETSI Pure		41 x 16 mm 1.63 x 0.63 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry+ inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-327 FCC		42.5 x 17 mm 1.67 x 0.67 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry+ inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-387 NEL		30 x 50 mm 1.18 x 1.969 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Case Parcel Item Level Tracking
AD-387 WEL		50 x 30 mm 1.969 x 1.18 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Case Parcel Item Level Tracking
AD-456 ETSI/FCC		64 x 6 mm 2.52 x 0.24 in	NXP UCODE 8	128-bit EPC	96-bit / 48-bit unique serial number	Label	On-Metal Asset Tracking Brand Protection Food Item-Level Retail
AD Bullseye™		Ø 33 mm 1.30 in	NXP ICODE SLIX2	2500-bit	N/A	Label	Authentication Reordering Expiration and Care, Integration into Label, Packaging

Our RFID product recommendations

Product Name	Design (not to scale)	Antenna Dimensions	Chip	EPC and User Memory	TID Memory	Delivery Format	Applications
AD Bullseye™ NFC		Ø 35 mm 1.378 in	NXP NTAG213	144 bytes	N/A	Dry inlay Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Bullseye™ NFC		Ø 35 mm 1.378 in	NXP NTAG216	888 bytes	N/A	Dry inlay Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Bullseye™ On Metal		Ø 35 mm 1.38 in	NXP NTAG213	144 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ NFC		Ø 20 mm 0.79 in	NTAG210μ	48 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ NFC		Ø 20 mm 0.79 in	NXP NTAG213	144 bytes	N/A	Dry inlay Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ NFC		Ø 20 mm 0.79 in	NXP NTAG216	888 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ NFC		Ø 20 mm 0.79 in	ST25TN512	64 bytes user memory	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ NFC		Ø 20 mm 0.79 in	ST25TN01K	160 bytes user memory	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ Mini		Ø 18 mm 0.71 in	NXP NTAG213	144 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ Flex		Ø 20 mm 0.79 in	NXP NTAG213	144 bytes	N/A	Dry inlay Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ On-metal		Ø 20 mm 0.79 in	NXP NTAG213	144 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging

Our RFID product recommendations

Product Name	Design (not to scale)	Antenna Dimensions	Chip	EPC and User Memory	TID Memory	Delivery Format	Applications
AD Circus™ Pro		Ø 20 mm 0.79 in	NXP NTAG424 DNA	416 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ Pro		Ø 20 mm 0.79 in	EM4332	208 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ Tamper Loop		20 x 50 mm 0.79 x 2.0 in	NXP NTAG213 TT	144 bytes	N/A	Wet inlay Label / sticker	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Midas Flagtag		31.41 x 18 mm 1.24 x 0.71 in	Impinj Monza R6	96-bit and n/a	N/A	Wet inlay Dry inlay	On-Metal Asset Tracking Metal and Liquids Supply Chain Management
AD Midas Flagtag		31.41 x 18 mm 1.24 x 0.71 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	N/A	Wet inlay Dry inlay	On-Metal Asset Tracking Metal and Liquids Supply Chain Management
AD Midas Slim		17 x 8.5 mm 0.669 x 0.335 in	NXP NTAG213	144 bytes	N/A	Wet inlay Dry inlay	Electronics and Gaming Food Beauty and Personal
AD Square wave		93 x 11 mm 3.661 x 0.433 in	Impinj M730 Impinj M750	128-bit and n/a 96-bit EPC and 32bit	96-bit / 48-bit unique serial number	Dry Inlay Wet Inlay Label	Logistics Food Industrial Applications
AD TT Sensor Plus 2		68 x 26 x 3.5 mm 2.68 x 1.02 x 0.14 in	NXP NHS3100	12 KBytes [Flash] for logging data	7-bit hard encoded unique serial number	Individual sticker	Container / Box Temperature Tracking

Sustainability



Our Pure portfolio of environmentally friendly inlays include a family of UHF RFID inlay designs that feature antennas made from pure aluminum in the final inlay construction.

Contact information
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Warranty: Please refer to Avery Dennison standard terms and conditions: rfid.averydennison.com/termsandconditions

Care and handling: RFID inlays are sensitive to ESD. Observe standard industry practices relating to electronics / RFID to keep environmental impact and static charge to a minimum.

Applications: This product should be tested by the customer / user thoroughly under end use conditions to ensure the product meets the particular requirements. Avery Dennison does not represent that this product is fit for any particular purpose or use. Avery Dennison reserves the right to modify, change, supplement or discontinue product offerings at any time without notice. The information contained herein is believed to be reliable but Avery Dennison makes no representation concerning the accuracy or correctness of the data.



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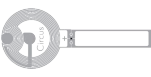


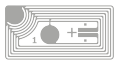



- MOQs as low as 1 roll
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- Stock items shipped within 24 hours
- Fast response from your local technology and sales team
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AD-163		60 x 4 mm 2.36 x 0.16 in	NXP UCODE 8	128-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Supply Chain Management Inventory Asset Tracking
AD-183		Ø 26 mm 1.02 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Personal Care Products Asset Tracking
AD-226		95 x 8.15 mm 3.74 x 0.32 in	NXP G2iM	256-bit and 512-bit	96-bit / 48-bit unique serial number	Dry inlay Wet inlay	Supply Chain Management Inventory Asset Tracking
AD-23x		70 x 14.5 mm 2.76 x 0.57 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Brand Protection Supply Chain Management
AD-23x Pure	 	70 x 14.5 mm 2.76 x 0.57 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Brand Protection Supply Chain Management
AD-251 ETSI		95 x 15 mm 3.74 x 0.57 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Label	Microwave Safe Asset Tracking Supply Chain Management
AD-251 FCC		95 x 13 mm 3.74 x 0.52 in	Impinj Monza R6-P	128-bit / 96-bit and 32-bit / 64-bit	96-bit / 48-bit unique serial number	Label	Microwave Safe Asset Tracking Supply Chain Management
AD-324 FCC		41 x 16 mm 1.63 x 0.63 in	NXP UCODE 8	128-bit and n/a	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-325 FCC		42.5 x 17 mm 1.67 x 0.67 in	Impinj M730	128-bit EPC / -	96-bit / 48-bit unique serial number	Dry+ inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-327 ETSI		41 x 16 mm 1.63 x 0.63 in	NXP UCODE 9	128-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-327 ETSI Pure	 	41 x 16 mm 1.63 x 0.63 in	NXP UCODE 9	128-bit EPC	96-bit / 48-bit unique serial number	Dry+ inlay Wet inlay Label	Supply Chain Management Inventory and Logistics
AD-327 FCC		42.5 x 17 mm 1.67 x 0.67 in	NXP UCODE 9	96-bit and 0	96-bit / 48-bit unique serial number	Dry+ inlay Wet inlay Label / sticker	Supply Chain Management Inventory and Logistics
AD-387 NEL		30 x 50 mm 1.18 x 1.969 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Case Parcel Item Level Tracking
AD-387 WEL		50 x 30 mm 1.969 x 1.18 in	NXP UCODE 9	96-bit EPC	96-bit / 48-bit unique serial number	Dry inlay Wet inlay Label	Case Parcel Item Level Tracking
AD-456 ETSI/FCC		64 x 6 mm 2.52 x 0.24 in	NXP UCODE 8	128-bit EPC	96-bit / 48-bit unique serial number	Label	On-Metal Asset Tracking Brand Protection Food Item-Level Retail
AD Bullseye™		Ø 33 mm 1.30 in	NXP ICODE SLIX2	2500-bit	N/A	Label	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Bullseye™ NFC		Ø 35 mm 1.378 in	NXP NTAG213	144 bytes	N/A	Dry inlay Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging

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AD Circus™ Mini		Ø 18 mm 0.71 in	NXP NTAG213	144 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ Flex		Ø 20 mm 0.79 in	NXP NTAG213	144 bytes	N/A	Dry inlay Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ Pro		Ø 20 mm 0.79 in	NXP NTAG424 DNA	416 bytes	N/A	Wet inlay	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Circus™ Tamper Loop		20 x 50 mm 0.79 x 2.0 in	NXP NTAG213 TT	144 bytes	N/A	Wet inlay Label / sticker	Authentication Reordering Expiration and Care, Integration into Label, Packaging
AD Midas Flagtag		31.41 x 18 mm 1.24 x 0.71 in	Impinj Monza R6	96-bit and n/a	N/A	Wet inlay Dry inlay	On-Metal Asset Tracking Metal and Liquids Supply Chain Management
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AD TT Sensor Plus 2 BLE		70 mm x 32 mm x 4.5 mm / 2.76 in x 1.26 in x 0.18 in	NXP NHS3100 NXP QN9080	64 Kb	N/A	Label / sticker	Temperature recording

Sustainability



Our Pure portfolio of environmentally friendly inlays include a family of UHF RFID inlay designs that feature antennas made from pure aluminum in the final inlay construction.

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