

PRODUCT COMPARISON CHART

Cards

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PRODUCT NAME	Secure Mobile Device Sticker	Contactless ISO Cards					Clamshell Cards	Contactless Combo Cards			Contact based ISO Cards		MIFARE SAM AV2
<b>Application</b>	Printable sticker designed to work on metal devices like smartphones for cashless payment or identification	Contactless cards to suit standard applications like access control or cashless payment. Highly robust and customizable.					Hard card with punch slot e.g. for access control	Contactless cards with multiple wireless or contact based technologies in one card for standard applications like access control or cashless payment. Highly robust and customizable.			Memory cards Security-memory cards Crypto-memory cards	Micro-controller cards	Glossy White cards with GSM-SAM punch
<b>Frequency</b>	13.56 MHz	125 kHz	13.56 MHz			860 - 960 MHz UHF	125 kHz	125 kHz / 13.56 MHz	13.56 MHz / 13.56 MHz	125 kHz / 13.56 MHz / UHF	N/A		N/A
<b>Size</b>	85.6x54x0.84 mm (ISO Card), 48x25x0.84 mm (Sticker)	85.6x54x0.76 mm (ISO Card)					85.7x53.9x1.7 mm	85.6x54x0.76 mm (ISO Card)			85.6x54x0.76 mm (ISO Card)		85.6x54x0.76 mm (ISO Card + SAM punch)
<b>Color</b>	White	White					White	White			White		White
<b>Standards / Protocol Support</b>	ISO 10373, ISO 7816-1, ISO 7810, ISO 14443	ISO 10373, ISO 7816-1	ISO 10373, ISO 7816-1, ISO 15693 (ATC only)	ISO 10373, ISO 7816-1, ISO 15693, ISO 18000-3	ISO 10373, ISO 7816-1, ISO 14443	ISO 10373, ISO 7816-1, EPC C1G2, ISO 18000-6	ISO 10373	ISO 10373, ISO 7816-1, ISO 14443, UHF EPC C1G2			ISO 7816-1/2/3	ISO 7816-1/2/3/4	ISO 7816-1/2/3/4, ISO 14443
<b>Chip Type</b>	MIFARE EV1 1K/4K, DESFire EV1-2K/4K/8K	Unique, Q5, Titan, Hitag 1, Hitag 2, Hitag S, ATA5577	LEGIC: MIM256, MIM1024, ATC1024-MV	I-Code SLIx, I-Code SLIx-S, Vigo™	MIFARE UL, UL C MIFARE Classic EV1: 1K, 4K MIFARE Ultralight EV1 128 Bytes MIFARE Plus EV1 2K MIFARE Plus EV1 4K MIFARE Plus SE 1K, S/X 2K, 4K MIFARE DESFire EV1: 256, 2K, 4K, 8K, MIFARE DESFire EV2: 2K, 4K, 8K, SLE66R35R, LEGIC: ATC4096-MP, CTC4096, NTAG 213, NTAG 216, Calypso; HID Trusted Tag™	Monza 4QT; UCODE DNA	Unique, Q5, ATA5577	Unique or Q5 or Hitag 2 + MIFARE 1K or 4K	Legic Prime MIM256 or MIM 1024 + MIFARE	Combination of LF, HF and/or UHF chips on request possible	I <sup>2</sup> C-Bus Infineon SLE55xx series, Atmel AT88SCxx series	NXP P5 and P6 (SmartMX JCOP series), Infineon SLE series, EM TG97 Various OS available like Java, CardOS, MTCOS, IDCOS	MIFARE SAM-AV2
<b>Memory *1)</b>	1024 - 8192 byte RW	64 bit RO, 256 - 2048 bit RW	128 - 4096 bit RW	1024 bit RW, 2048 bit RW	64 - 8192 byte RW	up to 224 bit EPC, up to 3Kbit user memory	64 bit RO, 264 bit RW	64 bit RO, 256 - 4096 bit RW			1024 bit - 512 kByte	32-97 KB	81 KB
<b>Anti-collision</b>	Yes	Hitag S - Yes	ATC - Yes	Yes				MIFARE - Yes			N/A		N/A
<b>Operating Temperature*</b>	-35°C to +50°C	PVC: -35° to +50° C, Composite: -40° to +70° C					-10°C to +50°C	PVC: -35° to +50° C, Composite: -40° to +70° C			-35°C to +50°C		-35°C to +50°C
<b>Storage Temperature*</b>	-35°C to +50°C	PVC: -35° to +50° C, Composite: -40° to +70° C					-10°C to +50°C	PVC: -35° to +50° C, Composite: -40° to +70° C			-35°C to +50°C		-35°C to +50°C
<b>Thermal Shock*2)</b>	-35°C to +80°C	-35°C to +80°C					-35°C to +50°C	-35°C to +80°C			-35°C to +80°C		-35°C to +80°C
<b>Housing Material</b>	PVC	PVC (other on request)					Shell: ABS, Cover foil: PVC	PVC (other on request)			PVC (other on request)		PVC (other on request)
<b>Chemical and Environmental Resistances*</b>	Water, IP68 (1m, 24 hr), Saltwater, Salt mist, Acetic Acid Water, Carbonated Sodium Water, Sugared Water, Fuel B, Ethylene Glycol, Artificial Perspiration, Humidity 95% at 50° - 24h	Water, IP68 (1m, 24 hr), Saltwater, Salt mist, Acetic Acid Water, Carbonated Sodium Water, Sugared Water, Fuel B, Ethylene Glycol, Artificial Perspiration, Humidity 95% at 50° - 24h					Identical to ISO card	Water, IP68 (1m, 24 hr), Saltwater, Salt mist, Acetic Acid Water, Carbonated Sodium Water, Sugared Water, Fuel B, Ethylene Glycol, Artificial Perspiration, Humidity 95% at 50° - 24h					
<b>Mechanical Resistances*</b>		Dynamic bending and torsion stress tested (4x250 bends)						Dynamic bending and torsion stress tested (4x250 bends)					
<b>Customization options</b>	Single side printing with various technologies, personalization	Artwork; encoding; visual (pre-)personalization via inkjet, thermal printing or laser marking; magnetic stripe; thermo-rewritable area; signature panel and optical security features . Non-technology cards, or other contact, contactless or dual-interface chips.					Double side printing with various technologies	Double side printing with various technologies, magnetic stripe, personalization, alternative contact based smartcard or memory chip, punch mark, personalization, alternative contactless chips etc.			Double side printing with various technologies, personalization, alternative chips, encoding, alternative card material to PVC e.g. PETG		Double side printing with various technologies, personalization
<b>Warranty *3)</b>	1 Year	1 Year					1 Year	1 Year			1 Year		1 Year

\* For further specification details, please see datasheets of the respective products. ASSA ABLOY offers a wide range of printing, security and personalization services. Custom form factors or chip combinations are possible. Please contact a Solymat sales representative for details.  
 \*1) Unique (64 bit RO), Q5 (264 bit RW), Hitag 1 (2048 bit RW), Hitag 2 (256 bit RW), Hitag S (256 bit RW, 2048 bit RW), Titan (1024 bit RW) I-Code SLIx-L (512 bit EEPROM, incl. 256 bit user memory), I-Code SLIx-S (2048 bit EEPROM, incl. 896 bit user memory), I-Code SLIx-S (2048 bit EEPROM, incl. 1280 bit user memory) MIFARE 1K (1024 byte EEPROM, incl. 768 byte user memory), MIFARE 4k (4096 byte EEPROM, incl. 3440 byte user memory), MIFARE UL (512 bit EEPROM incl. 384 bit user memory), MIFARE ULIC (1536 bit EEPROM) Legic MIM 256 (256 bit EEPROM, 234 bit user memory), MIM1024 (1024 bit EEPROM, 1002 byte user memory) Infineon SLE5542 (256 byte EEPROM), SLE5528 (1024 byte EEPROM), Microchip 24LCxx (1Kbyte - 512 kbyte EEPROM), Atmel AT88SC (1024 bit EEPROM) NXP SmartMX JCOP (32 kbyte EEPROM), Infineon SLE66C322 (32 kbyte EEPROM), EM TC97 (97 kbyte EEPROM)  
 \*2) Thermal shock: 50 cycles, 5 min soaking time, 20 sec transition. The card's surface may show slight deformation but cards remain functional.  
 \*3) Warranty: Storage condition must not exceed specification for temperature, chemical, mechanical, electrical condition, storage from -25°C to +50°C, humidity 20% to 80%



PRODUCT COMPARISON CHART

# Keyfobs & ID Bands

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PRODUCT NAME	Bobsleigh Keyfob		Blueye Keyfob		Tear Shape Keyfob			Epoxy Keyfob			Custom Keyfob	ID Band	
<b>Application</b>	Printable keyfob transponder designed to suit most standard applications for access control or time and attendance		Printable keyfob transponder designed to suit most standard applications for access control or time and attendance		Printable keyfob transponder designed to suit most standard applications for access control or time and attendance			Thin, printable, engravable tag with high mechanical and thermal stability, suits most standard applications for access control or time and attendance			Keyfob in customer specific shape, e.g. for loyalty programs	Wrist band transponder designed especially for use in swimming pools, sauna, wellness areas etc.	
<b>Frequency</b>	125 kHz	13.56 MHz	125 kHz		125 kHz	13.56 MHz		125 kHz	13.56 Mhz		125 kHz or 13.56 Mhz	125 kHz	13.56 MHz
<b>Size</b>	49.6x33.0x6.6 mm		47.9x28.6x7.5 mm		40x31x4.8 mm			45x30x1.6 mm			Custom	Strap: 241x16x1.5 mm, Housing: Ø25x4.4 mm	
<b>Color</b>	Transparent blue		Transparent blue		Black, Blue, Red			Black			Custom	Dark Blue (Pantone 541C)	
<b>Standards / Protocol Support</b>	ISO 10373, ISO 60529	ISO 10373, ISO 60529, ISO 14443	ISO 10373, ISO 60529		ISO 10373, ISO 60529	ISO 10373, ISO 60529	ISO 10373, ISO 60529, ISO 14443	ISO 10373, ISO 60529	ISO 10373, ISO 60529, ISO 15693, ISO 18000-3	ISO 10373, ISO 60529, ISO 14443	Depends on chip	ISO 10373, ISO 60529	ISO 10373, ISO 60529, ISO 14443
<b>Chip Type</b>	Unique, Q5, Hitag S	MIFARE EV1 1K	Unique	Hitag S	Unique, Q5, Titan, Hitag 1, Hitag 2, ATA 5577	Legic Prime MIM 256, MIM1024	MIFARE EV1 1K, MIFARE DESFire EV1 2K	Unique, Q5, Titan, Hitag 1, Hitag 2, ATA5577	I-code SLIx	MIFARE EV1 1K, Trusted Tag™	Customer defined	Unique, Q5, Hitag S	MIFARE EV1 1K
<b>Memory *1)</b>	64 bit RO, 256 bit RW, 264 bit RW, 2048 bit RW	1K Byte RW	64 bit RO	256 bit RW, 2048 bit RW	64 bit RO, 256 bit RW, 264 bit RW, 1024 bit RW, 2048 bit RW	256 bit RW, 1024 bit RW	1024 byte RW, 2048 byte RW	64 bit RO, 256 bit RW, 264 bit RW, 1024 bit RW, 2048 bit RW	1024 bit RW	1K Byte RW, 8K Byte RW	Depends on chip	64 bit RO, 512 bit RW	1K Byte RW
<b>Anti-collision</b>	Hitag S - Yes	Yes		Yes			Yes	Hitag S - Yes	Yes		Depends on chip		Yes
<b>Operating Temperature*</b>	-25°C to +80°C		-25°C to +80°C		-25°C to +80°C			-25°C to +85°C			Custom	-25°C to +50°C	
<b>Storage Temperature*</b>	-25°C to +80°C		-25°C to +80°C		-25°C to +80°C			-40°C to +95°C			Custom	-25°C to +50°C	
<b>Thermal Shock*2)</b>	-35°C to +80°C		-35°C to +80°C		-35°C to +80°C			-25 °C to + 100 °C			Custom	-20°C to +100°C	
<b>Peak Temperature</b>								+140°C (1x24h)			Custom	+100°C (1x24h)	
<b>Housing Material</b>	PC		PC		PC			Epoxy			Custom	Strap: TPE E, Housing: PC	
<b>Chemical and Environmental Resistances*</b>	Water, IP67 (1m, 1hr), Saltwater, Salt mist, Acetic Acid Water, Carbonated Sodium Water, Sugared Water, Fuel B, Ethylene Glycol, Artificial Perspiration		Water, IP67 (1m, 1hr), Saltwater, Salt mist, Acetic Acid Water, Carbonated Sodium Water, Sugared Water, Fuel B, Ethylene Glycol, Artificial Perspiration		Water, IP67 (1m, 1hr)			Water, IP67 (1m, 1hr), Mineral Oil, Ethanol, Petrol, Fuel			Custom	Water, IP68 (2m, 24hr), Chlorine (SIA385/1)	
<b>Mechanical Resistances*</b>	Drop test 1.8m (10x10 cycles)		Drop test 1.8m (10x10 cycles)		Drop test 1.8m (10x10 cycles), Axial/Radial Compression 500N			Drop test 1.8m (10x10 cycles)			Custom	84N with straight strap, 280N on closed bracelet	
<b>Customization options</b>	Printing on both sides with various technologies		Printing on both sides with various technologies		Single side printing with various technologies			Printing or laser engraving on both sides with various technologies			Custom	Printing or laser engraving on house and bracelet with various technologies	
<b>Warranty *3)</b>	1 Year		1 Year		1 Year			1 Year			1 Year	1 Year	

\*For further specification details, please see datasheets of the respective products.

ASSA ABLOY offers a wide range of printing, security and personalization services. Custom form factors or chip combinations are possible. Please contact an ASSA ABLOY sales representative for details.

\*1) Unique (64 bit RO), Q5 (264 bit RW), Hitag 1 (2048 bit RW), Hitag 2 (256 bit RW), Hitag S (256 bit RW, 2048 bit RW), Titan (1024 bit RW)

I-Code SLIx-L (512 bit EEPROM, incl. 256 bit user memory), I-Code SLIx (1024 bit EEPROM, incl. 896 bit user memory), I-Code SLIx-S (2048 bit EEPROM, incl. 1280 bit user memory)

MIFARE 1K (1024 byte EEPROM, incl. 768 byte user memory), MIFARE 4k (4096 byte EEPROM, incl. 3440 byte user memory), MIFARE UL (512 bit EEPROM incl. 384 bit user memory), MIFARE ULC (1536 bit EEPROM)

Legic MIM 256 (256 bit EEPROM, 234 bit user memory), MIM1024 (1024 bit EEPROM, 1002 byte user memory)

Infineon SLE5542 (256 byte EEPROM), SLE5528 (1024 byte EEPROM), Microchip 24LCxx (1kByte - 512 kByte EEPROM), Atmel AT88SC (1024 bit EEPROM)

NXP SmartMXJCOF (32 kByte EEPROM), Infineon SLE66CX322 (32 kByte EEPROM), EM TG97 (97 kByte EEPROM)

\*2) Thermal shock: 50 cycles, 5 min soaking time, 20 sec transition

\*3) Warranty: Storage condition must not exceed specification for temperature, chemical, mechanical, electrical condition, storage from -25°C to +50°C, humidity 20% to 80%



PRODUCT COMPARISON CHART

# Embeddable RFID

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PRODUCT NAME	Disc Sticker	MIFARE Coin	MIFARE Disc	Clear Disc		Prelaminates				Overlays	
<b>Application</b>	Printable sticker for LF applications	MIFARE proximity coin for embedding	MIFARE proximity disc for embedding	Clear disc tag for custom housing e.g. key fob		RFID inlays for contactless ISO cards (single or dual interface - also for financial applications)				Magstripe, Hologram or Thermo-rewritable foils for card production	
<b>Frequency</b>	125 kHz	13.56 MHz	13.56 MHz	125 kHz	13.56 MHz	125 kHz	13.56 MHz		125 kHz / 13.56 MHz / UHF	n/a	
<b>Size</b>	Ø25x1.0 mm	Ø17.8x1.7 mm	Ø22x0.95 mm	Ø20, 22 or 30x0.6 mm	Ø25 mm	Custom				Custom	
<b>Color</b>	White	Black	Yellow	Transparent		White				Transparent	
<b>Standards / Protocol Support</b>	ISO 10373	ISO 10373, ISO 60529, ISO 14443	ISO 10373, ISO 60529, ISO 14443		ISO 14443		ISO 14443	ISO 10373, ISO 7816-1, ISO 15693, ISO 18000-3	depends on chips	HiCo, LoCo for Magstripe	
<b>Chip Type</b>	Unique, Q5	MIFARE EV1 1K	MIFARE EV1 1K	Hitag S, Unique, Q5	MIFARE EV1 1K, MIFARE DESFire EV1 4K	Q5, EM4102, ATA5577, Hitag S	Legic Prime MIM256, MIM1024, Legic Advant Family	MIFARE EV1 MIFARE Ultralight, Ultralight C, Ultralight EV1 128 Bytes, 1K, 4K, MIFARE DESFire EV1 /EV2 2K/4K/8K, MIFARE UL, ULC, MIFARE Plus SE, S/X /EV1 2K, 4K, SLE66R35R, NTAG 213/215/216, EM NF48K, EM4830	ICODE SLIX2, EM4233, Vigo™	combination of LF, HF and/or UHF chips on request possible	n/a
<b>Memory *1)</b>	64 bit RO, 264 bit RW	1024 bit RW	1024 bit RW	64 bit RO, 256 - 2048 bit RW	1024 - 4096 byte RW	264 bit RW, 512 bit RW	256 bit RW, 1024 bit RW	64 - 8192 byte RW	1024 bit RW, 2048 bit RW	depends on chips	n/a
<b>Anti-collision</b>		Yes	Yes	Hitag S - Yes	Yes	Yes				n/a	
<b>Operating Temperature*</b>	-10°C to +50°C	-30°C to +70°C	-30°C to +70°C	-20°C to +60°C		Depends on material					
<b>Storage Temperature*</b>	-10°C to +50°C	-40°C to +70°C	-25°C to +120°C	-20°C to +60°C		Depends on material					
<b>Housing Material</b>	PVC with 3M adhesive on one side	Epoxy PT365	FR4 + Epoxy Globtop	Polyethylen + Polyester		PVC, PETG, PC, synthetic paper, Teslin®					
<b>Chemical and Environmental Resistances*</b>		Water, IP67 (1m, 1hr)		Depends on finished product		Depends on material					
<b>Mechanical Resistances*</b>	Drop test 1.8m (10x10 cycles), Vibration IEC 68.2.6, Shock IEC 68.2.29	Drop test 1.8m (10x10 cycles), Vibration IEC 68.2.6, Shock IEC 68.2.29	Drop test 1.8m (10x10 cycles), Vibration IEC 68.2.6, Shock IEC 68.2.29	Depends on finished product		Depends on material					
<b>Customization options</b>	Single side printing with various technologies					Other chips upon request, custom size, format, material and color				Custom holograms, magstripe colors, printed magstripes, TRW colors black or blue	
<b>Warranty *2)</b>	1 Year										

## Finding what you need

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\* For further specification details, please see datasheets of the respective products.  
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\*1) Unique (64 bit RO), Q5 (264 bit RW), EM4305 (512 bit RW)  
MIFARE EV1 1K (1024 byte EEPROM, incl. 768 byte user memory), MIFARE EV1 4K (4096 byte EEPROM, incl. 3440 byte user memory)  
\*2) Warranty: Storage condition must not exceed specification for temperature, chemical, mechanical, electrical condition, storage from -25°C to + 50°C, humidity 20% to 80%



PRODUCT COMPARISON CHART

# Printing Options

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OPTION NAME*	PRINTING BEFORE LAMINATION			PRINTING AFTER LAMINATION				MARKING			
	Offset Printing	Digital Offset Printing	Silkscreen Printing	Single Card Offset	Single Card Silkscreen	Direct Thermo Transfer	Thermo Retransfer Printing	Inkjet Code Printing	Laser Engraving	Barcode / QR-Code	Slot Punch Marks
Image											
Description	The desired print image is burned onto a plate and is then transferred (or offset) from the plate to a rubber blanket, and then to the printing surface. The image to be printed gets ink from ink rollers, while the non printing area attracts a film of water, keeping the non printing areas ink-free.	Digital printing eliminates many of the mechanical steps required for conventional printing, (making films or color proofs, manually stripping the pieces together and making plates). Typically used for volumes up to 50.000, before Offset Printing becomes economical.	A metal frame with fine polyester mesh makes up the screen then ink is poured into the frame and forced through the screen. Can be both manually and machine operated. Also used to generate signature panels or scratch-off printing.	The desired print image is burned onto a plate and is then transferred (or offset) from the plate to a rubber blanket, and then to the surface of the cards.	A metal frame with fine polyester mesh makes up the screen then ink is poured into the frame and forced through the screen. Can be both manually and machine operated.	Printing directly on surface of card. Images are printed by heating a print ribbon beneath a thermal printhead, resulting in the transfer of color from the ribbon to a card.	Image is printed mirrored to an overlay, then applied with heat onto the card via High Definition Printing Film developed by Sokymat-FARGO.	Code to print can be: Just a number or text (same on each card), Incremental number: Chip UID (decimal, hexa or other format), Specific algorithm based on the chip UID (algorithm can be provided by the customer or developed by Sokymat).	Laser cuts into card or keyfob surface.	Barcodes or QR codes in various formats can be printed.	Slot punch marks (small dots) can be printed on the cards: either vertically, horizontally or both to indicate where it is safe to punch a hole without damaging chips or antenna.
Advantages	Very high resolution - 3.600 dpi Very accurate printing High volume Pantone, CMYK colors can be printed	High resolution - 1.050 dpi Very accurate printing For high and low volume orders Personalization of individual data per card is possible	Rich, bold, and brilliant colors Pantone, CMYK colors Metallic colors	Pantone, CMYK Layout can be protected by a varnish finish Cost-efficient for small as well as mass production	Rich, bold, and brilliant colors Pantone, CMYK colors Possible to print: Metallic colors Glossy lacquer Matte lacquer Irodiin lacquer Glitter lacquer	Quick and flexible production Hologram foils can be added after printing Can be used for personalization Can be wiped off using chemicals (rewrite)	Quick and flexible production Easy changing of layout Can be used for personalization Can print on uneven surfaces	Quick, cheap and flexible production	Permanently engraved into card or keyfob surface. Mostly used for numbers. Logos and pictures possible		Can be printed before lamination (offset) or after lamination (offset, inkjet)
Disadvantages	Requires films or CTP Limited suitability for metallic colors (but can be combined with silk screen printing)	Printing is less shiny than classical offset	Not suitable for thin lines or detailed printing Not possible to print color gradients Film required	Heavy wear & tear Cards including varnish finish cannot be personalized using thermal transfer print (e.g. serial number)	Not suitable for thin lines or detailed printing Not possible to print color gradients Film required	Limited printing quality (300 dpi) Limited to low volumes No protection against abrasion (wear & tear) Absolute flat surface needed	Limited printing quality (300 dpi) Limited to low volumes Limited protection against abrasion Bending of card with single side printing	Not as resistant as laser engraving	Only black or shades of gray possible. Mostly used for numbers. Not suitable to show complex layouts		N/A

\*) Frequently used default options are Offset Printing, Single Card Offset and Inkjet Code Printing.

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# Other Card Options

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COMMON OPTIONS								
OPTION NAME	Outer Form Punching	Slot Punch	SIM Punch	Magstripe	Embossing	Signature Panel	Scratch-off Panel	Thermo rewritable foil
<b>Image</b>								
<b>Description</b>	Cards can be provided in various standard sizes or even in custom shapes	Slot punch either vertically, horizontally or both to insert badge holders without damaging the antenna	Contact cards like SmartMX (JCOP) can be punched to enable break out of the chip in standard GSM SIM format. Sim punch is included for MIFARE SAM AV2.	Optional Magnetic Stripe	Metal letters hit the card with high speed and force which distresses the card surface Raised letters can then be tipped with a metal foil	Enables card user to write on the card using a common pen	Reveals a text after being scratched off used for prepaid cards etc.	Re-writable cards are made of PVC and have a transparent thermo re-write (TRW) foil adhered onto the card. This foil can be erased and re-written by using clearjet printers up to 300 times. Often used for returnable tickets e.g. in Ski resorts.
<b>Options</b>	CR 80 - ISO card CR90 - US driver's license format CR79 - smaller than ISO CR100 - military format other, even custom irregular shapes possible	Optionally also available as punch marks only to be punched by customer on demand	Allows shipping SIM cards in ISO format, optionally printed and then enabling the end-user to break out the chip for use in his mobile device like smartphone etc.	LOCo, HiCo, Watermark, Custom magstripe color or encoding	Mainly used for credit cards. Cards must be designed with smaller shape antennas			Possible to cover only parts of the card with the TRW foil TRW foils are available with a blue or black reaction color

## Finding what you need


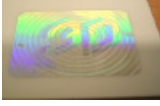



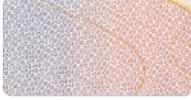



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# Security Options

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SECURITY OPTIONS									
OPTION NAME	Infrared	Hologram	Guilloche	Microtext	UV Print	Rainbow Printing	Special Inks	Relief Structures	MLI/CLI
<b>Image</b>									
<b>Description</b>	Data is stored as binary information: black areas are printed before or after lamination by offset printing Counterfeit-proof Requires very accurate printing	Various types of holographic images are available	A guilloche is an ornamental pattern formed of two or more curved bands that interlace to repeat a circular design made with a geometric lathe	A microprint is a text which is visually identified as a line. This text can only be recognized when using a magnifying-glass.	Invisible ink which can only be seen under UV (Ultra Violet) light	The colors gradually change their shade from one color to the next. Color copiers cannot reproduce this effects	Inks with special properties can be used as added copy protection feature e.g. Fluorescent, metallic, pearlescent, thermo-reactive, optical variable inks	Can be made tactile / non-tactile in custom designs	Multiple Laser Image / Changeable Laser Image - changes image depending on the angle it is viewed
<b>Options</b>		Possibility to increase the security by getting a tailor-made hologram, a kinogram or a Fargo VeriMark or HoloMark	Pattern can only be produced by typographic way using offset or digital offset printing - Copy safe						

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