Application Note

VIDEOJET PHARMA LINE

Pharmaceutical

Mastering Crypto-Codes with Thermal Inkjet (TIJ)

Effective as of January 1, 2019, the Russian Federal Act No. 488-FZ mandates that 12 different product groups marketed in Russia, including pharmaceuticals, will require traceability serialization using a Crypto-Code no later than July 1, 2020.

The serialization can be done by RFID tag or by using DataMatrix Code, but implementation should not be underestimated, because Crypto-Codes have a higher data density, and thus require DataMatrix Codes with symbol sizes of up to 36x36 modules. Not only might this increase in code size require changes to product packaging design, it certainly presents an additional challenge to your current printing systems.

This application note gives an overview of the Russian coding requirements and their implementation with Thermal Inkjet (TIJ) printers from Videojet.

Coding requirements

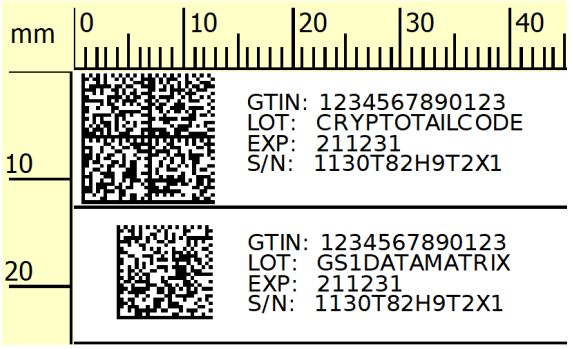
A Crypto-Code consists of two components: an identificaton element and a verification element. The identification element contains both a GTIN (AI01) and an unique Serial Number (AI21). Both must be applied in plain text form. The verification element consists of a Public Key (AI91) and a Crypto Key (AI 92). These keys are generated via cryptographic transformation of the identification element and are supplied by the Russian system operator CRPT (Center for Research in Perspective Technologies).

The batch number (AI10) and the expiry date (AI17) may be added as well, but this is optional.

Moreover, all informationen have to be encoded into a DataMatrix Code ECC 200 with a minimum printing quality of grade C according to ISO 15415.

	Application Identifier (AI)/ Information	Number of digits	Plain text required?
Mandatory	(01) GTIN	14	Yes
	(21) Serial Number	13	Yes
	(91) Public Key	4	No
	(92) Crypto Key	44	No
Optional	(10) Batch	20	No
	(17) Expiry Date	6	No

In comparison to common GS1 DataMatrix Codes that are used for serialization in the US and in the EU, Crypto-Codes are up to 34% bigger due to the data elements AI 91 and AI 92.



A typical Crypto-Code with a symbol size of 36x36 modules (at the top) compared to a common GS1 DataMatrix Code with a symbol size of 26x26 modules (at the bottom).

Printing Crypto-Codes with the Wolke m610/m600 series

In order to optimally print the relatively large Crypto-Codes at a resolution of 300 dpi, Videojet has developed a software update for the Wolke m610/m600 series. Thus, it is possible to print up to 90 m/min (295 feet/min) at 300dpi. At the same time, the available print height of 12.7 mm (0.5 “) can be used to the maximum to provide enhanced camera readability. The software update can be downloaded free of charge from https://www.wolke.com/intern.

Wolke m610 oem	Wolke m600 oem	Wolke m610 advanced	Wolke m600 advanced	Label Creator
Firmware 5.5	Firmware 4.4	Firmware C.5.5.	Firmware A.1.2.4.	Firmware 3.7

Printing speeds for Crypto-Codes on folding boxes	
Symbol size	36x36
Videojet modul size	8 (0.344mm)
Size of the code in mm	12.2 mm
Max. speed at 300 dpi*	90 m/min 295 feet/min
Max. speed at 600 dpi*	45 m/min 147 feet/min

*The specified product speeds are the maximum possible printing speeds. They can be reduced by factors such as the substrate to be printed, the ink used, the integration of the printer, or the transport guide of the folding box.

A typical Crypto-Code with a symbol size of 36x36 modules printed with the Wolke m610 advanced.

Finding the right combination of carton and ink

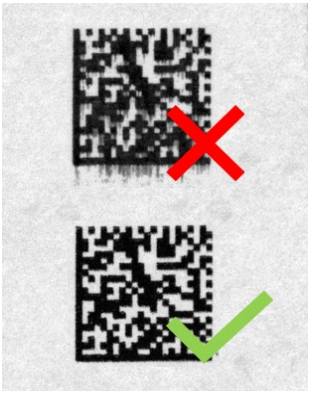
When it comes to traceability of pharmaceuticals, it is crucial that codes are readable over the long term. Yet influences along the supply chain, such as friction, condensation or UV radiation, may blur or fade the code.

In order to help ensure superior code quality on folding boxes, Videojet has worked together with the independent Paper Technology Foundation (PTS) to offer the test service Code2Carton™ to find and certify the optimum combination of customers‘ carton and Videojet ink.

Code2Carton™ offers the following test criteria:

- Drying time
- Light fastness (resistance of colors under light)
- Water resistance

Please visit www.videojet.com/code2 for more information.



Smudged codes can be unreadable putting legibility at risk

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