Basic physical characteristics of eID

PWPW SA

Polska Wytwórnia Papierów Wartościowych S.A.
(Polish Security Printing Works)
ul. R. Sanguszki 1
00-222 Warszawa

POLSKA WYTWÓRNIA PAPIERÓW WARTOŚCIOWYCH

Basic specification Polycarbonate ID-1 – part 1

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Prepared by

PWPW SA
Polish Security Printing Works

Service for:

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Below specification lists chief features of the card body and give an overview of production and quality means. The final specification will be prepared based on actual artwork.

Products from the tender covered by the specification

The specification covers the following ID-1 polycarbonate products form the tender:

2. Polycarbonate blanks (booklets) - Identity card of the citizen of the Republic of Moldova (CA)

3. Polycarbonate blanks (booklets) - driving license (DL)

5. Polycarbonate blanks (booklets) - Permanent residence permit (CR)

6. Polycarbonate blanks (booklets) - Identity card of a stateless person (CC)

7. Polycarbonate blanks (booklets) - Refugee Identity Card (RI)

8. Polycarbonate blanks (booklets) — Identity card for beneficiaries of humanitarian protection (IH)

9. Polycarbonate blanks (booklets) — Temporary residence permit for the foreign nationals (IR)

10. Polycarbonate blanks (booklets) — Temporary residence permit for stateless people (IC)

Card body description

ID documents produced by PWPW SA are manufactured in ISO 14298 (Intergraf) certified production plant to meet stringent security measures as required for national level identification documents. Similarly the graphic design is adapted and processed in secure, separated from the Internet environment based on a special software that is available only for authorized users that design and manufacture ID documents and banknotes. As such final editable artwork is not available outside PWPW. Only simplified versions in .pdf or .jpg formats are shared with the authorized stakeholders of the project.

The card body of all listed identification documents is a multi-layered structure made of PC material. Particular layers of the card are bound together in unified product by means of hot lamination process. Ready-made card is prepared for laser engraving personalization.

Basic physical features:

- Card dimensions: according to ISO 7810 ID-1 cards.
- Lamination: glossy
- Card is prepared for 10 years usage as defined in ISO 24789 standard

Planned structure of the eID document

The planned structure of the eID document would entail not less than 7 layers of polycarbonate film. Used polycarbonate features no fluorescence under UV light.
Respective layers of the document are overprinted with offset printing with the usage of **PANTONE** ink colours. It shall be emphasized that process CMYK colours ARE NOT USED at all in printing of documents. The colours composition of up to 8 inks on the front and 8 inks on the back side (together with UV inks). Moreover, on the front side (and if applicable on the back side) optically variable ink is applied. It is imposed on the card by means of silkscreen printing.

Particular elements of the card image are visible only in UV. – The detailed specification of the card and positioning of particular security elements is elaborated after receiving the artwork.

The multilayer polycarbonate card body is prepared for laser engraving personalization both flat and tactile.

Applicable standards

*Meeting the **ISO 7810** standard for ID-1 cards are fully prepared to be used as ID-1 size national level documents issued in line with **ICAO 9303** requirements for TD-1 documents.*

*Moreover the card bodies are tested internally in PWPW against the following set of standards, **ISO 10373** and **ISO 24789**, adequately to the intended usage of the eID and applied PC components.*

Security features

The following graphical security features would be applied:

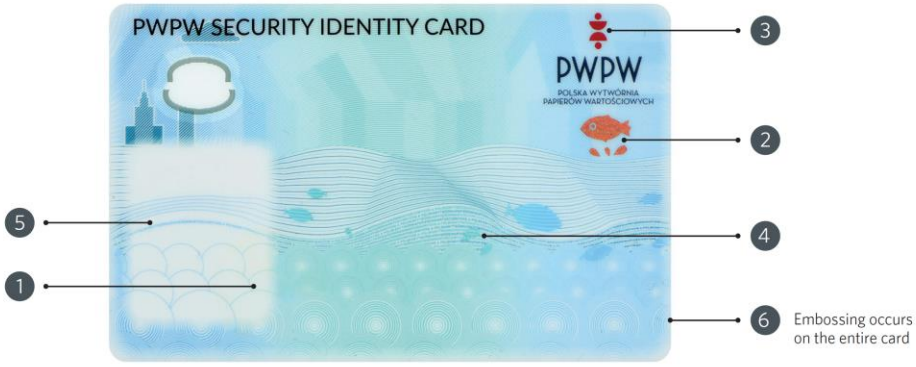
No.	Feature	Description
1	Rainbow Printing [7.3.1]	Rainbow printing is mainly an anti-xeric security feature. On PC substrate rainbow printing is achievable only in offset printing. Printing of a continuous line with colour transition is not possible to achieve with commercially available ink-jet and laser printers, as well as thermal-transfer printing. Any attempted imitation is easily detectable.
2	Intensity of print modulation [7.3.1]	In the area of the holder's image there will be transitional decreasing of colour intensity to get smooth transition from document background to image zone.
3	Line width modulation and interlaced guilloche lines [7.4.1]	The artwork provided by the issuer will be transformed for printing so as to secure anti-scanning and anti-coping protection. The transformation takes place in special software dedicated solely to design banknotes or ID documents and not available outside security zones in our production plant.
2	Guilloche Lines Print [7.3 & 7.4]	Guilloche lines are an anti-copy security feature which prevent from document counterfeiting and altering biographical data. The resolution required to produce sharp, thin and continuous lines is only achievable with offset printing, which is usually unavailable to counterfeiters.

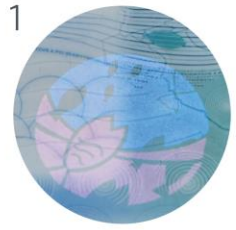
		Creating state of the art guilloches design requires dedicated computer software which is accessible only for authorised security printers.
3	Microtexts [7.4.1]	Microtext (with the height as small as 0,25 mm) is a text unreadable without magnifying glass. It can contain fonts of variable size to hinder unauthorized duplication. The artwork will include both positive and negative microtexts.
4	Optical Variable Ink [7.2.5]	OVI is a special type of security ink that displays a shift of colour when observed at different angles. OVIs of specific colour shifts are not available for non-secure applications and may be applied only by security printers.
5	Deliberate error [7.2.6]	Deliberate error is a security feature that makes it easier to recognize counterfeit documents. A counterfeiter who does not know the location of such a protection will not apply it in the fake document. It can be used to satisfy their level protection as defined in 7.2.6.
6	UV Reactive Invisible Ink [7.2.4]	Inks that are invisible in daylight and visible in UV are suitable for protecting document's holder data and photo. In daylight they do not hinder data and photo verification. According to tenders spec elements will include State Coat of Arms of the Republic of Moldova, and other features listed in 7.2.4.
7	Hologram / DOVID [7.2.1]	Modern DOVIDs production involves sophisticated and exclusive technologies (e.g. electron beam lithography) which are not commercially available. They offer high resolution security features comprising images, microtexts, nanostructures and advanced optical effects which are very difficult to simulate. DOVID overlaps part of primary portrait and personal data in the document. The forger can attempt changing said primary portrait and data, but lack of part of DOVID makes that change visible. Therefore, DOVIDs are commonly used to protect genuine documents against counterfeiting as well as against alteration of holder's primary portrait or variable personal data. Applied DOVID will have the diameter of 13 mm and will include all the effects defined in point 7.2.1 of the ID (CA) specification.
8	MLI [7.2.2]	MLI is a tactile security feature which contains fine structure of lenses, that is integrated into the card surface during the lamination step. For MLI to work properly, lenses must have a specific microstructure, i.e. strictly defined dimensions and smooth surface, adapted for card overlay composition, which is impossible to obtain by means of commonly available milling machines and without proper know-how. Further, MLI is personalised by means of laser engraving, i.e. images (portrait and birth date) are applied in such a way that each one is visible from a different angle. Repetition of the portrait and certain data enhances their protection and prevents forgery of the document.
9	Embossed card surface on the front [7.2.3]	Obtaining sharp and fine convex shapes on the surface of the document is possible only by means of a special lamination process with specially prepared laminating plates, which is not available to counterfeiters. This thickness irregularity of the card surface profile protects against adding a foil on top of the card with the impostor's data or photo substitution by means of scratching and milling. It also allows for easy verification of document authenticity by means of touch. In particular we will include outline map of the Republic of Moldova and other graphical elements as listed in point 7.2.3 of the tender specification.
10	Card serial number [7.7]	Laser Engraved serial number. For full traceability no card without serial number leave our production plant. If needed the serial number can have barcode representation – e.g. CODE 128.
11	IR visible elements – Metameric effect [7.4.3]	Some elements of the image can be printing in such a way that they are partially visible in IR light. It does not influence the perception of the image in VIS light. Depending on application in the artwork it can be used as second or third level of protection.

Exemplary usage of security features based on PWPW SA sample card

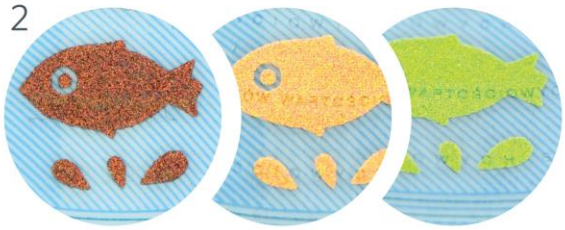
Below exemplary images are shown in order to present features listed in the above table.

Front Side

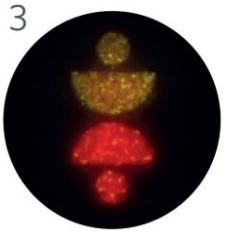



1

Two-colour iridescent element / or DOVID partially overlapping photo area


2

Optically variable ink


3

Twin-up protection (metameric up-converter)


4

Positive and negative micro-printing with case modulation


5

Microtext partially overlapping photo area

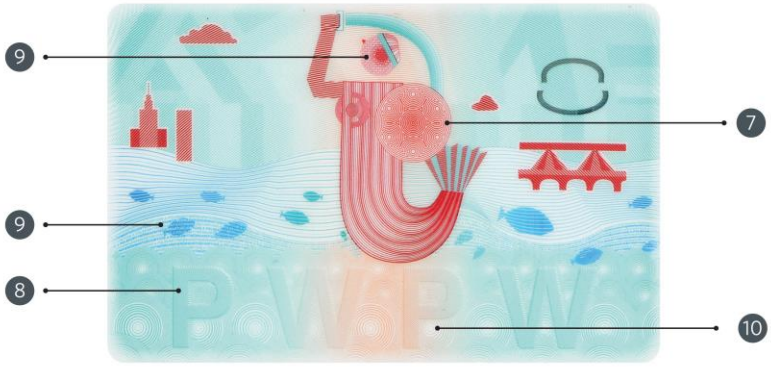

6

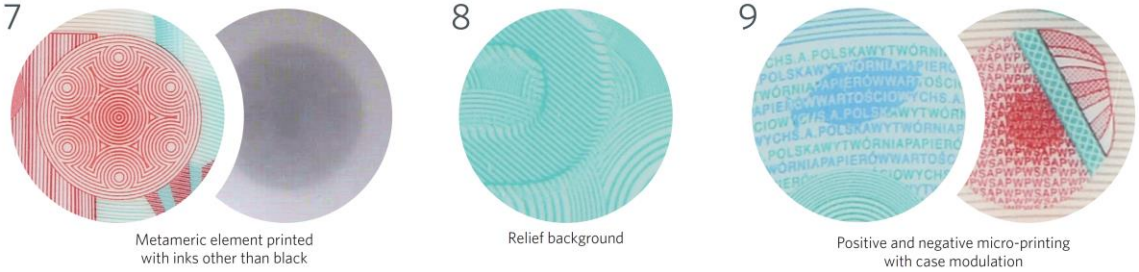
Embossed images, motives related to the graphics of the card

Embossed microtext

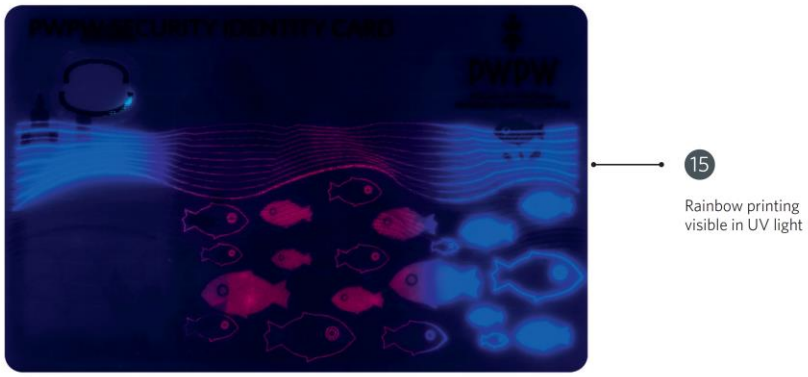
Embossed lines overlapping photo area

Back Side





VIEW UNDER UV LIGHT



** Based on provided artworks PWPW propose adequate application of particular security elements pursuant to the requirements of the tender.

Additional information

Technologies applied and listed above basic security features will be adequately applied to provided artworks.

Moreover, in order to void ambiguities we do confirm the polycarbonate ID card will include security features as listed in tender documentation in the following documents:

- ST_MD_35_37603221_204_2021_CA
- ST_MD_35_37603221_206_2021_DL
- ST_MD_35_37603221_208_2021_CC
- ST_MD_35_37603221_209_2021_CR
- ST_MD_35_37603221_210_2021_IH
- ST_MD_35_37603221_211_2021_RI
- ST_MD_35_37603221_212_2021_IR
- ST_MD_35_37603221_213_2021_IC

Offered polycarbonate ID-1 cards are fully prepared for laser engraving personalization on the front and on the back side of the card.

Dimension tolerances in production

Table 1 – Tolerances applicable for printed items – ID-1 polycarbonate card

No.	Parameter	Tolerance	Remarks
1	Matching offset printed elements against each other	top, bottom +/-0,2 mm left, right +/-0,2 mm	Visual inspection, magnifying glass, length measuring unit
2	Positioning offset printed elements and silkscreen printed elements against the edge of the card	top, bottom +/- 1,0 mm left, right +/- 1,0 mm	Against the edge of the card (check based on the template)
3	Hologram positioning (if applicable)	top, bottom +/- 1,5 mm left, right +/- 1,5 mm	Against the edge of the card (check based on the template)
4	Numbering	top, bottom +/- 1,0 mm left, right +/-1,0 mm	Against the edge of the card (check based on the template)
5	Size	According ISO 7810 i.e.: width 85,6 mm, tolerance 85,47÷ 85,72 mm height 54,0 mm, tolerance 53,92÷54,03 mm thickness 0,76 mm, tolerance 0,68 ÷ 0,84 mm	Against the edge of the card (check based on the template)

Quality control in PWPW plant

The quality control is accomplished based on the PN-ISO-2859-1 standard.

A PLAN OF THE ACCEPTANCE INSPECTION OF A LOT ACCORDING TO THE PN-ISO 2859-1 STANDARD

The quality inspection of ID cards is performed in accordance with the sampling plan presented bellow (Table 2), appropriately for each characteristic selected for inspection. If the nonconformities for an inspected characteristic do not exceed the number (i.e. AC), the characteristic fulfils the quality criteria. If the AC acceptable number for any characteristic be exceeded, the lot does not fulfil the requirements.

Table 2 – Quality acceptance plan for a product lot

Item	The inspected characteristic	The object of the inspection	Inspection level*	AQL	Notes
1	Identification and functional element of the card in visible light (graphics, texts, security features, numbering, embossing, microprocessor)	The presence	II	0,15	Presence of elements consistent with the pattern
		Appearance and colours	II	2,5	The Appearance and colours of all elements accordance with the pattern and the border patterns
		Positioning	II	1,5	According to the technical specification
2	The appearance and representation	The presence	S3	0,4	Presence of elements consistent with the pattern

	security elements in print and application in UV, IR and up-converting lights	Appearance and colours	S3	4,0	Elements active in UV and up-converting light are checked for correct reproduction, colour and intensity of UV light consistent with the pattern. Visibility/invisibility in IR light are checked for correct reproduction consistent with the pattern.
3	Format, card edges	Card dimensions, appearance in the edge area	II	1,5	According to the technical specification
4	Card surface	Debris, scratches in the personalization area	II	2,5	According to the boundary patterns
		Debris, scratches outside the personalization area	II	1,5	According to the boundary patterns

Checking the quality of execution of ID cards is performed according to above-mentioned Quality acceptance plan, and criteria in Tables 1 , respectively for each of the evaluated elements. Existing non-compliance are not summed for comparison with number of eligible AC. Exceeding the number of eligible AC is checked only for each properties alone.

*** Inspection level II** – standard for sample of the optimum size; **Special level S3** – used when it is necessary to use a small sample, e.g. because tests are time-consuming, harmful or destructive

Packing methods

According tender requirements.

Grażyna Renata Rafalska

Elektronicznie podpisany przez Grażyna Renata Rafalska
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