

Security Features of Passport

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- "Passport" includes a document which having been issued by or under the authority of the Government of a foreign country satisfies the conditions prescribed under the Passport (Entry into India) Act, 1920 in respect of the 34 of 1920 class of passports to which it belongs. "Travel document" includes a document which having been issued by or under the authority of the Government of a foreign country satisfies the conditions prescribed. - The Passports Act, 1967.

"Passport"

The following classes of passports can be issued under the Passport Act 1967, namely:

- ❖ Official
- ❖ Diplomatic
- ❖ General Citizen Passports.



In addition, Jumbo and Hajj passports are also issued.

Indian passports can be classified into three main categories:

- Ordinary/**Regular**/Tourist Passport (Deep Blue cover) – Issued for ordinary travel, such as vacations and business trips (36 or 60 pages). It is a ‘Type P’ passport, where ‘P’ stands for Personal.
- **Official/Service/Special** Passport (White cover) - Issued to individuals representing the Indian government on official business. It is a ‘Type S’ passport, where ‘S’ stands for Service.
- **Diplomatic Passport** (Maroon cover) - Issued to Indian diplomats, top ranking government officials and diplomatic couriers. It is a "Type D" passport, where ‘D’ stands for Diplomatic.

Indian passports can be classified into three main categories:

- (i) Machine Readable Passport (MRP): Ordinary Passport of 36 pages (dark blue cover).
- (ii) Machine Readable Passport (MRP): Jumbo Ordinary Passport of 64 pages (dark blue cover).
- (iii) Machine Readable Passport (MRP): Official Passport (off white cover). Machine Readable Passport (MRP): Diplomatic Passport (maroon cover).
- (iv) Machine Readable Passport (MRP): Indo-Bangladesh Passport (light blue cover).
- (v) Person of Indian Origin (PIO): Booklets (grey cover).
- (vi) Overseas Citizenship of India (OCI): Booklets (sky blue cover).
- (vii) Emergency Passport (white cover).
- (viii) Indo-China Trade Travel Passport (saffron cover).
- (ix) Certificate of Competency for shipping department (14 varieties).
- (x) Continuous Discharge Certificates for shipping Department. (xi) E-Passports.

Different types of Travel Documents

- (i) Substrate: Ashok Pillar cylinder water marks.
- (ii) Cover page: Ashok Chakra printing (visible in 365 nm).
- (iii) First page-body printing: Black in visible light and green in Luminescence.
- (iv) Heat Activated Ultra Violet (HAUV) film: Printing visible in red and yellow in UV.
- (v) Data page: Micro line, text, tint, design (Emblem, Govt. of India), Passport printing, rainbow printing: Blue and orange printing, gothic numbering, bifluorescent invisible design, invisible fibers (green and blue).
- (vi) Page numbering: Micro lines on all pages visa visible and invisible.
- (vii) Passport number: 8 digit alphanumeric laser perforated conicals of passport booklet

Security features of Indian Passports

- Bio data: photograph, name, date of birth, issue and expiration date, signature
- General inspection: exterior view, binder thread, numbering by perforation, watermark
- Transmitted light examination: all the pages, fibres, printing processes, substrates, laminations under 10X magnification
- UV light examination: fibres, printing inks, paper including overt and covert security features
- Visible light examination: security features such as passport papers/pages, gothic/punched number, biographical/bio data page, LSI, barcode, micro printing, fugitive/sensitizing ink
- Stereomicroscopic examination: document number, substrate elements, print processes, lamination
- Oblique light examination: dicuts

Checklist for Forensic Screening/Examination of Passports

A. Visible Light Examination-

- Examination of passport can be performed by front eye view examination. Visible light examination includes detailed examination of security features such as passport papers/pages, gothic/punched number, biographical/bio data page, LSI, barcode, micro printing, fugitive/sensitizing ink.



Security Features of Indian Passport

- The high quality papers are used in Indian passports that are of 100 GSM [grams per square meter].
- The number of pages in the passport depends upon the passport booklet type. All the pages of the passport show fine trimming and finishing as per the prescribed standards.
- Alignment of pages and passport cover/smoothing of folds/creases is also done as per the standards.



1. Passport Papers/Pages-



- Passport number is perforated through the half back part of the passport with laser. This numbering is called Gothic Numbering , which is present in the half back part of the passport i.e. from page 19 to 35 and back cover of the passport in case of 36 type booklet.
- Typical distinguishing marks are produced which include traces of burning round the edges of the holes. Raised edges around the holes on the back of the perforations should be absent.
- When viewed from front to back, conical decrease in size of the perforated holes in the passport booklet should be present. This feature is incorporated to avoid tampering in the passports.

2. Gothic/Punched Number-

- It includes personal details of the bearer of the document which appeared as text in the visual and machine readable zones.
- Biographical page is composed of several layers of Polycarbonate (PC), which is a thermoplastic polymer with excellent durability (lifecycle can exceed up to 10 years) and fused at high temperature and pressure to form a single monolithic structure.
- Background printing is done with coloured offset printing i.e. pre-printed text.

3. Biographical/Bio Data Page-

- Personalization is the process, whereby the passport holder's image, signature and biographical data are incorporated into the passport. The holder's biographical data (Biodata) appears both in the Visual Inspection Zone (VIZ) and in the Machine Readable Zone (MRZ) on the bio data page.
 - Photograph of the holder, signature and bio data text are incorporated directly by the process of integration during personalization. The photo is transferred to the bio data page by digital means which is called as Integrated Digital Photograph and it printed by Thermal Wax Printing.
 - Apparently, the personal data page has been shifted from inner cover to page 2, while data on last page is shifted to page 35. The signature and seal of passport issuing authority has been shifted from page 1 to the overleaf of front cover page.
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- The Ministry of External Affairs launched a new series of passport booklets in April 2013 with the Letter Screen Image (LSI) of the holders.
- In LSI passport booklets, the personal data such as name, address, date of birth, file number, etc. of the applicant are embedded in tiny fonts, which forms the ghost/shadow image of the holder.
- The LSI passport is now being issued by all passport issuing authorities in India and abroad. LSI is appearing as ghost images of the applicant and it is the replica of the applicant's original photograph.

4. Letter Screen Image

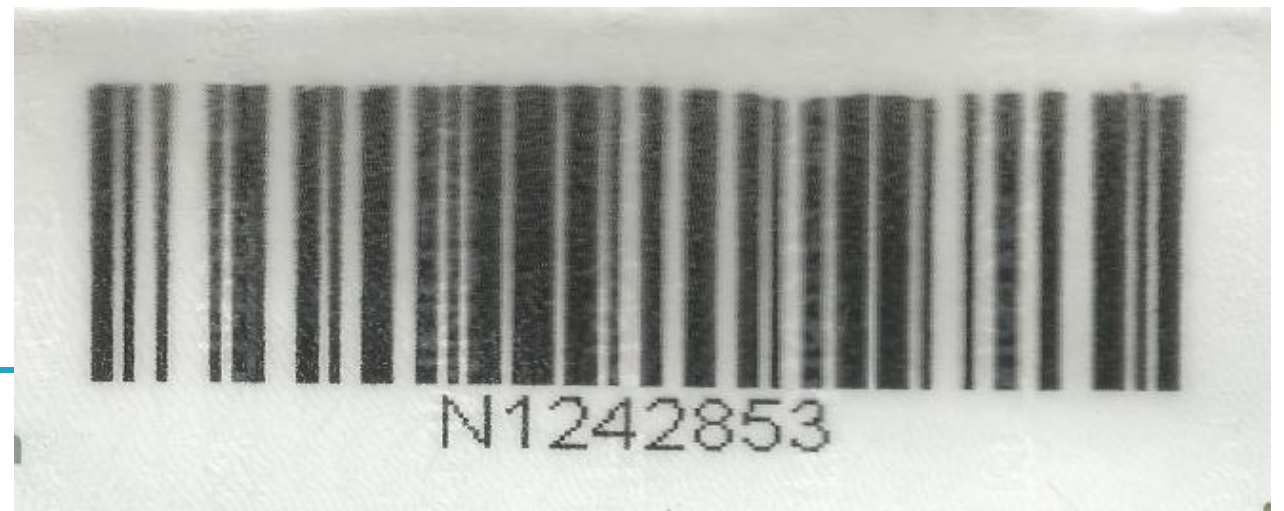
Letter Screen Image on Front Bio Data Page



- The text of LSI cannot be checked by naked eye, but can be seen with a magnifying glass and cannot be forged. After filing the necessary information of the applicant that includes name, date of birth, address and after affixing the scanned photograph, the ghost image of the photograph, along with the applicant's information will be printed in dots on the booklet by using the LSI machine at the regional passport office.
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- A barcode is an optical, machine-readable, representation of data. The data usually describes something about the object that carries the barcode. Code 128, used in the Indian passport is a very high-density barcode symbology. It is used for alphanumeric barcodes. It can encode all 128 characters of American Standard Code for Information Interchange (ASCII) and by use of an extension character (FNC4), the Latin-1 characters defined in ISO/IEC 8859-1. Basically, Barcode present in the passport is made from passport number of the concerned individual (Fig 8).

5. Barcode-



- Lines or motifs made up of very small letters or numbers that are barely perceptible to the eye are called as micro prints. Micro prints contain printed text smaller than 0.25 mm/ 0.7 pica points which require the use of low magnification, e.g. a magnifier or a loupe. That is the reason forged passports often show unreadable micro prints.



6. Micro Printing-

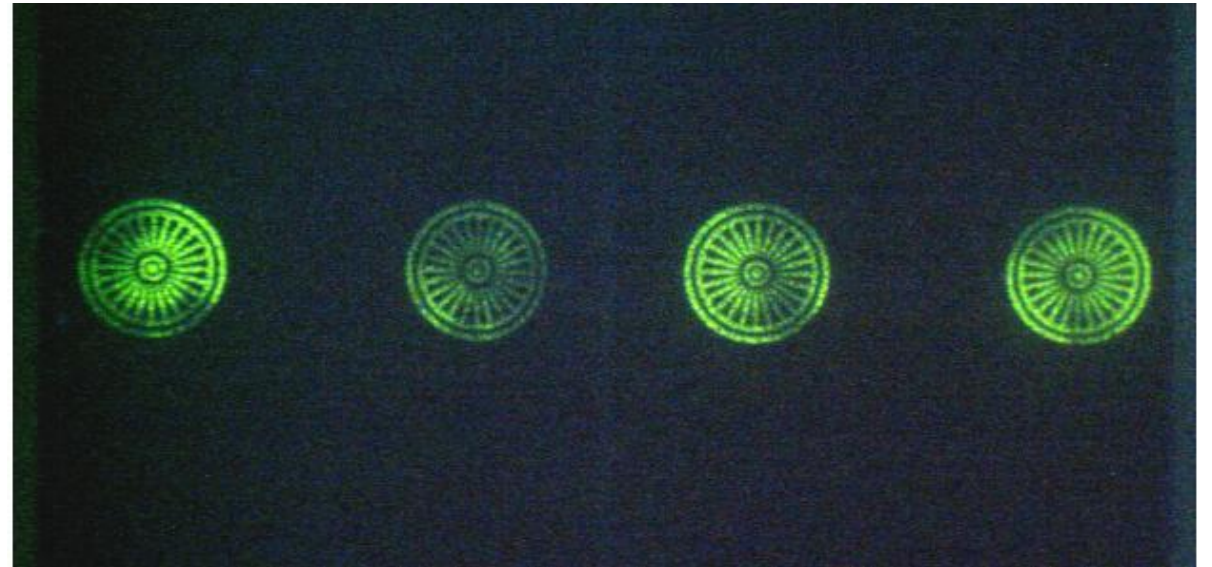
- Microprinting is present as “GOVERNMENT OF INDIA” and “BHARAT SARKAR” (in Hindi) subsequently on biographical page (Fig 9). All the printed lines (horizontal & vertical) on the VISA pages of the passport are also printed as “VISA PAGE (Respective Page No.)” and VISA PRASTHA (Respective Page No.)” in Hindi on each remaining page (Visa Page) of the passport.
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- The base printing of the passport is done by fugitive ink. Fugitive ink present in the passport can react to chemicals/solvents.
- In contact with a specific chemical, the ink will migrate or changes colour resulting in a visible distortion. The phenomenon of this bleaching effect is called as fugitation/sensitization.
- The text (except biographical page), page no., lines and all the security printing, etc. shows fluorescence of greenish colour.

7. Fugitive/Sensitizing Ink-

- There is three types of passport covers depending upon the colour/class of passport. The front part of the cover shows **golden embossing** over it.

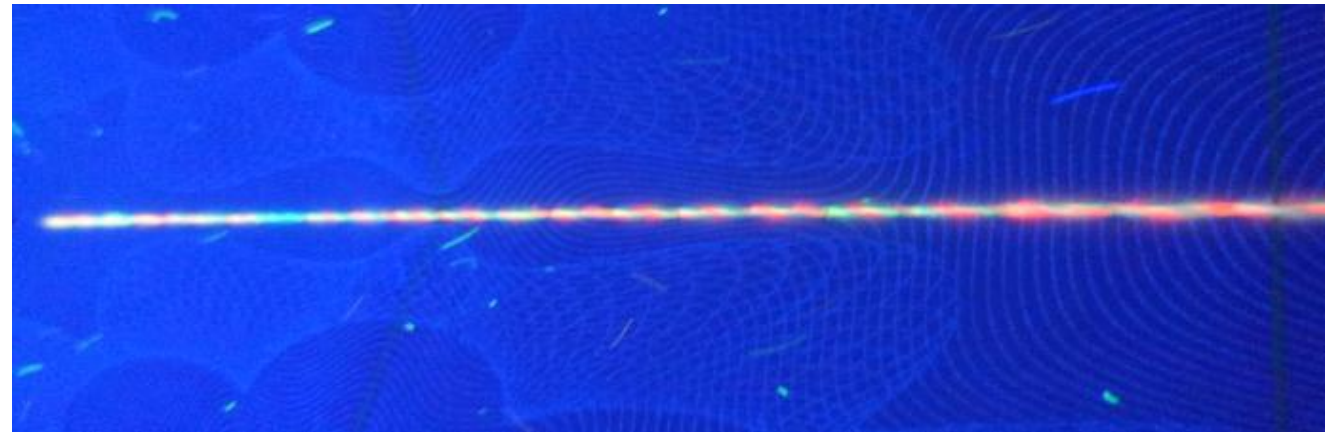
Passport Cover under UV Light



1. Passport Cover-

- The Emblem of India is emblazoned in the centre of the front cover. The word 'passport' (in Hindi as well as in English) are inscribed above the Emblem whereas 'Bharat Ganrajya' (Hindi) and 'Republic of India' (English) are inscribed below the Emblem. The back part of the cover contains punched passport number. When the passport cover is viewed under the UV light it shows Ashoka Chakra in both front and back of the cover
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- Stitching thread [stitched in the spine] is used for stitching the pages of a booklet of passport. Stitching is sewn with a set pattern by using reverse stitching machine that is known as Saddle Stitching. The thread shows multi-coloured fluorescence with green, yellow and red colour when exposed to UV light.



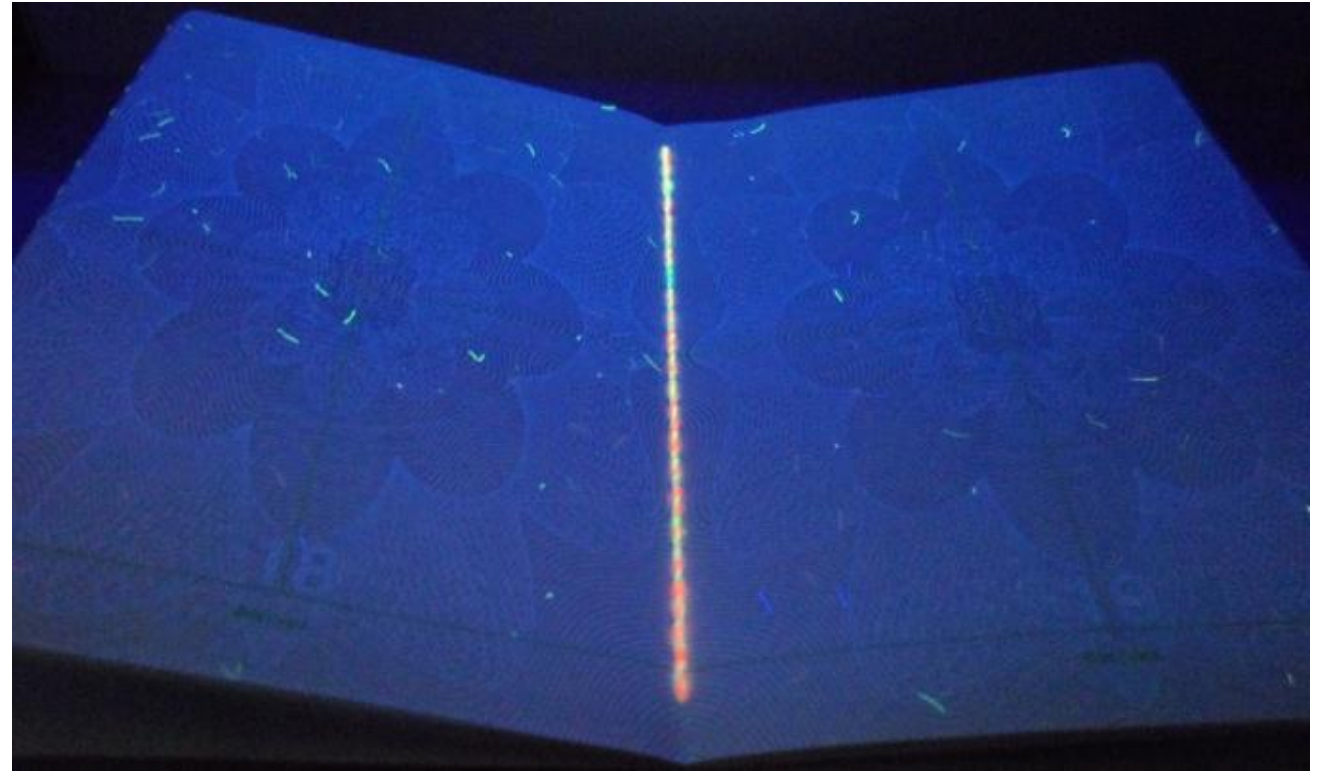
2. Stitching/Binding Thread-

- A laminated sheet is a type of plastic sheet with invisible security features that is affixed to the bio data page in order to protect data entries against falsification. Lamination is done by using HAUUV [Heat Applied Ultra Violet] film by fusing it at 160 to 180 degree Celsius temperature. The key aim of any security laminate is data protection: securing and protecting it from fraudulent alteration.

3. HAUUV/Laminated Film-

- Previously, lamination was present on the inner side of the passport cover i.e. biographical page. But currently passport is having ‘double laminations’ on both the bio data pages (front and back) and their respective back sides. Provision of double lamination has been included on pages 1, 2, 35 and 36. It is a new security feature implemented in Indian passport to enhance the overall quality of passports as well as to improve their security.
 - When biographical page is seen under the Ultra Violet light, it shows “GOVERNMENT OF INDIA” {Reddish in colour} repeatedly [in few lines] and “BHARAT SARKAR” {Greenish in colour, in Hindi} repeatedly [in multiple lines]. It has to be noticed that there will be only three lines of “BHARAT SARKAR” between the both lines of “GOVERNMENT OF INDIA” (Fig. 13). The printed text on the laminated sheet can be viewed under normal light. It means lamination contains visible and invisible printing.
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- Guilloches are decorative engraving technique by which a very precise intricate repetitive pattern or design is mechanically engraved into an underlying material with fine detail. They are the traditional elements of the document design comprising regular geometrical patterns of fine lines, which are produced by special machines or on a computer.

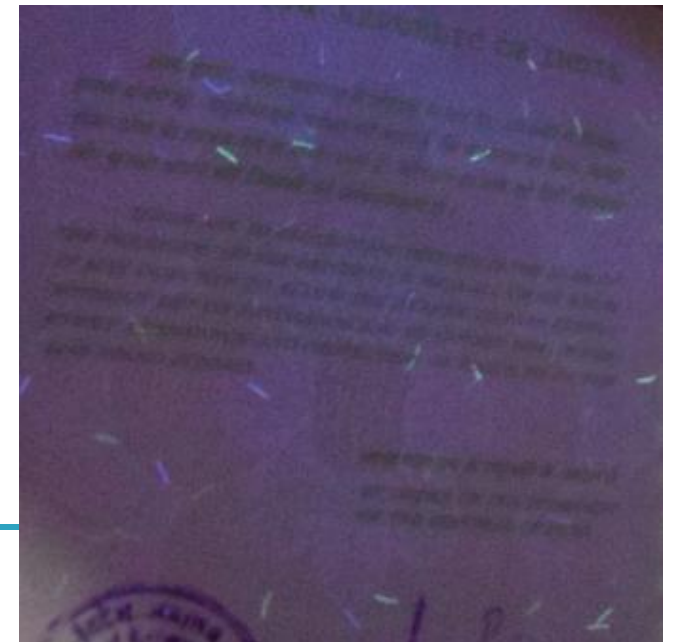


4. Guilloches/Fine Line Pattern-

- These also serve as a security feature against counterfeiting. Indian passports contain guilloches pattern which is visible under UV light and fluoresce with various colours in different wavelength i.e. visa page shows light greenish colour of Guilloches Pattern under UV
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- Fibres are small, thread-like particles embedded in a substrate during manufacture. During the early stages of the paper manufacturing process, small fibres with various colours and properties are randomly placed on to the paper.
- Fibers are the integral part of the paper structure and can only be lifted away from the paper by mechanical means. Fibres may be visible without equipment or with UV light sources.

5. Fibers-

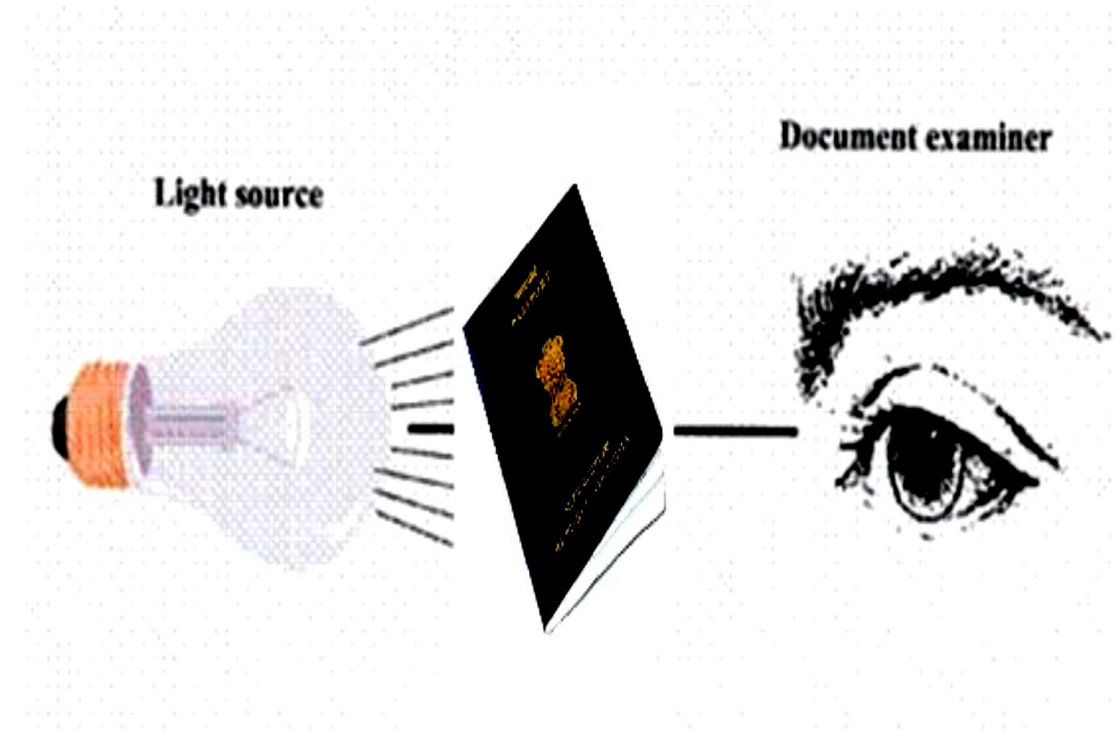


- Fluorescent Ink is used to print background text or motifs. This type of ink is visible under visible light and fluoresces under UV light. Fluorescence is a short-lived light emission which ceases within 10⁻⁸ seconds.
- Ultraviolet light is not visible itself, only its effect, i.e. the visible fluorescence stimulated by UV light can be seen in fluorescent ink. Indian passports show greenish fluorescence of all printed text.



6. Fluorescent Ink-

- In transmitted light examination, passport is held between the light source and eye as shown in the diagram.
- Watermark is examined by using transmitted light.



C. Transmitted Light Examination

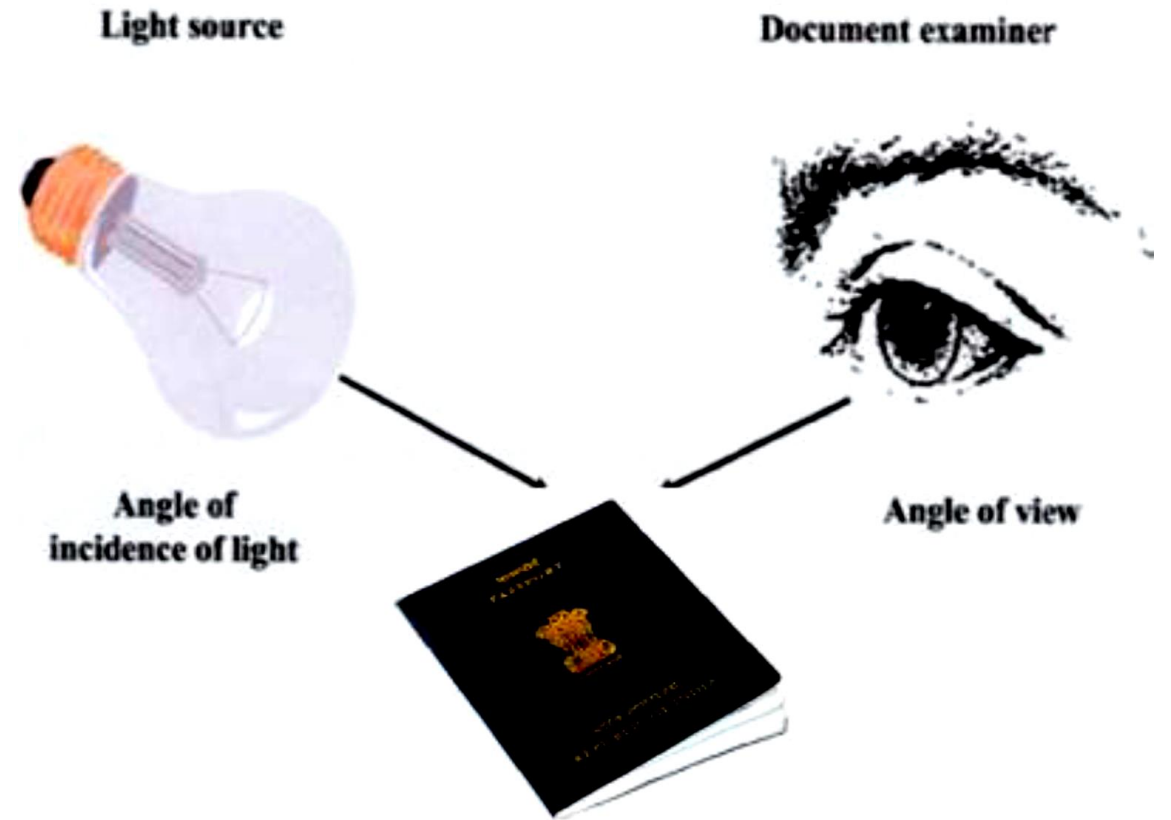
- A watermark is a translucent design produced during the paper manufacturing process and it contains tonal gradation, formed in the paper or other substrate. It is created by the displacement of paper by making certain areas of the paper slightly thinner or thicker than the rest of the sheet.



1. Watermark-

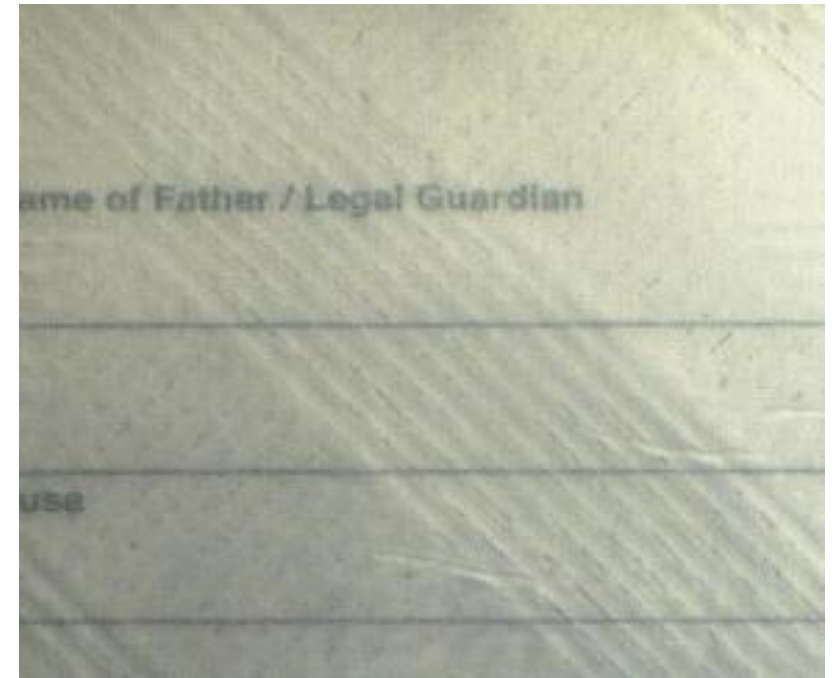
- Side light may be used to recognize the uneven structure of a watermark. The watermark should not appear under UV light. Indian passport contains single tone watermark that is of dark shade. Indian passport contains 2 and ½ Ashoka Pillar as head to head or tail to tail condition on each page except biographical page.
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- Oblique light is impacted from the side with at a shallow angle and used to examine dicuts in Passport.



D. Oblique Light Examination-

- Dicuts are the type of horizontal/ oblique lines, which are present in front and back page of biographical page. In earlier passports ‘two special dicuts’ were formed on biographical page having shape of Ashoka Pillar form. But now in the recent passport, it is eliminated.



1. Dicuts-



THANK
YOU