# METHOD FOR PRODUCING DATA SHEET, AND DATA SHEET

## FIELD OF THE INVENTION

**[0001]** The present invention relates to producing a flexible data sheet in a security document, such as a passport. In the following the invention will be explained primarily with reference to a passport, although the invention may also be utilized in other security documents, in which a flexible data sheet is required.

## DESCRIPTION OF THE PRIOR ART

**[0002]** The properties required of a flexible data sheet are partly contradictory. First of all, the data area of a data portion on a data sheet, in which the data included on the data sheet is recorded, should be of such a structure that a counterfeiter is unable to disassemble it. Different solutions based on bonding different layers to one another by gluing in the data area, in which the data included on the data sheet is recorded, are disadvantageous in the sense that the adhesive layer may offer a counterfeiter a chance to disassemble the data sheet at the most critical area thereof regarding security. It has been proven in practice that a uniform data portion made of plastic material by means of lamination is an excellent alternative in respect of security, as it cannot be disassembled without leaving any visible traces.

**[0003]** However, in practice a data sheet produced by laminating plastic material has to be made of such a material, whose flexing properties and bending strength are poor. Thus, a need is created to provide the data sheet with a flexible and bending resistant attachment portion, by means of which the data sheet is attached to the security document. In order to achieve an adequate security level the data portion on the data sheet should be attached to the attachment portion in such a manner that these two cannot be detached from one another without leaving any visible traces.

**[0004]** A solution is previously known in which the data portion produced by laminating plastic material to form a uniform part is attached to the attachment portion utilizing a strip provided with projections. Then, apertures are first made through the attachment portion. After this, the perforated area of the attachment portion is placed against the data portion. The strip made of plastic material is placed over the attachment portion so that the projections thereof are inserted through the apertures of the attachment portion to the sur-

face of the data portion. Finally the projections are attached to the surface of the data portion using an adhesive agent or by laminating them together.

**[0005]** However, the above prior art solution is associated with such a problem that the bond between the attachment portion and the data portion is totally dependent on the durability of the strip made of plastic material. It is possible that a counterfeiter is able to break such a plastic strip without leaving any significantly visible traces. Consequently, a counterfeiter may be able to detach the data portion on the data sheet from the security document without leaving any traces, which is not acceptable regarding security.

## BRIEF DESCRIPTION OF THE INVENTION

**[0006]** It is an object of the present invention to solve the problem described above and to provide a flexible data sheet of a security document that is safer than the previous ones in respect of counterfeit attempts. This object is achieved with a method according to the accompanying independent claim 1 and a data sheet according to the accompanying independent claim 5.

**[0007]** The invention is based on the idea that when a data portion on a data sheet is made of plastic material to form a uniform part, from the end of which an attachment portion protrudes into the plastic material of the data portion, and as the attachment portion is attached to the data portion by means of the protruding portion, then a solution is achieved, in which the attachment portion cannot be detached from the data portion without leaving any visible traces in the plastic material of the data portion. In addition, since the portion protruding into the data portion of the attachment portion is dimensioned such that it barely extends at all or extends only slightly to the data area of the data portion, in which the data of the data sheet is recorded, the risk of providing the data area with such a layer structure that would enable to disassemble the data sheet in the data area is avoided.

**[0008]** The preferred embodiments of the method and data sheet of the invention are disclosed in the accompanying dependent claims 2 to 4 and 6 to 7.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0009]** In the following the invention will be explained in greater detail by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a data sheet associated with a security document,

Figures 2 and 3 illustrate a first preferred embodiment of the invention,

Figure 4 illustrates a second preferred embodiment of the invention, and

Figures 5 and 6 illustrate a third preferred embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0010]** Figure 1 shows a data sheet 1 according to the invention attached to a security document. In the example shown in Figure 1 the security document refers to a passport, to which the data sheet 1 has been attached by means of an attachment portion 2. The data sheet 1 can be attached to the security document for instance with a stitch 5, i.e. like the other sheets included in the security document.

**[0011]** Data such as the name, time of birth and photograph of the passport holder etc. is included in a data area 4 of a data portion 3 on the data sheet.

**[0012]** Figures 2 and 3 illustrate a first preferred embodiment of the invention. Figure 2 shows a method, by which the data sheet is produced and Figure 3 shows the structure of a completed data sheet.

**[0013]** In the embodiment shown in Figure 2 the data portion on the data sheet is produced by making at least two sheets 6 and 7 to be laminated overlap, whereof at least one is applicable for laser inscription. The sheets 6 and 7 can be made of for instance bright polycarbonate (PC). In order to enable laser inscription at least one of the layers may be of bright carbonized polycarbonate.

**[0014]** The attachment portion 2 is made of flexible and bending resistant material. An alternative is to employ a layer-structured attachment portion, the surface layers of which are made of polyethylene (PE) and the middle layer thereof is made of polyester (PET). To produce the data sheet, the attachment portion 2 made of flexible and bending resistant material is placed between the overlapping sheets 6 and 7 to be laminated to partly separate the sheets 6 and 7 from one another. After this, the sheets 6 and 7 are laminated together at a higher temperature, whereby the end result is the data sheet shown in Figure 3. When the attachment portion is structured in layers as explained above, the polyethylene on the surfaces of the attachment portion

forms adhesive layers, which bond the attachment portion in position during the lamination taking place at a higher temperature. No further adhesive layers are then required.

**[0015]** The data sheet can be produced either in such a manner that the sheets 2, 6 and 7 are cut precisely in the correct shape thereof and are placed accurately at predetermined positions in relation to one another before lamination. Alternatively, the preparation can be carried out so that larger sheets are laminated together, in which case the preparation method includes a cutting stage after lamination for cutting off the unnecessary parts of the sheets.

**[0016]** It should be noted when studying Figure 2 as well as the other Figures that for the sake of clarity the dimensions of the layers deviate from the actual dimensions. The total thickness of the data sheet ranges for instance between 0.8 and 0.9 mm and the thickness of the attachment portion on the data sheet may for instance range from 0.1 to 0.2 mm.

**[0017]** The data sheet shown in Figure 3 is produced as described in Figure 2. The data sheet thus includes a data portion 3 made of uniform plastic material. The sheets 6 and 7 are laminated so tightly together that they practically form a uniform part, whereby a counterfeiter is unable to separate the sheets used to produce the data sheet from one another without leaving any traces. The attachment portion 2 is attached to the data portion by means of a portion 10 protruding into the plastic material of the data portion 3. However, the portion protruding into the data portion 3 of the attachment portion 2 does not extend in this example to the data area 4 of the data portion, in which the data included on the data sheet is recorded. Thus, the formation of such a layer structure is avoided in the data area 4 that could allow a counterfeiter to break the data sheet in pieces in the most critical area thereof, i.e. in the data area 4.

**[0018]** In accordance with the invention, the attachment portion 2 can be attached to the data portion using an adhesive agent. This may be carried out for instance so that the surfaces of the portion 10 inserted between the sheets 6 and 7 of the attachment portion 2 are provided with layers of adhesive agent before placing the flexible and bending resistant sheet forming the attachment portion 2 in position between the sheets 6 and 7 to be laminated. Employing an adhesive agent that is activated at a higher temperature the attachment portion 2 can be bonded in position during the laminating stage when

the temperature is raised. Alternatively another type of adhesive agent can be employed that does not require a higher temperature during the bonding stage.

**[0019]** Figure 4 illustrates the second preferred embodiment of the invention. The embodiment shown in Figure 4 corresponds to a great extent with the embodiment described in Figures 2 and 3. Therefore the embodiment shown in Figure 4 is explained in the following primarily by pointing out the differences in the embodiment shown in Figure 4 in comparison with the previous embodiments.

**[0020]** In the embodiment shown in Figure 4 the data portion 3' on the data sheet is provided with a filling layer 8 to be laminated. The thickness of this layer corresponds with the thickness of the attachment portion 2 and it is arranged as an extension of the attachment portion 2 between the sheets 6 and 7 to separate the sheets 6 and 7 from one another before lamination. The filling layer may be made of the same material as the sheets 6 and 7.

**[0021]** During lamination the filling layer 8 as well as the sheets 6 and 7 are thus laminated together and form a data portion 3' made of uniform plastic material. The filling layer provides such an advantage that no corresponding discontinuity point is formed on the outer surfaces of the data portion 3', or threshold, which is formed in the embodiment shown in Figure 3 at the position where the attachment portion 2 inserted into the data portion ends. In the embodiment shown in Figure 4 the outer surfaces of the data portion 3' on the data sheet thus become smoother.

**[0022]** Figures 5 and 6 illustrate a third preferred embodiment of the invention. In Figure 6 the data sheet is shown partly in cross-section at an aperture 9. The embodiment shown in Figures 5 and 6 corresponds to a great extent with the embodiment described in Figures 2 and 3. Thus, the embodiment shown in Figures 5 and 6 is explained in the following primarily by pointing out the differences of the embodiment shown in Figures 5 and 6 in comparison with the previous embodiments.

**[0023]** It can be noted in Figures 5 and 6 that apertures 9 extending through the attachment portion 2" are formed in the flexible and bending resistant attachment portion 2" in the portion 10" protruding into the data portion. When the sheets 6 and 7 as well as the filling layer 8 are laminated together, the sheets 6 and 7 are also laminated together at the apertures 9. The lamination taking place at the apertures 9 attaches the portion 10" protruding into the

data portion 3'' of the attachment portion 2'' and at the same time the entire attachment portion 2'' to the data portion.

**[0024]** Dimensioning the apertures 9 appropriately allows fastening the attachment portion 2'' and the data portion 3'' with one another only by means of the lamination taking place through the apertures 9. Alternatively the fastening can be further improved with an adhesive agent, in which case the portion 10'' inserted into the data portion 3'' can also be provided with adhesive layers on the surfaces that come in contact with the data portion 3''.

**[0025]** It is to be understood that the above description and the figures associated therewith are merely intended to illustrate the present invention. Different variations and modifications of the invention will be apparent for those skilled in the art without deviating from the scope of the invention shown in the accompanying claims.

CLAIMS

1. A method for producing a data sheet in a security document, the data sheet including at least a data portion and an attachment portion, the method comprising:

producing the data portion by making at least two sheets to be laminated overlap one another, whereof at least one is applicable for laser inscription, and the overlapping sheets to be laminated are laminated together in order to achieve a uniform data portion, **characterized** in that producing the attachment portion comprises:

placing a flexible and bending resistant sheet before lamination between the overlapping sheets to be laminated to separate a portion of the two sheets to be laminated from one another, and

carrying out the lamination.

2. A method as claimed in claim 1, **characterized** in that the portion separating the sheets to be laminated of the flexible and bending resistant sheet is also bonded to the sheets to be laminated.

3. A method as claimed in claim 1 or 2, **characterized** in that the method further comprises:

forming apertures through the flexible and bending resistant sheet,

placing the flexible and bending resistant sheet between the overlapping sheets to be laminated to separate a portion of the two sheets to be laminated from one another so that the apertures are located between the two sheets to be laminated, and

carrying out the lamination, whereby the sheets to be laminated on opposite sides of the flexible and bending resistant sheet are laminated together also through the apertures, thus fastening the flexible and bending resistant sheet in position.

4. A method as claimed in claims 1 to 3, **characterized** by

placing a filler sheet to be laminated between the overlapping sheets to be laminated before lamination as an extension of the flexible and bending resistant sheet between the overlapping sheets to be laminated to separate these from one another, and

laminating the overlapping sheets to be laminated and the filler sheet together in order to form the data portion.

5. A data sheet (1) in a security document comprising

a data portion (3, 3', 3") including a data area (4) in which at least some of the data on the data sheet (1) can be recorded utilizing laser inscription technique, and

a flexible and bending resistant attachment portion (2, 2") in order to attach the data sheet (1) to the security document, **characterized** in that

the data portion (3, 3', 3") is formed of a uniform part made of plastic material, from the end of which the attachment portion (2, 2') protrudes into the plastic material of the data portion,

the attachment portion (2, 2') is attached to the data portion (3, 3', 3") by means of a portion (10, 10") protruding into the plastic material of the data portion, and

the portion (10) protruding into the data portion (3, 3', 3") of the attachment portion (2, 2") does not extend at all or extends only partly to the data area (4) of the data portion in which the data included on the data sheet is recorded.

6. A data sheet as claimed in claim 5, **characterized** in that the portion (10) protruding into the data portion (3, 3') of the attachment portion (2) is attached to the plastic material of the data portion with an adhesive agent.

7. A data sheet as claimed in claim 5 or 6, **characterized** in that

apertures (9) extend through the portion protruding into the data portion (3") of the attachment portion (2"), and

the plastic material of the data portion (3") is protruding through the apertures (9) in order to fasten the attachment portion (2") to the data portion (3").