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**Method for the securing and monitoring of containers and
container with securing and monitoring means**

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Description:

The invention relates to a method for monitoring a
container for holding goods, in which one or more surfaces
10 of the container are provided with an electrically con-
ductive material, whereby the material serves as a sensor
means for ascertaining state changes in the physical
properties of the container material, and a data processing
unit on the container obtains this state information from
15 the sensor means.

The invention also relates to a container for holding goods
and for carrying out the method according to the invention.

20 In the realm of the transportation of goods within
logistics systems, there is a need to adequately secure the
transportation containers and thus the goods contained
therein against damage, theft or other undesired
influences. In order not to have to use any intricately
25 secured and heavy containers, the containers are normally
monitored during transportation.

Damage to the transported goods can occur, for example, if
the goods are not transported at certain ambient conditions
30 such as temperature, air composition or humidity, with the
result that especially foods or drugs are not transported
under the requisite optimum conditions. Therefore, for the

operator of a transportation and logistics system, it is advantageous if the ambient conditions of such goods in a container can be monitored and recorded. In some cases, the monitoring allows a direct influencing of the conditions of
5 the transportation container.

A system for monitoring containers in which the ambient state is monitored and controlled in the containers that hold goods like fruit and vegetables that spoil easily is
10 known, for example, from German Preliminary Published Application DE 195 34 948 A1. The system involves the placement of state monitoring devices in the containers that are in communication with a monitoring center via a phone, radio or satellite connection. The disclosed system
15 also affords theft protection in which the position of a container is detected, for example, by a satellite positioning method such as GPS. If the position diverges from a prescribed target position, an alarm with various follow-up scenarios can be triggered.

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Particularly for purposes of verifying the integrity of a transportation container, it is also advantageous to continuously record and log the state of a transportation container. In the postal shipping sector, packaging such as
25 envelopes or parcels are known whose surfaces are completely or partially coated with several conductive strips. For this purpose, European patent application EP 1 122 698 A2 discloses, for example, packaging with means for checking the integrity of the packaging. The packaging
30 is provided with conductive strips and with a control module, so that damage to the packaging interrupts the electric circuit of the strips and this is detected as

damage. The occurrence of damage can be written into a memory, and this information can be augmented, for example, by the place of the damage on the packaging, the date, the time and the position of the packaging within the transportation system. This information can be read out via an interface and further processed.

International patent application WO 2004/078787 A1 likewise discloses packaging that is coated with a conductive ink in order to ascertain damage. In addition to a means to detect the occurrence of physical damage to the packaging material, the packaging also has a temperature sensor that measures the temperature inside the packaging. The temperature value is stored and can likewise be read out at a later point in time via an interface.

Particularly during the transportation of valuable goods, there is a risk that the goods will be stolen from the transportation containers, whereby the goods can be removed from the containers during the actual transportation or at various intermediate stops. Therefore, for a commissioned shipping company, it is desirable to be able to demonstrate that a container holding goods within a certain shipping order was not opened and, if applicable, that certain specifications were complied with. If an unwanted event occurs to the container, this should be recorded promptly.

Therefore, the objective of the invention is to provide a container for transporting goods that allows monitoring of the transportation of goods and that is improved over the prior-art containers.

It is also the objective of the invention to provide a method for monitoring containers that hold goods.

According to the invention, this objective is achieved by a
5 method having the features of the independent Claim 1. Advantageous refinements of the method ensue from the subordinate Claims 2 to 17. An especially preferred embodiment of the method according to the invention is the method according to Claims 18 to 25. The objective is also
10 achieved by a container according to Claim 26. Advantageous embodiments of the container can be gleaned from the subordinate Claims 27 to 37, whereby the further Claims 38 to 42 relate to an especially preferred embodiment of the container according to the invention.

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The method according to the invention for monitoring a container for holding goods provides that one or more surfaces of the container are provided with an electrically conductive material, whereby the material serves as a
20 sensor means for ascertaining state changes in the physical properties of the container material. A data processing unit on the container obtains this state information from the sensor means. The method is characterized in that a positioning means in communication with the container
25 determines the position of the container and the position of the container is associated with the state information obtained from the sensor means. In this process, the position of the container can be determined by means of a positioning means located directly on the container or on a
30 transportation means with which the container is being transported. If the positioning means is on an associated

transportation means, it is preferably in communication with the data processing unit of the container.

The position of the container can be determined, for example, by a positioning means in the form of a GSM module, a GPS module and/or a direction-finding transmitter. The various positioning means can be used as a function of the requisite precision of the position determination, whereby they can be used alternately or in parallel.

The method proposes that for the state information obtained from the sensor means to be compared to target values, whereby a deviation from a target value is considered to be an alarm. The comparison of the state information is preferably carried out by comparing the measured electrical properties of the conductive layers to a target value for the electrical properties. Here, it can be provided that if the physical properties of the container material detected by the sensor means deviate from a target value, this is not considered to be an alarm if the deviation is associated with a position of the container that is stored in the data processing unit as a position in which it is permissible to open the container.

In an especially preferred embodiment of the invention, the state information obtained from the sensor means is transmitted to a communication module on the container, and the communication module transmits the state information to a message receiving device. The communication module is preferably a GSM module. The state information can be transmitted from the communication module to the message

receiving device during transportation or once the container has arrived at the destination. Preferably, the state information is only transmitted during transportation if a comparison within the data processing unit shows that
5 a deviation from target values of the state information acquired by the sensor means is considered to be an alarm.

The determination of the position of the container and the association of the position with the state information
10 obtained from the sensor means are preferably carried out in the data processing unit of the container, but it can also be carried out in the message receiving device or in the monitoring center.

15 In an especially preferred embodiment of the invention, the container is provided with an atmosphere measuring device that detects the atmosphere inside the container and then the measured values from the atmosphere measuring device are transmitted to the data processing unit of the
20 container. This atmosphere measuring device can be, for example, a temperature and/or moisture sensor whose measured values are transmitted to the data processing unit of the container.

25 Another embodiment of the invention proposes for the container to be provided with a goods detection means for recording the goods held in the container and then data about the detected goods is transmitted to the data processing unit. An example of a goods detection means is
30 an antenna that is installed around the opening edge of the container. The goods are recorded by reading out the RFID tags located on the goods while the RFID tags are being

moved past the antenna when the goods are placed into the container. The container can also be provided with a group detection device that detects the goods once all of the goods have been placed into the container.

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When the goods are detected, at least the number of items that have been placed into the container are recorded in the data processing unit. Here, an item removed from the container reduces the number of items recorded in the data processing unit, whereby the procedure of removal of an item from the container is recorded in that the number of procedures in which the unambiguously identifiable RFID tag was detected is an even number.

15 In addition to the number of items placed into the container, preferably further data about the goods is also acquired. In an especially preferred embodiment of the invention, the number of recorded items and/or further data about the recorded items are transmitted from the data processing unit to the communication module, which then
20 sends the information to a message receiving device. The message receiving device can be located, for example, in the area of the receiver of the goods or in the area of a monitoring center.

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In addition to a method for monitoring a container, the invention also comprises a container having means for the monitoring according to the invention. The container for holding goods calls for sensor means made of conductive
30 strips that serve to ascertain state changes in the physical properties of the container. The container also comprises a data processing unit and a positioning means

for determining the position of the container in communication with the container. Preferably, the container has a communication module that is in communication with the data processing unit and an atmosphere measuring device
5 such as a temperature and/or moisture sensor. In an especially preferred embodiment of the invention, the container also has a protective sheathing. Another advantageous embodiment of the container has a goods detection means for recording at least the number of items
10 placed into the container.

The method according to the invention has the advantage that the state of a container can be comprehensively monitored during the transportation of goods. Techniques
15 for measuring and monitoring the physical properties of a container material and/or of the ambient conditions can be used together with a positioning means in order to associate a position of the container with an event involving the container or with a state. This allows the
20 precise determination of the location and thus, for example, the area of responsibility in which an event occurred.

If several positioning means with differing precisions are
25 employed, they can be used as a function of the requisite precision range. It is especially advantageous here to use a communication module that can send acquired data to a monitoring component either continuously or in case of an alarm.

30

In order to already start the monitoring when a container is being filled, it is advantageous to use a goods

detection means that allows the recording of all of the items in the container. A position of the container in question can, in turn, be associated with this information and the communication module can be used to send the data to different message receiving devices. In this manner, a log can be created indicating that the goods intended for transportation were actually placed into the container and that any theft that may occur can only happen during transportation.

10

This is especially advantageous for the shipper of a container that holds goods since, together with the state sensors and the positioning means, any undesired event involving the container can be tracked without there being a need to take into account any uncertainties about the content of the container before the transportation procedure.

Additional advantages, special features and practical refinements of the invention can be gleaned from the subordinate claims and from the presentation below of preferred embodiments making reference to the figures.

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The figures show the following:

25 Fig. 1 a schematic depiction of an especially preferred embodiment of the container according to the invention;

Fig. 2 an embodiment of a container with protective sheathing; and

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Fig. 3 an embodiment of a container with means for recording the goods.

The container 10 schematically shown in Figure 1 for holding and transporting goods can be, for example, a cuboidal container with a bottom surface, four side walls and a lid arrangement. The container can be made of various materials such as cardboard, wood, plastic, metal or combinations thereof. If a soft material such as cardboard is used, it can be practical to provide the cardboard box with protective sheathing 100 which completely encloses the container. This protective sheathing can likewise be made of plastic, wood or metal.

Such a container with protective sheathing is shown by way of example in Figure 2. In an especially preferred embodiment of the invention, the protective sheathing 100 comprises a pallet bottom 110 made of wood and side walls as well as a lid made of rigid plastic. The bottom 110 is configured as a conventional pallet and permanently or detachably joined to the side walls made of rigid plastic. The protective sheathing 100 can be permanently joined to the base container 10, although it has proven to be advantageous to configure the protective sheathing 100 so that it is detachable from said container. In this manner, the base container can be transported over portions of the transportation route in such a way that it is protected by the sheathing, whereas the container can be conveyed or stored without any protective sheathing along other transportation routes where no additional protection is necessary. Moreover, in this way, the protective sheathing 100 is reusable and can be used for a large number of transportation runs, even if the base container 10 is damaged and can no longer be used.

Preferably, all of the wall surfaces of the container 10 are provided with surfaces made of electrically conductive material that serves as a sensor means 30 for ascertaining state changes in the physical properties of the container material. For this purpose, parts of the surface or else the entire surface of the container can be coated with conductive material. Preferably, the container surface is provided with several conductive strips in the form of electronic ink that are printed directly onto the container material or onto a polymer film coating. For the sake of simplicity, Figure 1 shows only the front side wall of the container with conductive strips 30. The conductive strips are arranged in such a way that a physical change in the properties of the container material and thus damage to the container material causes a change in the electrical properties of the strips.

In order to evaluate the state information acquired by the sensor means, the conductive strips 30 are connected to a data processing unit 40 that is in communication with the container 10. Advantageously, the data processing unit has at least one source of voltage, a computer means for processing data and a memory. The unit is preferably located directly on or in the container 10. In order to protect the unit from unauthorized access, the individual components can be integrated, for example, into the container material.

The conductive strips 30 of the container can be used in various ways as sensor means for monitoring the properties of the container material. For instance, the resistance of

the strips can be continuously measured, and a fluctuation in the resistance is considered to be damage to the container material. Since this entails the risk that the monitoring might be manipulated if the strips are bridged,
5 it has proven to be practical to carry out the monitoring of an analog resistance value. Here, it is advantageous to use reference strips in order to account for natural changes in the resistance, for example, due to aging, moisture or temperature influences. If a deviation from the
10 target value set by the reference strips is measured, then this is recorded as damage to the container material and, optionally, as an alarm.

In order to record not only damage to the container
15 material, for example, as a result of cuts, but rather also the opening of the container lid, various lid arrangements can be provided. If in an application area it is merely necessary to record the one-time opening of the lid, then this can be achieved, for example, in that the conductive
20 strips 30 likewise extend into the area of the container lid surfaces 11. As is known from the state of the art used for the monitoring of envelopes, it can be provided for the closure surfaces to be configured in such a way that the conductive strips 30 adhere slightly to the container
25 material whereas they adhere strongly to the closure materials like adhesive tape. For example, the closure of a container lid 11 made of cardboard can be configured in such a way that two or four lid surfaces are folded over
and connected to each other. Such a lid with two visible
30 lid surfaces is shown in Figure 1. The lid surfaces 11 are preferably connected to an adhesive tape (not shown here) that is applied onto areas of the surfaces to which the

conductive strips only adhere slightly. As a result, the adhesive tape cannot be removed to open the lid without the conductive strips underneath them also being detached, as a result of which a resultant change to the electrical properties of the strips is recorded.

In another embodiment of the invention, overlapping lid surfaces 11 are provided with capacitive connection surfaces 12 that extend, for example, along the edges of the lid surfaces, as shown in Figure 1. When the lid is closed, two connection surfaces lie on top of each other, so that the two connection surfaces 12 form a capacitive element with a relatively high capacitance. If the lid is opened, the distance between the connection surfaces 12 increases and the capacitance drops markedly. The connection surfaces are likewise in communication with the data processing unit 40 and the drop in the capacitance can be recorded as an opening of the lid.

A lid arrangement with capacitive connection surfaces 12 has the advantage that no fixed closure using adhesive tape is required and moreover, that opening and closing multiple times can be recorded without the lid closure being destroyed in the process. Goods 20 can thus be removed from or added to the container if authorization has been given for this, whereas unauthorized procedures are recorded.

An essential component of the invention is that the container 10 is in communication with a positioning means 50 in order to determine the position of the container. The positioning means 50 is preferably situated directly on the container, but it can also be situated on a transportation means with which the container is transported. For example, the positioning means can be situated on an airplane, truck or ship on which the container is conveyed.

10 The positioning means can be, for example, a direction-finding transmitter, a GSM module or a GPS module. The direction-finding transmitter is mounted onto the container or onto an associated transportation means and can be located by a remote station. In this case, the information about the position of the container is not available to the data processing unit 40, so the direction-finding transmitter is advantageously augmented by another module such as a GPS (Global Positioning System). When a GPS positioning procedure is used, its current position can be transmitted to the appertaining satellite receiver so that the position of the container is available to the data processing unit 40. This likewise applies to a GSM module whose position is transmitted by means of cellular position determination. The use of a GSM module is also advantageous since it can concurrently be used as a communication module for sending information.

The positioning means cited by way of example can be used alternately or in parallel. In an especially preferred embodiment of the invention, at least two of the above-mentioned positioning means are used for determining the position of the container. This embodiment has the

advantage that, owing to the various positioning techniques, the position of the container can be determined with a variable precision and, if necessary, also within closed spaces. For example, the direction-finding
5 transmitter can be used in order to be able to determine the position of the container as precisely as possible, whereas position determination by means of GPS and/or GSM modules is sufficient for the determination within a larger area.

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In another embodiment of the invention, the container 10 also has an atmosphere measuring device 70 with which the atmospheric conditions inside or on the container can be measured. The atmosphere measuring device is likewise in
15 communication with the data processing unit 40. The measuring device can be, for example, a temperature or moisture sensor whose measured values are transmitted to the data processing unit 40.

20 The container also has a communication module 80 that is in communication with the data processing unit 40. The communication module 80 can be, for example, a PC interface for reading out data. However, special preference is given to the use of a GSM module with which messages can be sent
25 and received within the GSM network. The communication module is configured in such a way that it can transmit data received from the data processing unit to a monitoring center 60 and/or to an alternative message receiving means
30 61. The monitoring center can be, for example, the central office of a transportation and logistics company that is transporting the goods held in the container. Additional message receiving means 61 can be situated at the premises

of the shipper or of the recipient of the goods being transported, so that these stations can likewise receive messages from the container.

5 The described set-up of the container 10 with various sensors, a positioning means 50 and a communication module 80 allows monitoring of the container, whereby various parameters such as integrity, position and ambient conditions can be monitored. Here, all of the available or
10 selected parameters can be monitored. The monitoring of the integrity of the container 10 is achieved by the sensor means 30 in the form of conductive surfaces, whereby the measured electrical properties of the sensor means are transmitted to the data processing unit 40. In this manner,
15 it can be monitored whether a container has been cut open during transportation, for example, by sharp objects, so that goods could have been removed without authorization.

Moreover, it can be advantageous to monitor a planned route
20 of the container and, for this purpose, to continuously determine the current position of the container by using the positioning means 50. Thus, it can be tracked whether a container has moved away from a prescribed route, which is a sign of an irregularity that might have to be checked or
25 even of the theft of the goods held in the container. The determination of the position can especially serve to associate a position of the container with an alarm, indicating where an irregularity has occurred.

30 The monitoring of certain values for the temperature and/or moisture inside the container is done by an appropriate sensor 70, whose values are likewise transmitted to the

data processing unit. Thus, for example, during the transportation of food or drugs, it can be monitored whether the requisite atmospheric conditions are maintained.

5

Methods for monitoring the container 10 can involve various types of alarms and responses to them. For example, it can be provided for the data acquired on the container to be stored in the data processing unit 40 and/or continuously transmitted via the communication module 80 to a monitoring center 60 or to an alternative message receiving means 61. In the case of just storage, the data can be read out and processed, for example, at the destination of the container via an interface. This can be done by connecting the communication module 80 to a receiving device, whereby the connection can be made via direct contact or remote transmission. For purposes of remote transmission, suitable communication means are, for example, RFID chips in the container, whose stored data can be read out.

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The evaluation of deviations of the measured values from target values can likewise be carried out in the data processing unit 40 itself or in a separate evaluation unit. In the latter case, the data is read out, for example, at the destination, and an evaluation is made as to whether deviations from target states have occurred. This can be advantageous if a given application merely requires the determination as to whether a container was transported correctly and where damage may have occurred.

30

However, it is especially advantageous to monitor the container during the transportation so that, if necessary,

a direct response to the alarm in question can be made. In this case, the communication module 80 transmits data about the container to the monitoring center 60 already during transportation. Here, it can be advantageous for the data
5 processing unit not to send a continuous data stream but rather for it to perform an evaluation of the measured state information and to trigger an alarm in case of deviations from target values. Only when an alarm is triggered is information about the state of the container
10 sent to the monitoring center 60 and/or to alternative message receiving means 61. This notification preferably comprises the type of deviation from a target value and the associated position where the deviation occurred. If, for example, an alarm is triggered relating to the integrity of
15 the container, the current position of the container is associated with this alarm and it is possible to check on site whether the container was damaged within the scope of theft.

20 The container according to the invention also allows further methods for verifying the authorized opening. For example, it can be programmed in the data processing unit 40 that the container may only be opened at a certain place. Consequently, when the container is opened, the
25 position of the container currently determined by the positioning means 50 is compared to the stored place where the opening is authorized. If these positions match, the opening is recorded as being correct. If the comparison
shows that the positions differ from each other, then this
30 is considered to be an unauthorized opening of the container. Various tolerances for the deviation of a position can be programmed, whereby it is once again

advantageous to use different positioning means with differing levels of precision. For example, a direction-finding transmitter can be used if the position at the time of the opening has to be accurate to within 1 meter. This
5 is the case, for example, if a container in a building may only be opened in certain rooms. If a larger area is permissible for the opening, then positioning means that operate with less precision such as GSM or GPS modules are sufficient.

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In another embodiment of the invention, the authorized opening of a container calls for an access code or for a release of the container. The access code can be entered by a user directly into the data processing unit. Especially
15 advantageously, however, access control can be achieved in that the data processing unit 40 requests a release of the container, for example, by the monitoring center 60 or by alternative components. Once certain conditions have been fulfilled, the monitoring center sends, for example, an
20 access code to the data processing unit 40 and the container can be opened without this being considered to be an unauthorized access. In this manner, it can likewise be achieved that the transmission of an access code by several components or users is required in order to authorize an
25 opening of the container without triggering an alarm.

In an especially preferred embodiment of the invention, the container is provided with a goods recording means 90 for
recording the goods held in the container 10. Such an
30 arrangement with an antenna that is installed around the opening edge of the container 10 is shown schematically in Figure 3. For the sake of simplicity, the lid surfaces of

the container are not shown here. For purposes of detection by the antenna, the goods 20 are preferably provided with an RFID tag 21 that is read out while an object of interest is being moved past the antenna. In this manner, the object
5 is detected, whereby the antenna 90 is in communication with the data processing unit 40 in which the detection of the goods is recorded. The goods can also have other identification means that can be detected by the antenna, but RFID tags entail the advantage that they have already
10 been applied to many goods for identification purposes and that, if desired, additional data can also be read out.

When the goods are detected, at least the number of objects present in the container is recorded, and the data
15 processing unit also provides computing means that record when an object is taken out of the container. This can be achieved by storing the number of procedures in which the unambiguously identifiable RFID tag that belongs to an object was detected. If the number of detection procedures
20 is an even number, the object is recorded as no longer being located in the container.

In addition to the detection of the goods by an edge antenna of the type shown in Figure 3, as an alternative, a
25 group detection of the RFID tags 21 of all of the objects in the container can be provided once the filling procedure has been completed. After the filling procedure has been completed, the group detection can be triggered, for
example, by an operator. In order to prevent objects from
30 being removed from the container without authorization after the detection, an edge antenna can be additionally

provided, which records the removal of an RFID tag that has already been recorded by the group detection.

The detection of the goods 20 by the goods detection means
5 90 can also provide for reading out of additional data from
the appertaining RFID tag 21 to be read out. This can
include, for example, information such as the sender or
recipient of the object, information about required
atmospheric conditions during transportation, a prescribed
10 transportation route or data to identify the object. This
data is likewise stored in the data processing unit 40 and,
if applicable, processed. For instance, target values for
monitoring the container can be generated on the basis of
the data.

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The container according to the invention with a positioning
means 50 allows the association of the position of the
container with the detected goods 20. Thus, it can be
stored in the data processing unit that a number of certain
20 goods were placed into a container at a given place. The
communication module 80 also allows a message to the effect
that goods were placed into a container to be transmitted
to a message receiving means 61 and/or to a monitoring
center 60. If the communication module is a GSM module, it
25 can sent a text message to the monitoring center 60 or to
an appropriate receiving device 61. As a result, for
example, the sender can receive a confirmation that the
correct number and type of goods were placed into a
container at a shipping location.

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List of reference numerals:

- 10 container
 - 11 lid surface
 - 5 12 capacitive element
 - 20 object, goods
 - 21 RFID tag, identification means
 - 30 sensor means, electrically conductive layer/strip
 - 40 data processing unit
 - 10 50 positioning means
 - 60 monitoring center
 - 61 message receiving means, message receiving device
 - 70 atmosphere measuring device
 - 80 communication module, interface
 - 15 90 goods recording means, edge antenna
 - 100 protective sheathing
 - 110 pallet bottom
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Claims

1. A method for monitoring a container (10) for holding goods (20), in which one or more surfaces of the container (10) are provided with an electrically conductive material, whereby the material serves as a sensor means (30) for ascertaining state changes in the physical properties of the container material, and a data processing unit (40) on the container (10) obtains this state information from the sensor means (30),
characterized in that a positioning means (50) in communication with the container (10) determines the position of the container (10) and the position of the container (10) is associated with the state information obtained from the sensor means (30).
2. The method according to Claim 1,
characterized in that the position of the container (10) is determined by means of a positioning means (50) on the container (10).
3. The method according to Claim 1,
characterized in that the position of the container (10) is determined by means of a positioning means (50) on a transportation means with which the container (10) is being transported.
4. ~~The method according to Claim 3,~~
characterized in that the position determined by a positioning means (50) on a transportation means is transmitted to the data processing unit (40) on the container (10).

5. The method according to one or more of Claims 1 to 4,
characterized in that the position of the container
(10) is determined by a positioning means (50) in the
5 form of a GSM module, a GPS module and/or a direction-
finding transmitter.
6. The method according to Claim 5,
characterized in that the direction-finding
10 transmitter, GPS module or GSM module are used as a
function of the requisite precision of the position
determination, whereby the individual positioning means
(50) can be used alternately or in parallel.
- 15 7. The method according to one or more of Claims 1 to 6,
characterized in that the state information obtained
from the sensor means (30) is compared to target
values, whereby a deviation from a target value is
considered to be an alarm.
- 20 8. The method according to Claim 7,
characterized in that the comparison of the state
information is carried out by comparing the measured
electrical properties of the conductive layer (30) with
25 a target value for the electrical properties.
9. The method according to one or both of Claims 7 and 8,
~~**characterized in that** if the physical properties of the~~
container material detected by the sensor means (30)
30 deviate from a target value, this is not considered to
be an alarm if the deviation is associated with a
position of the container that is stored in the data

processing unit (40) as a position in which it is permissible to open the container.

10. The method according to one or more of Claims 1 to 9,
5 **characterized in that** the state information obtained from the sensor means (30) is transmitted to a communication module (80) on the container, and in that the communication module (80) transmits the state information to a message receiving device (61).
- 10
11. The method according to Claim 10,
 characterized in that the communication module (80) is a GSM module.
- 15 12. The method according to one or both of Claims 10 and 11, **characterized in that** the state information is transmitted from the communication module (80) to the message receiving device (61) once the container (10) has arrived at the destination.
- 20
13. The method according to one or both of Claims 10 and 11, **characterized in that** the state information is transmitted from the communication module (80) to the message receiving device (61) once the container (10)
25 is on its way to the destination.
14. The method according to Claim 13,
 characterized in that the state information is transmitted to the message receiving means (61) if a
30 comparison within the data processing unit (40) shows that a deviation from target values of the state

information acquired by the sensor means (30) is considered to be an alarm.

15. The method according to one or more of Claims 1 to 14,
5 **characterized in that** the determination of the position of the container (10) and the association of the position with the state information obtained from the sensor means (30) are carried out in the data processing unit (40) of the container (10) or else in
10 the message receiving device (61).
16. The method according to one or more of Claims 1 to 15,
 characterized in that the container (10) is provided with an atmosphere measuring device (70) that detects
15 the atmosphere inside the container and in that the measured values from the atmosphere measuring device (70) are transmitted to the data processing unit (40) of the container (10).
- 20 17. The method according to Claim 16,
 characterized in that the atmosphere measuring device (70) is a temperature and/or moisture sensor whose measured values are transmitted to the data processing unit (40) of the container.
25
18. The method according to one or more of Claims 1 to 17,
 characterized in that the container (10) is provided with a goods detection means (90) for recording the goods held in the container (10) and then data about
30 the detected goods (20) is transmitted to the data processing unit (40).

19. The method according to Claim 18,
characterized in that the container (10) is provided with an antenna that is installed around the opening edge of the container (10) and in that the goods (20) are recorded by reading out the RFID tags (21) located on the goods while the RFID tags are being moved past the antenna when the goods are placed into the container.
20. The method according to Claim 18,
characterized in that the container (10) is provided with a group detection device that detects the goods (20) once all of the goods have been placed into the container.
21. The method according to one or more of Claims 18 to 20,
characterized in that at least the number of items (20) that have been placed into the container is recorded in the data processing unit (40).
22. The method according to Claim 21,
characterized in that an item removed from the container (10) reduces the number of items (20) recorded in the data processing unit (40), whereby the procedure of removal of an item from the container (10) is recorded in that the number of procedures in which the unambiguously identifiable RFID tag belonging to the item was detected is an even number.

23. The method according to one or both of Claims 21 and 22, **characterized in that** in addition to the number of items (20) placed into the container (10), further data about the goods (20) is acquired.
- 5
24. The method according to Claim 23,
characterized in that the number of recorded items (20) and/or further data about the recorded items (20) are transmitted from the data processing unit (40) to the
10 communication module (80), which then sends the information to a message receiving device (61).
25. The method according to Claim 24,
characterized in that the message receiving device (61)
15 is located in the area of the receiver of the goods (30) or in the area of a monitoring center (60).
26. A container for holding goods (20), in which one or more surfaces of the container (10) are provided with
20 an electrically conductive material, whereby the material serves as a sensor means (30) for ascertaining state changes in the physical properties of the container (10), and the container has a data processing unit (40) to which state information can be transmitted
25 from the sensor means (30),
characterized in that the container (10) is in communication with a positioning means (50) for determining the position of the container (10) and it has means for associating the position with the state
30 information in the data processing unit (40).

27. The container according to Claim 26,
characterized in that the positioning means (50) is
located on the container (10).
- 5 28. The container according to Claim 26,
characterized in that the data processing unit (40) is
in communication with a positioning means (50) that is
located on a transportation means with which the
container (10) can be transported.
- 10 29. The container according to one or more of Claims 26 to
28, **characterized in that** the positioning means (50) is
a GSM module, a GPS module and/or a direction-finding
transmitter.
- 15 30. The container according to Claim 29,
characterized in that, as a function of the requisite
precision of the position determination, the individual
positioning means (50) can be used alternately or in
20 parallel.
31. The container according to one or more of Claims 26 to
30, **characterized in that** the container (10) has a
communication module (80) that is in communication with
25 the data processing unit (40).

32. The container according to Claim 31,
characterized in that the communication module (30) is
a GSM module.
- 5 33. The container according to one or more of Claims 26 to
32, **characterized in that** the data processing unit (40)
has means to compare the state information obtained
from the sensor means (30) to a target state for the
physical properties of the container material.
- 10 34. The container according to Claim 33,
characterized in that the data processing unit (40) has
means to compare the measured electrical properties of
the conductive layer (30) to a target value for the
15 electrical properties of the layer.
35. The container according to one or more of Claims 26 to
34, **characterized in that** the container (10) has an
atmosphere measuring device (70) with which the
20 atmosphere inside the container (10) can be detected,
whereby the atmosphere measuring device (70) is in
communication with the data processing unit (40).
36. The container according to Claim 35,
25 **characterized in that** the atmosphere measuring device
(70) is a temperature and/or moisture sensor.

37. The container according to one or more of Claims 26 to 36, **characterized in that** the container (10) has a protective sheathing (100).
- 5 38. The container according to one or more of Claims 26 to 37, **characterized in that** the container (10) has a goods detection means (90) with which the goods (20) placed into the container can be recorded, whereby the goods detection means (90) is in communication with the data processing unit (40).
- 10
39. The container according to Claim 38, **characterized in that** the container (10) has an antenna that is installed around the opening edge of the container (10), whereby RFID tags (21) located on the goods (20) can be read out with the antenna while the goods (20) are being moved past the antenna when they are placed into the container.
- 15
40. The container according to Claim 38, **characterized in that** the container (10) has a group detection device that detects the goods (20) once all of the goods have been placed into the container.
- 20
41. The container according to one or more of Claims 38 to 40, **characterized in that** the data processing unit (40) has means for recording at least the number of items (20) and/or further data about the goods (20).
- 25

42. The container according to Claim 41,
characterized in that the data processing unit (40) has
means for recording the fact that the number of
procedures in which an unambiguously identifiable RFID
5 tag (21) belonging to an item (20) was detected is an
even number or an odd number.