Appendix II: test procedure for measuring the residual quantity

1) Definition of the indicator

One function of the packing is to facilitate the use of the product. The **restitution rate** shows the percentage of product actually consumable.

The coefficient of restitution shall be verified in accordance with the normal use of each product:

(1) If a pressure on a container is usually requested for the use of a product, this same pressure must be applied to determine the coefficient of restitution. The emptying is considered to be completed once no product comes out while respecting the usual conditions of use.

(2) For certain products when it's possible, consideration should be given to a practice already used by many users: At the end of use, it is possible for the user by pulsing in a water supply, to introduce a bit of water in the container to make less thick the content so as to finish the remaining product inside. When this operation is feasible, the coefficient of restitution should take into account a little bonus.

Residual amount (R): amount of product remaining in the container after the consumer has emptied the container. The rate is expressed as a weight percentage and defined as follows:

> **R = mass of the product residue divided by mass of product in the container**

2) Measurements

Measurements aim at determining precisely the mass of product and packaging.
Measurements are adapted to each product based on the characteristics of the packaging and are defined in dedicated specifications.

The following masses are measured:

- Primary packaging and product: **m1** (g)

- Primary packaging and product residue in normal conditions of use (see below): **m2** (g)

- Primary packaging emptied and cleaned: **m3** (g)

3) Results

From previous measurements, we have:

- The mass of product in the container

$$\mathbf{m_{product} = m1\text{-}m3}$$

- The mass of product residue in normal conditions of use

$$\mathbf{m_{residues} = m2\text{-}m3}$$

We deduce:

$$R = ((m2-m3) / (m1-m3)) \times 100 \ (\%)$$

Normal conditions of use

☐ Tube: Applying for three minutes successive pressures on the body of the primary packaging in direct contact, with the cap in downward position. The test is considered complete when no amount of liquid will flow after five successive pressures on the body of the primary packaging in direct contact. Neither the cap is dismantled, nor water is introduced inside the packaging.

☐ Spray: Applying successive pressures on the tip of the spray by pressing the spring down entirely. Wait until the spring has returned to its initial position prior to applying a new pressure. Repeat until no amount of product flows from the spray after five successive pressures. Neither the cap is dismantled, nor water is introduced inside the packaging

☐ Pot: The product is removed using the index and middle fingers by rubbing the edges and the bottom of the pot carefully but relentlessly. Neither the cap is dismantled, nor water is introduced inside the packaging

☐ Vial/flask: Returns the vial upside down, with the cap in downward position. After the trickle is not continuous, the bottle is left in the same position for another two minutes. Neither the cap is dismantled, nor water is introduced inside the packaging

The packaging must be designed to make correct dosage easy (e.g. by ensuring that the opening at the top is not too wide) and to ensure that at least a 90% of the product can be removed easily from the container. The residual amount of the product in the container (R), which must be below 10%, shall be calculated as follows:

$$R = ((m2-m3) / (m1-m3)) \times 100 \ (\%)$$

Where:

m1 - Primary packaging and product (g)

m2 - Primary packaging and product residue in normal conditions of use (g)

m3 - Primary packaging emptied and cleaned (g)