

## Loss of quantity

i) Evaporation loss or -if product is hygroscopic- increase of quantity (flour, noodles)

Here we are only interested in loss caused by the climatic surrounding, but not in loss / shrinking by takeoff of parts of the product.

E.g. the product losses water, alcohol ... directly or it permeates through the wrapping, plastic, cork stopper of a bottle, ...

ii) Exchange processes for products in prepackages for which sub quantities are labeled as for instance the drained weight.

**→ It is necessary to define the time of packing!**

## Loss of quantity

**OIML R 87** Edition 2004 “Quantity of product in prepackages”:

### **3 Metrological requirements for a prepackage**

A prepackage shall meet the requirements below **at any level of distribution** including at the point-of-pack, import, distribution and wholesale transactions, and sale (e.g. where a prepackage is offered or exposed for sale or sold).

→ *This does **not** work!*

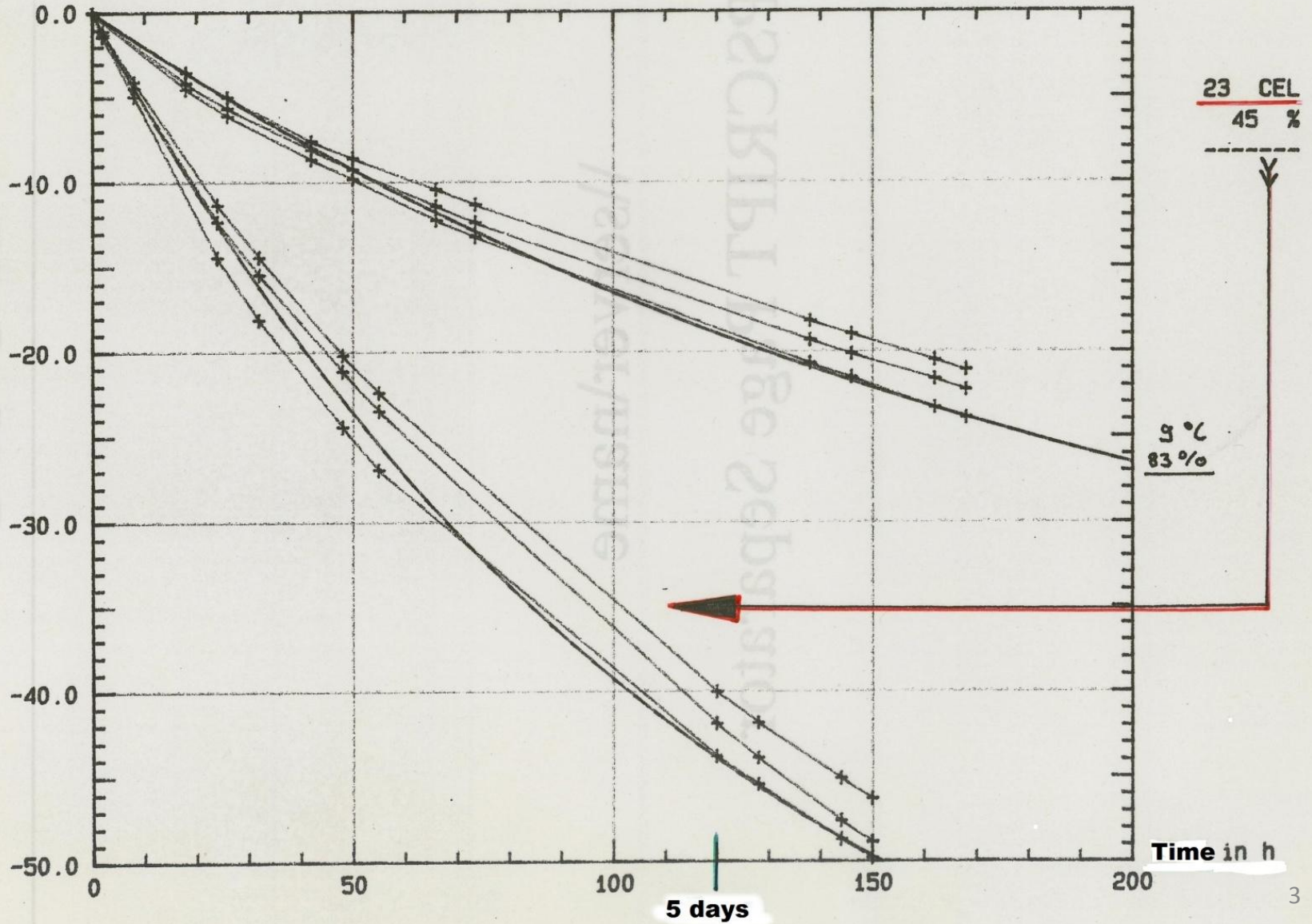
ROSENKOHL 500 g

NETZ



17A

GENICHTSVERLUST IN %

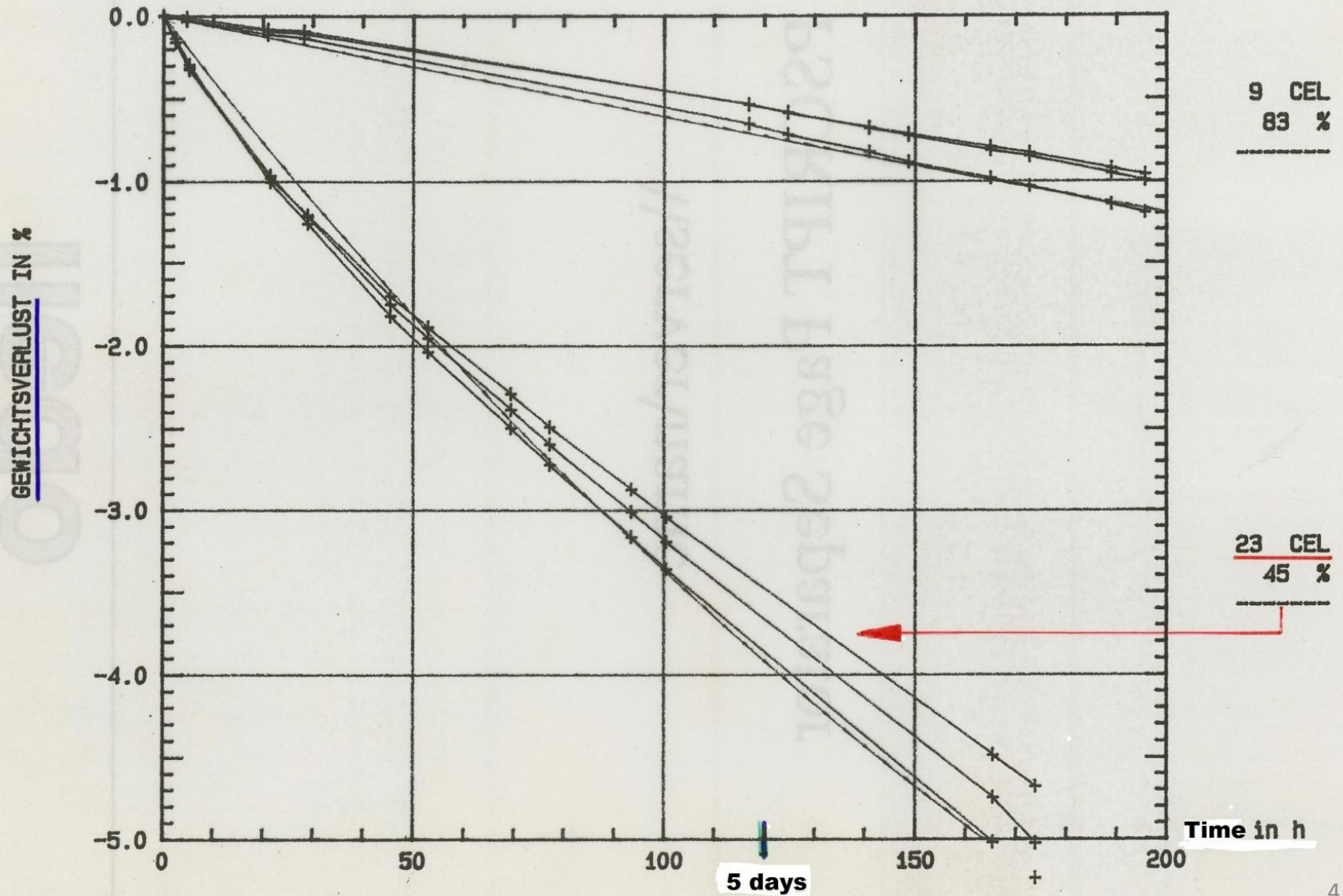


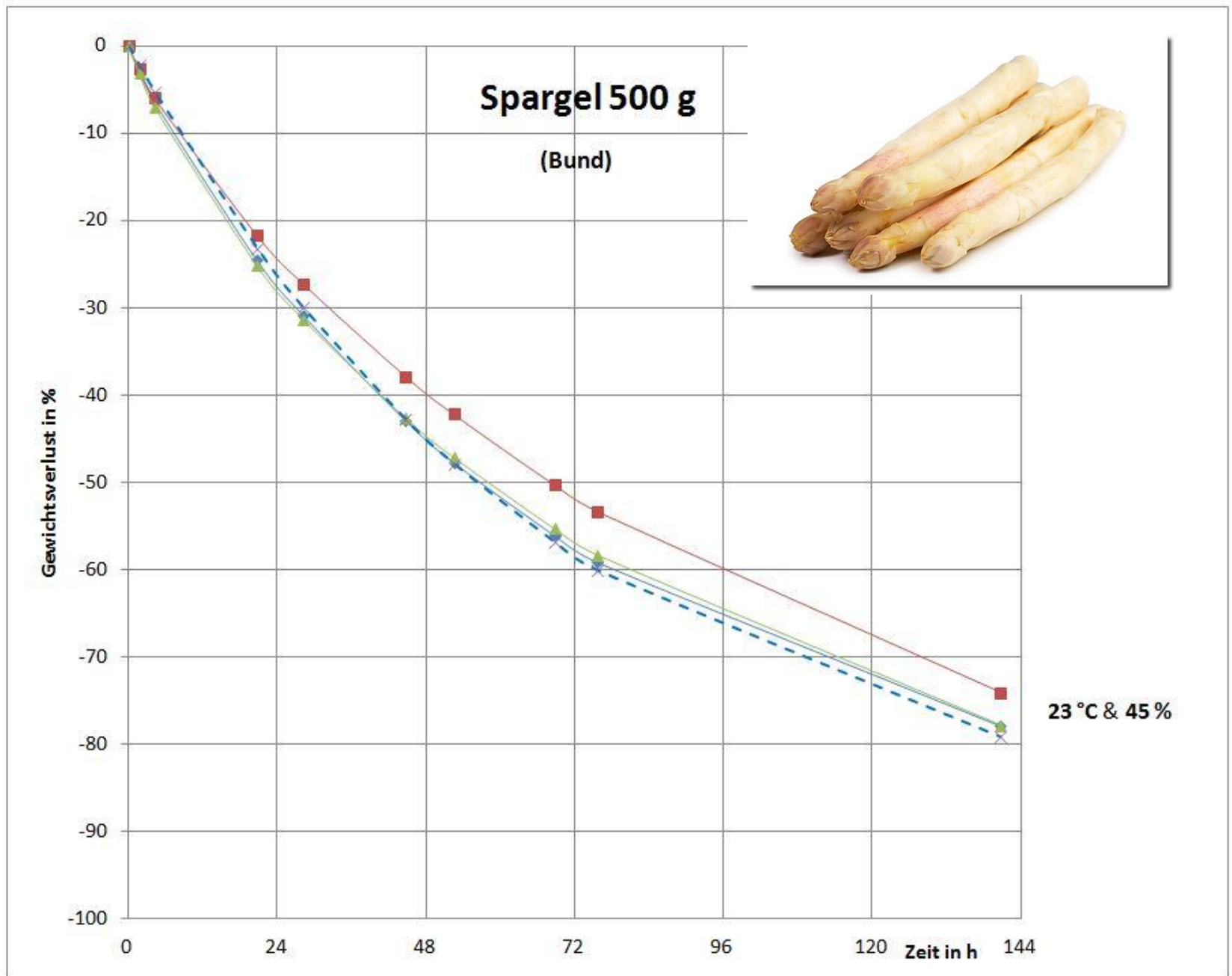
# TOMATEN 500 g

OFFEN (PAPPSCHALE)



90A





## Loss of quantity

**“European Council Directive on the approximation of the laws of the Member States relating to the making-up by weight or by volume of certain prepackaged products”**

**76/211/EEC, Annex I, 1. Objectives:**

**Prepackages covered by this Directive**

**shall be made up in such a way**

**that the completed packages satisfy the requirements**

**regarding to average, Tu1 and Tu2.**

**→ at point of packing!**

## Loss of quantity

### **WELMEC 6.11 Recommendation:**

5.1 In order that packers have to meet same requirements, WELMEC WG6 recommends that Competent Departments apply the Directive's requirements for these products whose quantity changes after packing as follows:

5.1.1 That the prepackages shall meet the three quantity requirements at time the prepackages have passed the quantity checks specified in the packer's or importer's quantity control system, and so are ready for placing on the market, and

5.1.2 be able to demonstrate this from records, and

5.1.3 No prepackages shall have a deficiency greater than twice the tolerable negative error anywhere in the distribution chain.



## Loss of quantity

**Now we have the problem how to act at market surveillance?**

If the time of loss starts at the **time of packing**, then we **have to calculate back** to this origin by graphs or tables.

This must be done for average, Tu1 (and Tu2).

Three graphs we have seen before for tomatoes, Brussels sprouts and asparagus, which we can use for this purpose.

On the next foil see a table for bread from RFP which we use in Germany.



## Loss of quantity

Product		1h	2h	4h	6h	10h	24h	72h	1 week
<b>unwrapped bread, not sliced</b>									
Weizenbrot		1,7	2,2	2,8	3,2	3,9			
Roggenbrot und Mischbrot		0,8	1,1	1,4	1,6	2,0			
<b>wrapped bread, not sliced</b>									
Weizenbrot		1,0	1,8	2,5	2,75	3,0	4,0		
Roggenbrot und Mischbrot		0,5	0,9	1,2	1,4	1,5	2,0		
Pumpernickel		0,3	0,5	0,6	0,7	0,8	1,0		
Vollkornbrot		0,2	0,3	0,4	0,5	0,7	1,0		
Schrotbrot		0,25	0,35	0,45	0,5	0,5	1,0		
<b>sliced bread</b>		0,5	1,0	1,2	1,4	1,5	2,0		

### Maximum loss in weight after time of manufacturing in per cent

Source: RFP Anlage 4b

## Loss of quantity

Table see RFP Annex 3:

**Exceptions from the fixed time of manufacturing**

**e.g. bread → 1 h after take out of the oven**

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For prepackages for which **sub quantities** are labeled as for instance the **drained weight** the fixation of a recommended period of time for checking the drained weight is of special importance (see 3.1.3 of WELMEC 6.8).

Reason for this is the possibility of exchange processes e.g. to reach the equilibrium of the sugar concentration in the product and in the liquid medium. One example is the declaration of drained weight for preserves with pears. Another example are fishery products which dissolve in the pouring liquid salt lake.

## Loss of quantity

### Literature:

- WELMEC 6.11 „Guidance for Prepackages whose Quantity Changes after Packing”
- ‘Guidance for metrological control on prepackages’ / “Richtlinie zur Füllmengenprüfung von Fertigpackungen und Prüfung von Maßbehältnissen durch die zuständigen Behörden (RFP)” → Tables in Annexes 3, 4a and 4b