SLOVENSKI STANDARD

SIST-TP CEN/TR 14520:2005

01-april-2005

Embalaģa ï Veļ kratna uporaba ï Metode za ocenjevanje lastnosti delovanja sistema za veļ kratno uporabo

Packaging - Reuse - Methods for assessing the performance of a reuse system

Verpackung - Wiederverwendung - Verfahren zur Bestimmung der Anzahl von Produktwegen oder Kreislaufdurchgängen

Emballage - Réutilisation - Méthode d'évaluation de la performance d'un systeme de réutilisation

Ta slovenski standard je istoveten z: CEN/TR 14520:2005

ICS:

55.020	Pakiranje in distribucija blaga na splošno	Packaging and distribution of goods in general

SIST-TP CEN/TR 14520:2005 **en,fr,de**

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 14520

February 2005

ICS 55.020

English version

Packaging - Reuse - Methods for determining the number of trips or rotations

Emballage - Réutilisation - Méthode d'évaluation de la performance d'un système de réutilisation

Verpackung - Wiederverwendung - Verfahren zur Einschätzung der Leistungsfähigkeit eines Wiederverwendungssystems

This Technical Report was approved by CEN on 23 October 2004. It has been drawn up by the Technical Committee CEN/TC 261.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. CEN/TR 14520:2005: E

Contents

Page

Foreword 3
Introduction 4
1 Scope 5
2 Terms and definitions 5
3 Methods of calculation 6
3.1 Open and closed loop systems 6
3.1.1 Principle 6
3.1.2 Calculation of average number of rotations 6
3.1.3 Calculation of reuse ratio 7
3.1.4 Packaging lifetime 7
3.2 Hybrid system 8
4 Factors influencing the calculation 8
4.1 Selection of calculation period 8
4.2 Selection of measurement point 8
4.3 Market Fluctuation and product lifecycle 8
Annex A (informative) Trips and Rotations 9
Annex B (informative) Example of reuse ratio calculation 10
Bibliography 11

Foreword

This document (CEN/TR 14520:2005) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Report: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The methods set out in this Technical Report are both capable of giving realistic results in the relevant circumstances. Experience over time with the results will indicate the levels of performance that are being achieved.

1 Scope

This Technical Report gives methods of assessing the performance of a reuse system related to the proportion of reused packaging in use. This may be measured by:

— the number of rotations or;

— the reuse ratio.

The choice of method will vary according to the type of reuse system and information available.

2 Terms and definitions

For the purposes of this Technical Report, the following terms and definitions apply.

2.1
trip
transfer of packaging, from filling/loading to emptying/unloading. A trip may be part of a rotation

2.2
rotation
cycle undergone by reusable packaging from filling/loading to filling/loading. A rotation will always contain a trip

2.3
population
total number of a packaging type, empty or filled, in that whole reuse system

2.4
claiming company
packer/filler who is making a claim of ‘reusable’ for a type of packaging, in the circumstances of its intended use

2.5
reuse ratio
ratio, expressed as a percentage, of reused packaging to the throughput at the measurement point (see definition 2.7) over the calculation period (see definition 2.6)

2.6
calculation period
period over which the number of trips or reuse ratio is calculated. This should be of adequate duration to smooth out the effects of seasonal variation, product lifetime, packaging inputs and other factors which may affect the calculation

2.7
measurement point
point in the rotation loop at which the information for the calculation is gathered

NOTE Examples of some possible measurement points are given in clause 4.2.

2.8
newly manufactured packaging
newly purchased packaging entering the system for the first time to increase the population or replace all types of losses

2.9
system adjustment
increase or decrease of population of a packaging type due to market fluctuation

2.10
system losses
all types of losses of packaging from the system

2.11
closed loop system
system in which reusable packaging is circulated by a company or a co-operating group of companies

2.12
open loop system
system in which reusable packaging circulates amongst unspecified companies

2.13
hybrid system
system consisting of two parts:

a) reusable packaging, remaining with the end user, for which there exists no redistribution system leading to commercial refilling;

b) one way packaging, used as an auxiliary product to transport the contents to the reusable packaging.

3 Methods of calculation

3.1 Open and closed loop systems

3.1.1 Principle

The performance of a reuse system can be evaluated by calculating either the average number of rotations (see definition 2.2) or the reuse ratio. The population figure needs to be known accurately to perform the calculation of the average number of rotations. In the cases where this value cannot be known, which includes most open loop systems, only the reuse ratio can be calculated.

NOTE The packer/filler making the calculation will require the co-operation of all other partners in the system for that product. See 5.1 of EN 13429:2004.

3.1.2 Calculation of average number of rotations

The simple formula to determine the average number of rotations is:

$$R_n = \frac{Q_{sp}}{P_t}$$

where

R_n is the average number of rotations during the calculation period;

Q_{sp} is the quantity of packaging passing through the measurement point during the calculation period.

NOTE For pool systems this is the sum of all the packaging from all the packer/fillers.

P_t is the average population during the calculation period.

Q_{sp} can often be easily calculated from the number of despatches or output from the packer/filler etc. P_t however, is rarely directly known and has to be calculated. A simplified version of this calculation is:

$$P_t = P_{in} + \frac{P_{new}}{2} - \frac{P_{loss}}{2} \pm \frac{P_{adj}}{2}$$

where

P_t is the average population during the calculation period;

P_{in} is the population at the start of the calculation period;

P_{new} is the total of newly manufactured packaging entering the system during the calculation period;

P_{loss} is the system losses during the calculation period;

P_{adj} is the system adjustments during the calculation period.

P_{new}, P_{loss} and P_{adj} are divided by two to give an approximate average over the calculation period. Where possible a more accurate average should be used.

P_{new} and P_{adj} are often known, however P_{loss} generally has to be assessed. Under long term steady state conditions, P_{loss} is approximately equal to P_{new}.

3.1.3 Calculation of reuse ratio

$$R_r = \frac{Q_{reuse}}{Q_{sp}} \times 100$$

where

R_r is the reuse ratio;

Q_{reuse} is the number of reused packages passing through the measurement point during the calculation period;

Q_{sp} is the quantity of packaging passing through the measurement point during the calculation period.

In systems where only the reuse ratio can be calculated it should be noted that any percentage greater than zero is evidence of reuse.

3.1.4 Packaging lifetime

With long-term experience, the average age of the population can be estimated. By multiplying the average number of rotations per year by the average age of the population an approximate figure for the number of rotations per lifetime can be calculated as follows.

$$L_r = N_y \times A_a$$

where

L_r is the approximate number of rotations per lifetime;

N_y is the average number of rotations per year;