SLOVENSKI STANDARD
SIST-TS CLC/TS 50574-2:2015

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Zahteve za zbiranje, logistiko in obdelavo izrabljenih gospodinjskih aparatov, ki vsebujejo hlapne fluoroogljike ali hlapne ogljikovodike - 2. del: Specifikacija za preprečevanje onesnaženja

Collection, logistics & treatment requirements for end-of-life household appliances containing volatile fluorocarbons or volatile hydrocarbons - Part 2: specification for de-pollution

Anforderungen an die Sammlung, Logistik und Behandlung von Altgeräten aus dem Haushalt, die flüchtige Fluorkohlenwasserstoffe oder flüchtige Kohlenwasserstoffe enthalten - Teil 2: Spezifikation zur Schadstoffentfrachtung

Exigences de collecte, logistique et traitement pour la fin de vie des appareils domestiques contenant des fluorocarbures volatils ou des hydrocarbures volatils - Partie 2: Spécifications de dépollution

Ta slovenski standard je istoveten z: **CLC/TS 50574-2:2014**

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13.030.30	Posebni odpadki	Special wastes
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English Version

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Foreword

This document (CLC/TS 50574-2:2014) has been prepared by CLC/TC 111X “Environment”.

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Introduction

This Technical Specification is intended to support EN 50574:2012 by providing further normative requirements for the assessment of de-pollution for treatment of end-of-life household appliances containing volatile fluorocarbons or volatile hydrocarbons.

Any characteristic numbers and target values within this Technical Specification are based on evidence gathered by technical experts over a time period of more than two years when performing test according to EN 50574:2012.

1 Scope

EN 50574:2012 gives the responsible take-back parties the task of defining target values. This Technical Specification provides applicable target values, characteristic numbers; sampling and analysis procedures, as well as monitoring and reporting requirements. Furthermore, this Technical Specification provides validation methodologies for tests and the daily business of the treatment plants as defined in EN 50574:2012.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50574:2012, *Collection, logistics & treatment requirements for end-of-life household appliances containing volatile fluorocarbons or volatile hydrocarbons*

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 50574:2012 and the following apply.

3.1
characteristic numbers
values of parameters (except target values and limit values) used to determine VFC and VHC recovery performance for step 1 (e.g. q_{Mtot}, S_K), step 2 (e.g. f_{VFC}, f_{VHC}) and step 3, and values of parameters used to assess certain results of the plant performance audit (e.g. t_{max} in step 1 and $w_{i,VFC}$ and $w_{i,VHC}$ in step 2)

3.2
monitoring
system to acquire and store quantitative information about the material input and material output streams of the treatment facility (step 1, step 2, step 3) and related calculation of the recovery performance

Note 1 to entry: The scope of the required monitoring procedures is detailed in 5.5 in EN 50574:2012.

3.3
reporting
all information used to notify the results of the monitoring system

Note 1 to entry: The scope and content of the information to be reported is detailed in 5.6 in EN 50574:2012.

4 Target values

4.1 Step 1

A.2.7 of EN 50574:2012 define the target values for step 1 treatment.

4.2 Step 2: tv_{VFC}, tv_{VHC}

4.2.1 General

Clause 6 of EN 50574:2012 requires that target values for the recovery of VFCs and VHCs for Step 2 treatment (tv_{VFC}, tv_{VHC}) shall be defined.

The target values (tv_{VFC} and tv_{VHC}) represent the minimum masses of VFC and VHC to be recovered per kilogram of VFC-PU or VHC-PU foam respectively. The target value tv_{VFC} is calculated either from M_{VFC}, which is the “potentially recoverable” mass of VFC based on the VFC-PU foam in the plant’s PU input stream, or from D_{VFC}, which is the mass of VFC blowing agent determined based on the plant’s PU output stream. The

target value tv_{VHC} is defined analogously in those cases where there will be no on-site step 3 treatment after step 2 treatment.

4.2.2 Target values based on the quantity of potentially recoverable VFC and VHC blowing agent calculated from the plant's PU input stream

The total amount of potentially recoverable blowing agent (VFC and VHC) is calculated as: $M_{tot} = M_{VFC} + M_{VHC.}$

NOTE The formulas for calculating M_{VFC} and M_{VHC} are presented in Annex B of EN 50574:2012.

The target value tv_{VFC} is calculated using the formula: 0,9 x M_{VFC} / PU_{VFC} (expressed as g VFC per kg PU_{VFC}).

The target value tv_{VHC} is calculated using the formula: 0,9 x M_{VHC} / PU_{VHC} (expressed as g VHC per kg PU_{VHC}).

4.2.3 Target values based on the theoretical mass of VFC and VHC blowing agent calculated from the PU output fraction

The total theoretical quantity of blowing agent based on the PU output fraction is calculated as: $D_{tot} = D_{VFC} + D_{VHC}$

NOTE The formulas for calculating D_{VFC} and D_{VHC} are given in Annex B of EN 50574:2012.

The target value tv_{VFC} is calculated using the formula: 0,9 x D_{VFC} / PU_{VFC} (expressed as g VFC per kg PU_{VFC}).

The target value tv_{VHC} is calculated using the formula: 0,9 x D_{VHC} / PU_{VHC} (expressed as g VHC per kg PU_{VHC}).

5 Characteristic numbers

5.1 Step 1

5.1.1 Maximal ratio of VFC (according to rating plate) to mass of mixture of VFC and oil sucked off: t_{max}

According to A.2.6 c) in EN 50574:2012, a value (t_{max}) for the parameter t shall be specified, above which an individual appliance undergoing step 1 treatment shall be deemed to be defective. The parameter t is computed as the ratio of the potentially recoverable quantity of VFC to the effective reduction in mass (S_k) resulting from the vacuum extraction of the refrigerant and oil mix from the refrigerating system. A threshold value of t_{max} = 0,57 shall be used in case of completely emptied compressors.

NOTE If the step 1 process does not completely remove the refrigerants and oil, then the t value is not applicable and has no plausible relation with t_{max}.

In addition to the evaluation based on t_{max}, the quantity of VFC and oil removed by vacuum extraction shall be assessed. A completely emptied refrigerating system shall be deemed as defective if S_k < 0,24 kg.

5.1.2 Ratio of total quantity of VFC and oil recovered by vacuum extraction to the reduction in the appliance mass after vacuum extraction has been completed: q_{Mtot}

According to A.2.6 a) in EN 50574:2012, a mass balance analysis shall be carried out by calculating the ratio (q_{Mtot}) of the sum of the total mass of VFC recovered and the total mass of oil recovered (*outR* + *outL*) to the total mass reduction (*S*) of all appliances after vacuum extraction has been completed. This ratio q_{Mtot} is a measure of the total system performance in terms of the overall quantity of oil and refrigerant recovered.

A value of q_{Mtot} > 0,95 and < 1,05 is deemed plausible.

5.1.3 Number of oil containing refrigerating system: N

According to A.2.6 e) in EN 50574:2012, the average quantity of oil per refrigerating system is calculated by dividing the total mass of oil recovered (*outL*) by the number of refrigerating systems containing oil (*N*). The result (V_L) represents the quantity of oil recovered per refrigerating system. The parameter N refers to the number of appliances for which S_k > 0,050 kg.

5.1.4 Residual oil in compressors

According to 5.2 (1) in EN 50574:2012 all oil shall be removed from the refrigerating system. All oil shall be considered removed if the average residual amount of oil in the opened compressors is less than 10 g.

If the average residual amount of oil in the opened compressors according to A.2.6 of EN 50574:2012 exceeds the limit of 10 g then the residual amount of other compressors from the test shall be determined.

NOTE In order to get a representative figure one could measure the total amount of residual oil left in all the compressors.

5.2 Step 2

5.2.1 Masses of PU for the individual appliance categories VFC 1–3 (i) and VHC 1–3 (i): $w_{i,VFC}$ and $w_{i,VHC}$

According to Clause 6 in EN 50574:2012, the mass of PU originally present in the individual appliance categories (w_1, w_2, w_3) shall be defined. The masses of PU insulating foam in VFC-containing and VHC-containing appliances in the categories 1–3 vary from country to country or relevant playing field area.

Characteristic numbers for the individual areas are as follows:

- The values for $w_{i,VFC}$ and $w_{i,VHC}$ for the Northern European countries are:
  - $wN_{i,VFC}$: cat 1: 3,66 kg; cat 2: 4,88 kg; cat 3: 6,10 kg;
  - $wN_{i,VHC}$: cat 1: 4,36 kg; cat 2: 5,81 kg; cat 3: 7,26 kg;
- The values for $w_{i,VFC}$ and $w_{i,VHC}$ for the Mid European countries are:
  - $wM_{i,VFC}$: cat 1: 3,14 kg; cat 2: 4,18 kg; cat 3: 5,23 kg;
  - $wM_{i,VHC}$: cat 1: 4,36 kg; cat 2: 5,81 kg; cat 3: 7,26 kg;
- The values for $w_{i,VFC}$ and $w_{i,VHC}$ for the Southern and Eastern European countries are:
  - $wSE_{i,VFC}$: cat 1: 2,45 kg; cat 2: 3,26 kg; cat 3: 4,08 kg;
  - $wSE_{i,VHC}$: cat 1: 4,36 kg; cat 2: 5,81 kg; cat 3: 7,26 kg;

w_{iVHC} data are based on a limited number of tests and may be subject to change. If there are clear and comprehensible evidences, that in a single country numbers for w_{iVHC} are higher or lower than the average numbers in the geographical area these new numbers shall be used in the respective country.

In case of an appliance without doors the amount of foam of the appliance shall be reduced by 20 %.

NOTE 1 Countries are listed in Annex A.

NOTE 2 Categories are defined in 3.2 of the EN 50574:2012.

NOTE 3 A successful VFC test combined with tests on base of Annex B of EN 50574:2012 with solely VHC appliances of one category are deemed to be clear and comprehensible evidences.

5.2.2 Concentration of VFC in VFC-PU (input) and Concentration of VHC in VHC-PU (input): f_{VFC} / f_{VHC}

According to Clause 6 in EN 50574:2012, the concentration of VFC and VHC blowing agents present in the PU foam contained in appliances shall be defined. The following values are applicable in all European countries:

- **f_{VFC} = 8,5 %**
- **f_{VHC} = 3,8 %**

These values are needed in order to calculate the amounts of VFC and VHC that can potentially be expected to be recovered during plant performance tests and the target values derived from them.

6 Monitoring system and regular reporting (5.2 to 5.6 / Annex C of EN 50574:2012)

6.1 General

According to 5.5 of EN 50574:2012, the operator shall monitor the input and output information of step 1, step 2 and step 3 treatment of the plant.

The monitoring system shall demonstrate the recovery performance of the daily business. The role of the monitoring system is to provide evidence of the regular reporting, as well as an internal control system for the operator to measure and evaluate the daily recovery performance.

6.2 Information to be monitored

The monitoring information required may be found in Clause 5 and Annex C of the EN 50574:2012 and within other clauses of the standard.

6.3 Targets for day-to-day business

6.3.1 General

The monitoring data collected day-to-day shall be evaluated at least on a weekly basis.

The evaluation shall include the recovery rates and analysis of the performance of the plant in order to assess the achievements against the following:

If the operator doesn't reach these targets of the day-to-day business, failure will be justified and the operator shall activate corrective actions and monitor the related results.

6.3.2 Step 2

The mass of refrigerant recovered per intact refrigerating system in day-to-day business shall be not lower than 90 % of the expected mass.

The mass of oil recovered per oil containing refrigerating system in day-to-day business shall be not lower than 90 % by weight of the expected mass of oil.

NOTE 1 The expected mass of VFC is anticipated to be 126 g of refrigerant per intact refrigerating system. The expected mass of VHC is anticipated to be 54 g of refrigerant per refrigerating system.

The expected mass of oil is anticipated to be 240 g oil per VFC containing compressor. VHC containing compressors might have a different mass of oil. If there is clear and comprehensive evidence that the