Commission Delegated Regulation (EU) No 392/2012 of 1 March 2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household tumble driers (Text with EEA relevance)

ANNEX VII

Method for calculating the Energy Efficiency Index and the weighted condensation efficiency

1. CALCULATION OF THE ENERGY EFFICIENCY INDEX

For the calculation of the Energy Efficiency Index (*EEI*) of a household tumble drier model, the weighted Annual Energy Consumption of a household tumble drier for the standard cotton programme at full and partial load is compared to its Standard Annual Energy Consumption.

(a) The Energy Efficiency Index (*EEI*) is calculated as follows and rounded to one decimal place:

$$\mathrm{EEI} = \frac{\mathrm{AE_C}}{\mathrm{SAE_C}} \times 100$$

where:

AE_C	=	weighted Annual Energy Consumption of the household tumble drier.
SAE_C	=	standard Annual Energy Consumption of the household tumble drier.

(b) The Standard Annual Energy Consumption (SAE_C) is calculated in kWh/year as follows and rounded to two decimal places:

— for all household tumble driers that are not air-vented:

$$SAE_C = 140 \times c^{0,8}$$

— for air-vented household tumble driers:

$$\mathrm{SAE_C} = 140 \times c^{0,8} - \left(30 \times \frac{T_t}{60}\right)$$

where:

c	is the rated capacity of the household tumble drier for the standard cotton programme.
T_t	is the weighted programme time for the standard cotton programme.

(c) The weighted Annual Energy Consumption (AE_C) is calculated in kWh/year as follows and is rounded to two decimal places:

(i)

$$\mathrm{AE_C} = E_t \times 160 + \frac{\left[P_o \times \frac{525600 - (T_t \times 160)}{2} + P_l \times \frac{525600 - (T_t \times 160)}{2}\right]}{60 \times 1000}$$

where:

E_t	=	weighted energy consumption, in kWh and rounded to two decimal places.
P_o	=	power in 'off-mode' for the standard cotton programme at full load, in W and rounded to two decimal places.
P_l	=	power in 'left-on mode' for the standard cotton programme at full load, in W and rounded to two decimal places.

T_t	=	weighted programme time, in minutes and rounded to the nearest minute.
160	=	total number of drying cycles per year.

(ii) When the household tumble drier is equipped with a power management system, with the household tumble drier reverting automatically to 'off-mode' after the end of the programme, the weighted Annual Energy Consumption (AE_C) is calculated taking into consideration the effective duration of the 'left-on mode', according to the following formula:

$$AE_C = E_t \times 160 + \frac{\{(P_l \times T_l \times 160) + P_o \times [525600 - (T_t \times 160) - (T_l \times 160)]\}}{60 \times 1000}$$

where:

T_l	=	duration of the 'left-on mode' for the standard cotton programme at full load, in minutes and rounded to the nearest minute.

(d) The weighted programme time (T_t) for the standard cotton programme is calculated in minutes as follows and rounded to the nearest minute:

$T_t = (3 \times T_{dry} + 4 \times T_{dry½})/7$

where:

T_{dry}	=	programme time for the standard cotton programme at full load, in minutes and rounded to the nearest minute.
$T_{dry½}$	=	programme time for the standard cotton programme at partial load, in minutes and rounded to the nearest minute.

(e) The weighted energy consumption (E_t) is calculated in kWh as follows and rounded to two decimal places:

$E_t = (3 \times E_{dry} + 4 \times E_{dry½})/7$

where:

E_{dry}	=	energy consumption of the standard cotton programme at full load, in kWh and rounded to two decimal places.
$E_{dry½}$	=	energy consumption of the standard cotton programme at partial load, in kWh and rounded to two decimal places.

(f) For gas-fired household tumble driers, the energy consumption for the standard cotton programme at full and partial load is calculated in kWh and rounded to two decimal places, as:

$$E_{dry} = \frac{Eg_{dry}}{f_g} + Eg_{dry,a}$$

$$E_{dry\,½} = \frac{Eg_{dry\,½}}{f_g} + Eg_{dry\,½,a}$$

where:

Eg_{dry}	=	gas consumption of the standard cotton programme at full load, in kWh and rounded to two decimal places.

$Eg_{dry½}$	=	gas consumption of the standard cotton programme at partial load, in kWh and rounded to two decimal places.
$Eg_{dry,a}$	=	auxiliary electricity consumption of the standard cotton programme at full load, in kWh and rounded to two decimal places.
$Eg_{dry½,a}$	=	auxiliary electricity consumption of the standard cotton programme at partial load, in kWh and rounded to two decimal places.
f_g	=	2,5.

2. CALCULATION FOR THE PRODUCT INFORMATION DESCRIBED IN 'ANNEX II PRODUCT FICHE', 'ANNEX III TECHNICAL DOCUMENTATION' AND 'ANNEX IV INFORMATION TO BE PROVIDED IN CASES WHERE END-USERS CANNOT BE EXPECTED TO SEE THE PRODUCT DISPLAYED'

For gas-fired household tumble driers, the energy consumption on gas for the standard cotton programme at full and partial load for the information in Annex II, III and IV is calculated in kWh_{Gas} and rounded to two decimal places, as:

$$AE_{C(Gas)} = 160 \times (3 \times Eg_{dry} + 4 \times Eg_{dry1/2})/7$$

For gas-fired household tumble driers, the energy consumption on electricity for the standard cotton programme at full and partial load for the information in Annex II, III and IV is calculated in kWh and rounded to two decimal places, as:

$$AE_{C(Gas)el} = 160 \times (3 \times Eg_{dry,a} + 4 \times Eg_{dry1/2,a})/7 + ((P_l \times T_l \times 160) + P_o \times [525\,600 - (T_t \times 160) - (T_l \times 160)])/60 \times 1\,000$$

3. CALCULATION OF THE WEIGHTED CONDENSATION EFFICIENCY

The condensation efficiency of a programme is the ratio between the mass of moisture condensed and collected in the container of a condenser household tumble drier and the mass of moisture removed from the load by the programme, the latter being the difference between the mass of the wet test load before drying and the mass of the test load after drying. For calculating the weighted condensation efficiency, the average condensation efficiency for the standard cotton programme at both full and partial load is considered.

The weighted condensation efficiency (C_t) of a programme is calculated as a percentage and rounded to the nearest whole percent as:

$$C_t = (3 \times C_{dry} + 4 \times C_{dry½})/7$$

where:

C_{dry}	=	average condensation efficiency of the standard cotton programme at full load.
$C_{dry½}$	=	average condensation efficiency of the standard cotton programme at partial load.

The average condensation efficiency C is calculated from the condensation efficiencies of test runs and expressed as a percentage:

$$C = \frac{1}{(n-1)} \sum_{j=2}^{n} \left(\frac{W_{wj}}{W_i - W_f} \times 100 \right)$$

where:

n	is the number of test runs, comprising at least four valid test runs for the selected programme.
j	is the test run number.
W_{wj}	is the mass of water collected in the condenser reservoir during test run *j*.
W_i	is the mass of the wet test load before drying.
W_f	is the mass of the test load after drying.

Changes to legislation:
There are outstanding changes not yet made to Commission Delegated Regulation (EU) No 392/2012. Any changes that have already been made to the legislation appear in the content and are referenced with annotations.
View outstanding changes

Changes and effects yet to be applied to the whole legislation item and associated provisions

- Signature words omitted by S.I. 2019/539 Sch. 5 para. 6(5)
- Annex 1 para. 1 image substituted by S.I. 2020/1528 Sch. 5 para. 7(2)
- Annex 1 para. 2 image substituted by S.I. 2020/1528 Sch. 5 para. 7(3)
- Annex 1 para. 3 image substituted by S.I. 2020/1528 Sch. 5 para. 7(4)
- Annex 1 para. 4.1 image substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(a)
- Annex 1 para. 4.2 image substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(b)
- Annex 1 para. 4.3 image substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(c)
- Annex 1 s. 1para. 1.2 words inserted by S.I. 2019/539 Sch. 5 para. 6(6)(a)
- Annex 1 s. 2para. 2.2 words inserted by S.I. 2019/539 Sch. 5 para. 6(6)(b)
- Annex 1 s. 3para. 3.2 words inserted by S.I. 2019/539 Sch. 5 para. 6(6)(c)
- Annex 1 para. 4.1(d) words omitted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(iii)
- Annex 1 para. 4.2(d) words omitted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(iii)
- Annex 1 para. 4.3(d) words omitted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(iii)
- Annex 1 para. 4.1(d) words substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(i)
- Annex 1 para. 4.2(d) words substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(i)
- Annex 1 para. 4.3(d) words substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(i)
- Annex 1 para. 4.1(d) words substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(ii)
- Annex 1 para. 4.2(d) words substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(ii)
- Annex 1 para. 4.3(d) words substituted by S.I. 2020/1528 Sch. 5 para. 7(5)(d)(ii)
- Annex 1 para. 1.2 words substituted in earlier amending provision S.I. 2019/539, Sch. 5 para. 6(6)(a) by S.I. 2020/1528 reg. 4
- Annex 1 para. 2.2 words substituted in earlier amending provision S.I. 2019/539, Sch. 5 para. 6(6)(b) by S.I. 2020/1528 reg. 4
- Annex 1 para. 3.2 words substituted in earlier amending provision S.I. 2019/539, Sch. 5 para. 6(6)(c) by S.I. 2020/1528 reg. 4
- Annex 5(7) omitted by S.I. 2019/539 Sch. 5 para. 6(9)(b)
- Annex 3 para. 1(c) word substituted by S.I. 2019/539 Sch. 5 para. 6(8)
- Annex 2 para. 1(h) words inserted by S.I. 2019/539 Sch. 5 para. 6(7)
- Annex 2 para. 1(h) words substituted in earlier amending provision S.I. 2019/539, Sch. 5 para. 6(7) by S.I. 2020/1528 reg. 4
- Art. 3(c) words substituted by S.I. 2019/539 Sch. 5 para. 6(2)
- Art. 3(c) words substituted in earlier amending provision S.I. 2019/539, Sch. 5 para. 6(2) by S.I. 2020/1528 reg. 6(1)reg. 6(2)(c)(vi)