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Commission Delegated Regulation (EU) 2019/331 of 19 December 2018 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council (Text with EEA relevance)

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ANNEX VII

Data monitoring methods

1. SCOPE

This Annex lays down methods for determining data required for reporting the data listed in Annex IV at installation level, as well as rules for attribution of these data to sub-installations, with the exception of data monitored in accordance with a monitoring plan approved by the competent authority pursuant to Regulation (EU) No 601/2012. Data determined in accordance with Regulation (EU) No 601/2012 shall be used under this Regulation where relevant.

2. DEFINITIONS

‘Data set’ for the purposes of this Annex means one type of data, either at installation level or sub-installation level as relevant in the circumstances, as any of the following:

- (a) the amount of fuels or materials consumed or produced by a process as relevant for the calculation-based monitoring methodology, expressed in terajoules, mass in tonnes, or for gases as volume in normal cubic metres, as appropriate, including for waste gases;
- (b) a calculation factor as used by Regulation (EU) No 601/2012 (i.e. composition of a material or fuel or waste gas);
- (c) net quantity of measurable heat, and the relevant parameters required for determining this quantity, in particular:
 - mass flow of heat transfer medium, and
 - enthalpy of transmitted and returned heat transfer medium, as specified by composition, temperature, pressure and saturation;
- (d) quantities of non-measurable heat, specified by the relevant quantities of fuels used for producing the heat, and the net calorific value (NCV) of the fuel mix;
- (e) quantities of electricity;
- (f) quantities of CO₂ transferred between installations.

‘Determination methodology’ means either of the following:

- (a) a methodology of identifying, collecting and processing data already available at the installation for data sets of historical data or;
- (b) a monitoring methodology for a specific data set based on an approved monitoring methodology plan.

In addition, the definitions of ‘source stream’, ‘emission source’, ‘inherent risk’, ‘control risk’ and ‘emission factor’ as set in Article 3 of Regulation (EU) No 601/2012 shall apply.

3. GENERAL METHODS

3.1. Applicable methods

The operator shall determine data for the purpose of compiling a baseline data report in accordance with point (a) of Article 4(2) using methods contained in this Annex. Where this Annex does not describe applicable methods for determining a specific data set, the operator shall apply a suitable method, subject to the approval by the competent authority of the monitoring methodology plan in accordance with Article 6. A method shall be deemed suitable where the operator ensures that any metering, analyses, sampling, calibrations and validations

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for the determination of the specific data set are carried out by applying methods based on corresponding EN standards. Where such standards are not available, the methods shall be based on suitable ISO standards or national standards. Where no applicable published standards exist, suitable draft standards, industry best practice guidelines or other scientifically proven methodologies shall be used, limiting sampling and measurement bias.

3.2. Approach to attributing data to sub-installations

1. Where data for a specific data set are not available for each sub-installation, the operator shall propose an appropriate method for determining the required data for each individual sub-installation, except for cases referred to in the second and third subparagraphs of Article 10(3). For this purpose, either of the following principles shall be applied depending on which principle yields more accurate results:
 - (a) where different products are produced one after the other in the same production line, inputs, outputs and corresponding emissions shall be attributed sequentially based on the usage time per year for each sub-installation;
 - (b) inputs, outputs and corresponding emissions shall be attributed based on the mass or volume of individual products produced or estimates based on the ratio of free reaction enthalpies of the chemical reactions involved or based on another suitable distribution key that is corroborated by a sound scientific methodology.
2. Where several measurement instruments of different quality are contributing to measurement results, either of the following methods shall be used for splitting installation-level data on quantities of materials, fuels, measurable heat or electricity to sub-installations:
 - (a) Determination of the split based on a determination method, such as sub-metering, estimate, correlation, used equally for each sub-installation. Where the sum of the sub-installation data is different from the data determined separately for the installation, a uniform 'reconciliation factor' shall be applied for uniform correction to meet the total figure of the installation as follows:

$RecF = D_{Inst} / \sum D_{SI}$	(Equation 1)
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where RecF is the reconciliation factor, DInst is the data value determined for the installation as a whole, and DSI are the data values for the different sub-installations. The data for each sub-installation are then corrected as follows:

$D_{SI,corr} = D_{SI} \times RecF$	(Equation 2)
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- (b) If only one sub-installation's data are unknown or of lower quality than the data of other sub-installations, known sub-installation data may be subtracted from the total installation data. This method is preferred only for sub-installations which contribute smaller quantities to the installation's allocation.

3.3. Measurement instruments or procedures not under the operator's control

The operator may make use of measurement systems or analytical procedures outside the operator's own control:

- (a) where the operator does not have their own measurement instrument or analytical procedure available for the determination of a specific data set;

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- (b) where determination of a data set by the operator's own measurement instruments or analytical procedures is technically not feasible or would incur unreasonable costs;
- (c) where the operator demonstrates to the satisfaction of the competent authority that the measurement system or analytical procedure outside the operator's control gives more reliable results and is less prone to control risks.

To that end, the operator may revert to one of the following data sources:

- (a) amounts from invoices issued by a trade partner, provided that a commercial transaction between two independent trade partners takes place;
- (b) direct readings from the measurement systems;
- (c) use of empirical correlations provided by a competent and independent body, such as equipment suppliers, engineering providers or accredited laboratories.

3.4. Indirect determination methods

Where no direct metering or analysis approach is available for a required data set, in particular for cases where net measurable heat is going into different production processes, the operator shall propose the use of an indirect determination method, such as:

- (a) calculation based on a known chemical or physical process, using appropriate accepted literature values for the chemical and physical properties of substances involved, appropriate stoichiometric factors and thermodynamic properties such as reaction enthalpies, as appropriate;
- (b) calculation based on the installation's design data such as the energy efficiencies of technical units or calculated energy consumption per unit of product;
- (c) correlations based on empirical tests for determining estimation values for the required data set from non-calibrated equipment or data documented in production protocols. For this purpose the operator shall ensure that the correlation satisfies the requirements of good engineering practice and that it is applied only to determine values which fall into the range for which it was established. The operator shall evaluate the validity of such correlations at least once a year.

4. SELECTION OF DETERMINATION METHODOLOGIES AND DATA SOURCES REPRESENTING HIGHEST ACHIEVABLE ACCURACY

4.1. Technical feasibility

Where an operator claims that applying a specific determination methodology is technically not feasible, the competent authority shall assess the technical feasibility taking the operator's justification into account. That justification shall be based on the operator having technical resources capable of meeting the needs of a proposed system or requirement that can be implemented in the required time for the purposes of this Regulation. Those technical resources shall include availability of required techniques and technology.

4.2. Unreasonable costs

Where an operator claims that applying a specific determination methodology incurs unreasonable costs, the competent authority shall assess the unreasonable nature of the costs, taking into account the operator's justification.

The competent authority shall consider costs unreasonable where the operator's cost estimation exceeds the benefit of a specific determination methodology. To that end, the benefit shall be

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calculated by multiplying an improvement factor with a reference price of EUR 20 per allowance and costs shall include an appropriate depreciation period based on the economic lifetime of the equipment, where applicable.

The improvement factor shall be 1 % of the most recently determined sub-installation's annual allocation free of charge. By way of derogation from this calculation method, the competent authority may allow operators to determine the improvement factor as 1 % of the affected CO₂ equivalent. The affected CO₂ equivalent shall be one the following, depending on the parameter for which the improvement of methodology is considered:

- (a) In the case of a fuel or material containing carbon, including waste gases, the emissions that would result if the carbon contained in the annual quantity of the fuel or material were converted into CO₂;
- (b) In the case of emissions monitored by a measurement-based methodology, the annual emissions of the respective emission source;
- (c) In the case of measurable heat, the respective annual amount of measurable heat multiplied by the heat benchmark;
- (d) In the case of non-measurable heat, the respective annual amount of non-measurable heat multiplied by the fuel benchmark;
- (e) In the case of electricity, the respective annual amount of electricity multiplied by the factor specified in Article 22(3);
- (f) In the case of the quantity of a product for which a product benchmark applies, the sub-installation's preliminary annual number of emission allowances allocated free of charge determined in accordance with Article 16(2) for the first year of the respective allocation period. Where the relevant benchmark has not yet been determined in accordance with Article 10a(2) of Directive 2003/87/EC, the respective benchmark specified in Annex I to this Regulation shall be used.

Measures relating to the improvement of an installation's monitoring methodology shall not be deemed to incur unreasonable costs up to an accumulated amount of EUR 2 000 per year. For installations with low emissions in accordance with Article 47 of Regulation (EU) No 601/2012 that threshold shall be EUR 500 per year.

4.3. **Process**

To determine the most accurate available data sources, the operator shall select the most accurate data sources which are technically feasible and do not incur unreasonable costs, and which ensure a clear data flow with lowest inherent risk and control risk (referred to hereinafter as 'primary data sources'). The operator shall use the primary data sources for the purpose of compiling the baseline data report.

To the extent feasible without incurring unreasonable costs, for the purpose of the control system in accordance with Article 11, the operator shall strive to identify and use additional data sources or methods for determining data which allow corroboration of the primary data sources (referred to hereinafter as 'corroborating data sources'). The selected corroborating data sources, if any, shall be documented in the written procedures referred to in Article 11(2) and in the monitoring methodology plan.

For selecting the primary data sources, the operator shall compare all available data sources for the same data set using the generic data sources listed in sections 4.4 to 4.6, and use one of the highest ranked data sources that are considered as most accurate data sources. Only if any of the derogations in accordance with Article 7(2) apply, other data sources may be used.

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In such case, the next highest ranked data source shall be applied unless it is technically not feasible, would incur unreasonable costs or another data source has equivalent or lower level of associated uncertainty. Where needed, further data sources can be considered.

For selecting the corroborating data sources, the operator shall compare all available data sources for the same data set using the generic data sources listed in sections 4.4 to 4.6, and use an available data source other than the most accurate available data source.

For selecting data sources in order to determine all the data required in accordance with Annex IV, the operator shall proceed for the following main types of data sets as follows:

- (a) For the determination of quantities of products, fuels and other materials the operator shall take into account the generic data sources and their hierarchy laid down in section 4.4 of this Annex;
- (b) For the determination of quantities of energy flows (measurable or non-measurable heat, electricity) the operator shall take into account the generic data sources and their hierarchy laid down in section 4.5 of this Annex;
- (c) For the determination of properties of products, fuels and other materials, the operator shall take into account the generic data sources and their hierarchy laid down in section 4.6 of this Annex.

For the purpose of improving the monitoring methodology plan, the operator shall check regularly and at least once per year, whether new data sources have become available. In case such new data sources are considered more accurate in accordance with the ranking described in sections 4.4 to 4.6, they shall be applied and the monitoring methodology plan shall be changed in accordance with Article 9.

4.4. Selecting data sources for quantification of materials and fuels

The following generic data sources shall be used selecting most accurate available data sources for quantifying amounts (expressed as tonnes or Nm³) of materials, fuels, waste gases or products entering or leaving the installation, or any sub-installation:

- (a) Methods in accordance with the monitoring plan approved under Regulation (EU) No 601/2012;
- (b) Readings of measuring instruments subject to national legal metrological control or measuring instruments compliant with the requirements of Directive 2014/31/EU of the European Parliament and of the Council⁽¹⁾ or Directive 2014/32/EU of the European Parliament and of the Council⁽²⁾ for direct determination of a data set;
- (c) Readings of measuring instruments under the operator's control for direct determination of a data set not falling under point (b);
- (d) Readings of measuring instruments not under the operator's control for direct determination of a data set not falling under point (b);
- (e) Readings of measuring instruments for indirect determination of a data set, provided that an appropriate correlation between the measurement and the data set in question is established in line with section 3.4;
- (f) Other methods, in particular for historical data or where no other data source can be identified by the operator as available.

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For selecting data sources for the purpose of Article 7(1), only the data sources listed in points (a) and (b) of the first paragraph are considered representing most accurate data sources while the data source referred to in point (a) of that paragraph shall be used to the extent that it covers the respective data set. The data sources referred to in points (c) to (f) of the first paragraph are considered less accurate in the descending hierarchical order from point (c) to point (f).

4.5. Selecting data sources for quantification of energy flows

The following generic data sources shall be used for selecting most accurate available data sources quantifying amounts, expressed as TJ or GWh, of measurable heat or electricity entering or leaving the installation, or any sub-installation:

- (a) Readings of measuring instruments subject to national legal metrological control or measuring instruments compliant with the requirements of the Directive 2014/31/EU or Directive 2014/32/EU for direct determination of a data set;
- (b) Readings of measuring instruments under the operator's control for direct determination of a data set not falling under point a;
- (c) Readings of measuring instruments not under the operator's control for direct determination of a data set not falling under point a;
- (d) Readings of measuring instruments for indirect determination of a data set, provided that an appropriate correlation between the measurement and the data set in question is established in line with section 3.4 of this Annex;
- (e) Calculation of a proxy for the determining net amounts of measurable heat in accordance with method 3 of section 7.2;
- (f) Other methods, in particular for historical data or where no other data source can be identified by the operator as available.

For selecting data sources for the purpose of Article 7(1), only the data source referred to in point (a) of the first paragraph is considered representing most accurate data sources. The data sources referred to in points (b) to (f) of the first paragraph are considered less accurate in the descending hierarchical order from point (b) to point (f).

For situations where no information is available for some parameters (such as temperature and amount of condensate returned) required to determine net flows of measurable heat, the provisions of section 7 are to be applied. In accordance with section 7, several parameters need to be determined in order to result in annual net amounts of measurable heat. Therefore the overall result for the annual net amount of heat should be considered the purpose of the simplified uncertainly assessment in accordance with point (c) of Article 7(2) for the for selection of the methods referred to in points (b) to (f) of the first paragraph when deviating from the selection of data sources representing most accurate data sources.

4.6. Selecting data sources for properties of materials

The following generic data sources shall be used selecting most accurate available data sources for determining properties such as moisture or purity of the substance, carbon content, net calorific value, biomass content, etc. of products, materials, fuels or waste gases as inputs or outputs of the installation or sub-installation:

- (a) Methods for determining calculation factors in accordance with the monitoring plan approved under Regulation (EU) No 601/2012;
- (b) Laboratory analyses in accordance with section 6.1 of this Annex;

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- (c) Simplified laboratory analyses in accordance with section 6.2 of this Annex;
- (d) Constant values based on one of the following data sources:
 - standard factors used by the Member State for its national inventory submission to the Secretariat of the United Nations Framework Convention on Climate Change;
 - literature values agreed with the competent authority, including standard factors published by the competent authority, which are compatible with factors referred to under the previous sub-item, but they are representative of more disaggregated sources of fuel streams;
 - values specified and guaranteed by the supplier of a fuel or material where the operator can demonstrate to the satisfaction of the competent authority that the carbon content exhibits a 95 % confidence interval of not more than 1 %;
- (e) Constant values based on one of the following data sources:
 - standard factors and stoichiometric factors listed in Annex VI to Regulation (EU) No 601/2012 or listed in the Intergovernmental Panel on Climate Change (IPCC) guidelines;
 - values based on analyses carried out in the past, where the operator can demonstrate to the satisfaction of the competent authority that those values are representative for future batches of the same fuel or material;
 - Other values based on scientific evidence.

For selecting data sources for the purpose of Article 7(1), only the data sources referred to in points (a) and (b) of the first paragraph are considered representing most accurate data sources while data source referred to in point (a) of that paragraph shall be used to the extent that it covers the respective data set. The data sources referred to in points (c) to (e) of the first paragraph are considered less accurate in the descending hierarchical order from point (c) to point (e).

5. METHODS FOR DETERMINING ANNUAL QUANTITIES OF MATERIALS AND FUELS

Where the operator has to determine annual quantities of fuels or materials, including products relating to product benchmark sub-installations, the operator shall determine such quantities at installation level or for each relevant sub-installation, as required, in one of the following ways:

- (a) based on continual metering at the process where the material is consumed or produced;
- (b) based on aggregation of metering of quantities separately delivered or produced taking into account relevant stock changes.

For the purposes of point (b) of the first paragraph, the quantity of fuel or material consumed during the calendar year at the installation or sub-installation shall be calculated as the quantity of fuel or material imported during the calendar year, minus the quantity of fuel or material exported, plus the quantity of fuel or material in stock at the beginning of the calendar year, minus the quantity of fuel or material in stock at the end of the calendar year.

For the purposes of point (b) of the first paragraph, the quantity of product or other material exported during the calendar year shall be calculated as the quantity of product or material exported during the reporting period, minus the quantity imported or recycled into the process, minus the quantity of product or material in stock at the beginning of the calendar year, plus the quantity of product or material in stock at the end of the calendar year.

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Where it is technically not feasible or would incur unreasonable costs to determine quantities in stock by direct measurement, the operator may estimate those quantities based on one of the following:

- (a) data from previous years and correlated with appropriate activity levels for the reporting period;
- (b) documented procedures and respective data in audited financial statements for the reporting period.

Where the determination of quantities of products, materials or fuels for the entire calendar year is technically not feasible or would incur unreasonable costs, the operator may choose the next most appropriate day to separate a reporting year from the following one, and reconcile accordingly to the calendar year required. The deviations involved for one or more product, material or fuel shall be clearly recorded, form the basis of a value representative for the calendar year, and be considered consistently in relation to the next year.

6. REQUIREMENTS FOR LABORATORY ANALYSES AND RELATED SAMPLING

6.1. Requirements for laboratory analyses

Where the operator needs to carry out laboratory analyses for determining properties (including moisture, purity, concentration, carbon content, biomass fraction, net calorific value, density) of products, materials, fuels or waste gases, or for establishing correlations between parameters for the purpose of indirect determination of required data, the analyses shall be carried out in accordance with Articles 32 to 35 of Regulation (EU) No 601/2012, using an approved sampling plan for ensuring that samples are representative for the batch to which they relate. Where Annex VII to Regulation (EU) No 601/2012 does not provide an appropriate minimum frequency of analyses for a particular product, material or fuel, the operator shall propose a suitable analysis frequency for approval by the competent authority based on information on the heterogeneity of the product, material or fuel.

6.2. Simplified requirements for certain laboratory analyses

Where the operator provides evidence to the satisfaction of the competent authority that analyses in accordance with section 6.1 are technically not feasible or would incur unreasonable costs, the operator shall carry out the required analyses based on industry best practice, or use established proxies, in combination with an empirical correlation to an easier accessible parameter, determined at least once per year in accordance with section 6.1.

7. RULES FOR DETERMINING NET MEASURABLE HEAT

7.1. Principles

All specified amounts of measurable heat shall always refer to *net* amount of measurable heat, determined as the heat content (enthalpy) of the heat flow transmitted to the heat consuming process or external user minus the heat content of the return flow.

Heat consuming processes necessary for operating the heat production and distribution, such as deaerators, make-up water preparation, and regular blow offs, shall be taken into account in the efficiency of the heat system and can therefore not be considered heat consuming processes eligible for allocation.

Where the same heat medium is used by several consecutive processes and its heat is consumed starting from different temperature levels, the quantity of heat consumed by each heat consuming process shall be determined separately, unless the processes fall within the same sub-

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installation. Re-heating of the transfer medium between consecutive heat consuming processes should be treated like additional heat production.

Where heat is used to provide cooling via an absorption cooling process, that cooling process shall be considered as the heat consuming process.

7.2. Methodologies for determining net amounts of measurable heat

For the purpose of selecting data sources for quantification of energy flows in accordance with section 4.5, following methodologies for determining net amounts of measurable heat shall be considered:

Method 1: Using measurements

Under this method, the operator measures all relevant parameters, in particular temperature, pressure, state of the transmitted as well as the returned heat medium. The state of the medium in case of steam shall refer to its saturation or degree of superheating. The operator furthermore measures the (volumetric) flow rate of the heat transfer medium. Based on the measured values, the operator determines the enthalpy and the specific volume of the heat transfer medium using suitable steam tables or engineering software.

The mass flow rate of the medium is calculated as

$\dot{m} = \dot{V} / v$	(Equation 3)
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Where \dot{m} is the mass flow rate in kg/s, \dot{V} is the volumetric flow rate in m³/s and v is the specific volume in m³/kg.

As the mass flow rate is considered the same for transmitted and returned medium, the heat flow rate is calculated using the difference in enthalpy between the transmitted flow and the return, as follows:

$\dot{Q} = (h_{flow} - h_{return}) \cdot \dot{m}$	(Equation 4)
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Where \dot{Q} is the heat flow rate in kJ/s, h_{flow} is the enthalpy of the transmitted flow in kJ/kg, h_{return} is the enthalpy of the return flow in kJ/kg, and \dot{m} is the mass flow rate in kg/s.

In case of steam or hot water used as heat transfer medium, where the condensate is not returned, or where it is not feasible to estimate the enthalpy of the returned condensate, the operator shall determine h_{return} based on a temperature of 90 °C.

If the mass flow rates are known to be not identical, the following shall apply:

- Where the operator provides evidence to the satisfaction of the competent authority that condensate remains in the product (e.g. in ‘life steam injection’ processes), the respective amount of condensate enthalpy is not deducted;
- Where heat transfer medium is known to be lost (e.g. due to leakages or sewerage), an estimate for the respective mass flow shall be deducted from the mass flow of the transmitted heat transfer medium.

For determining the annual net heat flow from the above data, the operator shall – subject to the measurement equipment and data processing available, use one of the following methods:

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- Determine annual average values for the parameters determining the annual average enthalpy of the transmitted and returned heat medium, and multiply with the total annual mass flow, using equation 4;
- Determine hourly values of the heat flow and sum up those values over the annual total operating time of the heat system. Subject to the data processing system, hourly values may be substituted by other time intervals as appropriate.

Method 2: Using documentation

The operator determines net amounts of measurable heat based on documents in accordance with section 4.6 of this Annex, provided that heat quantities provided in such documents are based on metering, or on reasonable estimation methods in accordance with section 3.4 of this Annex.

Method 3: Calculation of a proxy based on measured efficiency

The operator determines amounts of net measurable heat based on the fuel input and the measured efficiency related to the heat production:

$Q = \eta_H \cdot E_{IN}$	(Equation 5)
$E_{IN} = \sum AD_i \cdot NCV_i$	(Equation 6)

Where Q is the amount of heat expressed in TJ, η_H is the measured efficiency of heat production, E_{IN} is the energy input from fuels, AD_i are the annual activity data (i.e. quantities consumed) of fuels i , and NCV_i the net calorific values of fuels i .

The value of η_H is either measured by the operator over a reasonably long period, which sufficiently takes into account different load states of the installation or taken from the manufacturer's documentation. In that regard the specific part load curve is to be taken into account by using an annual load factor:

$L_F = E_{IN}/E_{Max}$	(Equation 7)
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Where L_F is the load factor, E_{IN} the energy input as determined using Equation 6 over the calendar year, and E_{Max} the maximum fuel input if the heat producing unit had been running at 100 % nominal load for the full calendar year.

The efficiency should be based on a situation in which all condensate is returned. A temperature of 90 °C should be assumed for the returned condensate.

Method 4: Calculating a proxy based on the reference efficiency

This method is identical to method 3, but using a reference efficiency of 70 % ($\eta_{Ref,H} = 0,7$) in Equation 5.

7.3. Distinguishing district heating, EU ETS and non-ETS heat

Where an installation imports measurable heat, the operator shall determine separately the quantity of heat coming from installations covered by the EU ETS, and heat imported from non-EU ETS entities. Where an installation consumes measurable heat exported from a nitric acid product benchmark sub-installation, the operator shall determine that amount of heat consumed separately from other measurable heat.

Where an installation exports measurable heat, the operator shall determine separately the quantity of heat exported to installations covered by the EU ETS, and heat exported to non-EU

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ETS entities. Furthermore, the operator shall determine separately quantities of heat qualifying as district heating.

8. RULES FOR ASSIGNING FUELS AND EMISSIONS OF COMBINED HEAT AND POWER PRODUCTION (CHP) FOR THE PURPOSE OF UPDATING BENCHMARK VALUES

This section applies to situations where an operator, for the purpose of updating benchmark values, has to attribute inputs, outputs and emissions of cogeneration units to sub-installations.

For the purposes of this section, ‘cogeneration’ is used as defined in point (30) of Article 2 of Directive 2012/27/EU of the European Parliament and of the Council⁽⁹⁾.

The emissions of a cogeneration unit are determined as

$$Em_{CHP} = \sum AD_i \cdot NCV_i \cdot EF_i + Em_{FGC} \quad (\text{Equation 8})$$

Where Em_{CHP} are the annual emissions of the cogeneration unit expressed as t CO₂, AD_i are the annual activity data (i.e. quantities consumed) of fuels i used for the CHP unit expressed in tonnes or Nm³, NCV_i the net calorific values of fuels i expressed as TJ/t or TJ/Nm³, and EF_i the emission factors of fuels i expressed in t CO₂/TJ. Em_{FGC} are process emissions from flue gas cleaning expressed in t CO₂.

The energy input to the CHP unit is calculated in accordance with Equation 6. The respective annual average efficiencies of heat production and electricity (or mechanical energy, if applicable) production are calculated as follows:

$$\eta_{heat} = Q_{net}/E_{IN} \quad (\text{Equation 9})$$

$$\eta_{el} = E_{el}/E_{IN} \quad (\text{Equation 10})$$

Where η_{heat} (dimensionless) is the annual average efficiency of heat production, Q_{net} is the annual net amount of heat produced by the cogeneration unit expressed as TJ as determined in accordance with section 7.2, E_{IN} the energy input as determined using Equation 6 expressed as TJ, η_{el} (dimensionless) is the annual average efficiency of electricity production, and E_{el} the net annual electricity production of the cogeneration unit, expressed as TJ.

Where the operator provides evidence to the satisfaction of the competent authority that the determination of the efficiencies η_{heat} and η_{el} is technically not feasible or would incur unreasonable costs, values based on technical documentation (design values) of the installation shall be used. If no such values are available, conservative default values of $\eta_{heat} = 0,55$ and $\eta_{el} = 0,25$ should be used.

The attribution factors for heat and electricity from CHP are calculated as

$$F_{CHP,Heat} = \frac{\eta_{heat}/\eta_{ref,heat}}{\eta_{heat}/\eta_{ref,heat} + \eta_{el}/\eta_{ref,el}} \quad (\text{Equation 11})$$

$$F_{CHP,El} = \frac{\eta_{el}/\eta_{ref,el}}{\eta_{heat}/\eta_{ref,heat} + \eta_{el}/\eta_{ref,el}} \quad (\text{Equation 12})$$

Where $F_{CHP,Heat}$ is the attribution factor for heat and $F_{CHP,El}$ is the attribution factor for electricity (or mechanical energy, if applicable), both expressed without dimension $\eta_{ref,heat}$ is the reference

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efficiency for heat production in a stand-alone boiler, and $\eta_{ref,el}$ the reference efficiency of electricity production without cogeneration. For the reference efficiencies the operator shall apply the appropriate fuel-specific values from the Commission Delegated Regulation (EU) 2015/2402⁽⁴⁾ without application of the correction factors for avoided grid losses in Annex IV to that Regulation.

For attributing the energy input or emissions of the cogeneration unit to the production of heat and electricity (or mechanical energy, if applicable), the operator shall multiply the total energy input or emissions with the respective attribution factor for heat or electricity.

The specific emission factor of the CHP-related measurable heat to be used for the attribution of heat-related emissions to sub-installations in accordance with section 10.1.2 is calculated as

$EF_{CHP,Heat} = Em_{CHP} \cdot F_{CHP,Heat}/Q_{net}$	(Equation 13)
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Where $EF_{CHP,heat}$ is the emission factor for the production of measurable heat in the cogeneration unit expressed as t CO₂/TJ.

9. PROCEDURE FOR TRACKING PRODCOM CODES OF PRODUCTS

For the purpose of correct attribution of data to sub-installations, the operator shall maintain a list of all products produced at the installation and their applicable PRODCOM codes, based on NACE rev. 2. Based on this list, the operator shall:

- Attribute products and their annual production figures to product benchmark sub-installations in accordance with product definitions provided in Annex I where appropriate;
- Take this information into account for attributing inputs, outputs and emissions separately to sub-installations related to sectors exposed to a significant risk of carbon leakage or not exposed to such risk, in accordance with Article 10.

To this end the operator shall establish, document, implement and maintain a procedure for regular checking whether the products produced in the installation confirm with the PRODCOM codes applied when setting up the monitoring methodology plan. This procedure shall furthermore contain provisions to identify if the installation produces a new product for the first time, and to ensure that the operator determines the applicable PRODCOM code for the new product, add it to the list of products and attributes related inputs, outputs and emissions to the appropriate sub-installation.

10. RULES FOR DETERMINING EMISSIONS AT SUB-INSTALLATION LEVEL FOR THE PURPOSE OF UPDATING BENCHMARK VALUES

10.1. Emissions at sub-installation level

For the purpose of Article 10, the operator shall attribute the installation's total emissions to sub-installations applying, where applicable, the provisions of sections 3.2 and 10.1.1 to 10.1.5 of this Annex.

10.1.1. Direct attribution of source streams or emission sources

1. Emissions of source streams or emission sources serving only one sub-installation are attributed to that sub-installation in full. Where the operator uses a mass balance, outgoing source streams shall be subtracted in accordance with Article 25 of Regulation (EU) No 601/2012. For avoiding double counting, source streams which are converted into waste gases, with the exception of waste gases produced and fully

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consumed within the same product benchmark sub-installation, shall not be attributed using this approach.

2. Only where source streams or emission sources serve more than one sub-installation, the following approaches for attribution of emissions apply:
 - Emissions from source streams or emission sources used for the production of measurable heat shall be attributed to sub-installations in accordance with section 10.1.2;
 - Where waste gases are not used within the product benchmark sub-installation in which it is produced, the emissions stemming from waste gases shall be attributed in accordance with section 10.1.5;
 - Where the amounts of source streams attributable to sub-installations are determined by metering before the use in the sub-installation, the operator shall apply the appropriate methodology in accordance with section 3.2.
 - Where emissions from source streams or emission sources cannot be attributed in accordance with other approaches, they shall be attributed using correlated parameters, which have already been attributed to sub-installations in accordance with section 3.2. For that purpose, the operator shall attribute source stream amounts and their respective emissions proportionally to the ratio in which those parameters are attributed to sub-installations. Appropriate parameters include the mass of products produced, mass or volume of fuel or material consumed, amount of non-measurable heat produced, operating hours, or known equipment efficiencies.

10.1.2. Emissions attributable to measurable heat

Where the sub-installation consumes measurable heat produced within the installation, the operator shall determine, where applicable, the heat-related emissions using one of the following methods.

1. For measurable heat produced from the combustion of fuels within the installation except heat produced by cogeneration, the operator determines the emission factor of the relevant fuel mix and calculates emissions attributable to the sub-installation as

$$Em_{Q,sub-inst} = EF_{mix} \cdot Q_{consumed,sub-inst} / \eta \quad \text{(Equation 14)}$$

Where $Em_{Q,sub-inst}$ is the heat-related emissions of the sub-installation in t CO₂, EF_{mix} is the emission factor of the respective fuel mix expressed as t CO₂/TJ including emissions from flue gas cleaning, where applicable, $Q_{consumed,sub-inst}$ is the amount of measurable heat consumed in the sub-installation expressed in TJ, and η is the efficiency of the heat production process.

EF_{mix} is calculated as

$$EF_{mix} = (\sum AD_i \cdot NCV_i \cdot EF_i + Em_{FGC}) / (\sum AD_i \cdot NCV_i) \quad \text{(Equation 15)}$$

Where AD_i are the annual activity data (i.e. quantities consumed) of fuels i used for the measurable heat production expressed in tonnes or Nm³, NCV_i the net calorific values of fuels i expressed as TJ/t or TJ/Nm³, and EF_i the emission factors of fuels i expressed in t CO₂/TJ. Em_{FGC} are process emissions from flue gas cleaning expressed in t CO₂.

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Where a waste gas is part of the fuel mix used, the emission factor of that waste gas is adjusted before calculating EF_{mix} in accordance with point (b) of section 10.1.5 of this Annex.

2. For measurable heat produced in cogeneration units where fuels are combusted within the installation, the operator determines the emission factor of the relevant fuel mix and calculates emissions attributable to the sub-installation as

$\frac{Em_{Q,CHP,sub-inst}}{Q_{cons,CHP,sub-inst}} = EF_{CHP,Heat}$	(Equation 16)
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Where $Em_{Q,CHP,sub-inst}$ is the CHP-heat-related emissions of the sub-installation in t CO₂, $EF_{CHP,Heat}$ is the emission factor of the heat part of the cogeneration unit as determined in accordance with section 8 expressed as t CO₂/TJ including emissions from flue gas cleaning, where applicable, and $Q_{cons,CHP,sub-inst}$ is the amount of measurable heat produced by cogeneration within the installation and consumed in the sub-installation expressed in TJ.

Where a waste gas is part of the fuel mix used in the cogeneration unit, the emission factor of that waste gas is adjusted before calculating $EF_{CHP,Heat}$ in accordance with point (b) of section 10.1.5.

3. Where measurable heat is recovered from processes covered by a product benchmark sub-installation, a fuel benchmark sub-installation or a process emission sub-installation, the operator shall report those amounts of heat as being transferred between the relevant sub-installations in the baseline data report in accordance with point (a) of Article 4(2).
4. Where measurable heat is imported from other installations covered by the EU ETS or from installations or entities not covered by the EU ETS, the emission factor related to the production of that heat shall be reported, if available.
5. The operator shall attribute zero emissions to measurable heat produced from electricity, but report the related amounts of measurable heat in the baseline data report in accordance with point (a) of Article 4(2).

10.1.3. Attribution of emissions related to heat losses

Where losses of measurable heat are determined separately from the amounts used in sub-installations, in order to satisfy the criterion in accordance with point (c) of Article 10(5), the operator shall add emissions in relation to a proportionate quantity of heat losses to the emissions of all sub-installations in which measurable heat produced in the installation is used, using emission factors determined in accordance with section 10.1.2 of this Annex.

10.1.4. Attribution of emissions related to non-measurable heat

In order to attribute emissions related to the use of non-measurable heat that is not included in a product benchmark sub-installation, the operator shall attribute the relevant source streams or emission sources to sub-installations in accordance with section 10.1.1, using the relevant emission factors. The operator shall attribute only fuels and source streams related to process emissions from flue gas cleaning to uses of non-measurable heat.

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Where a waste gas is part of the fuel mix used, the emission factor of that waste gas is adjusted before attributing its emissions to non-measurable heat use, in accordance with point (b) of section 10.1.5.

10.1.5. Attribution of emission for the production and use of waste gases

The emissions from waste gases are split into two parts, except where they are used in the same product benchmark sub-installation where they are produced, as follows:

- (a) An amount of emissions assigned to the production of the waste gas is attributed under the product benchmark sub-installation where the waste gas is produced.

This amount is calculated as follows:

$Em_{WG} = V_{WG} \cdot NCV_{WG} \cdot (EF_{WG} - EF_{NG} \cdot Corr_{\eta})$	(Equation 17)
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Where Em_{WG} is the amount of emissions assigned to the production of the waste gas, V_{WG} is the volume of waste gas produced expressed as Nm^3 or t, NCV_{WG} is the net calorific value of the waste gas expressed as TJ/ Nm^3 or TJ/t, EF_{WG} is the emission factor of the waste gas expressed as t CO_2 /TJ, EF_{NG} is the emission factor of natural gas (56,1 t CO_2 /TJ), and $Corr_{\eta}$ is a factor that accounts for the difference in efficiencies between the use of waste gas and the use of the reference fuel natural gas. The default value of this factor is equal to 0,667.

- (b) An amount of emissions assigned to the consumption of the waste gas is attributed to the product benchmark sub-installation, heat benchmark sub-installation, district heating sub-installation or fuel benchmark sub-installation, where it is consumed. This amount is determined by multiplying the amount and calorific value of the waste gas with the value of the heat or fuel benchmark, as applicable.

10.2. Attributed emissions to sub-installations

The operator shall determine the attributed emissions of each sub-installation as a sum of:

- (a) emissions related to source streams relevant for the sub-installation determined in accordance with section 10.1.1, as applicable;
- (b) emissions attributable to measurable heat consumed in the sub-installation determined in accordance with sections 10.1.2 and 10.1.3, as applicable;
- (c) emissions attributable to non-measurable heat consumed in the sub-installation determined in accordance with section 10.1.4, as applicable;
- (d) emissions attributable to the production or use of waste gases in the sub-installation determined in accordance with section 10.1.5, as applicable.

In this calculation, the operator shall ensure that neither omissions nor double counting of source streams occur.

The operator shall also determine the difference between the total emissions of the installation and the sum of attributed emissions of all sub-installations relevant at the installation. If applicable, the operator shall identify all processes contributing to this difference and corroborate the plausibility of the attribution by estimating the emissions associated with these processes, in particular with source streams used for electricity production and for flaring other than safety flaring.

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- (1) Directive 2014/31/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of non-automatic weighing instruments ([OJ L 96, 29.3.2014, p. 107](#)).
- (2) Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments ([OJ L 96, 29.3.2014, p. 149](#)).
- (3) Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC ([OJ L 315, 14.11.2012, p. 1](#)).
- (4) Commission Delegated Regulation (EU) 2015/2402 of 12 October 2015 reviewing harmonised efficiency reference values for separate production of electricity and heat in application of Directive 2012/27/EU of the European Parliament and of the Council and repealing Commission Implementing Decision 2011/877/EU ([OJ L 333, 19.12.2015, p. 54](#)).

Changes to legislation:

There are outstanding changes not yet made to Commission Delegated Regulation (EU) 2019/331. Any changes that have already been made to the legislation appear in the content and are referenced with annotations.

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Changes and effects yet to be applied to :

- Regulation applied (with modifications) by S.I. 2023/850 art. 20(1)
- Regulation revoked by S.I. 2019/916 reg. 62
- Regulation word substituted by S.I. 2020/1557 Sch. 1 para. 2

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

- Signature words omitted by S.I. 2020/1557 Sch. 1 para. 32
- Annex 7 s. 4.2 sum substituted by S.I. 2020/1557 Sch. 1 para. 37(5)(a)(i)
- Annex 7 s. 4.2 sum substituted by S.I. 2020/1557 Sch. 1 para. 37(5)(a)(ii)(aa)
- Annex 7 s. 4.2 sum substituted by S.I. 2020/1557 Sch. 1 para. 37(5)(a)(ii)(cc)
- Annex 7 s. 7.3 word substituted by S.I. 2020/1557 Sch. 1 para. 37(7)(b)(ii)
- Annex 7 s. 7.3 word substituted by S.I. 2020/1557 Sch. 1 para. 37(7)(c)(ii)
- Annex 7 s. 1 words inserted by S.I. 2020/1557 Sch. 1 para. 37(2)(a)
- Annex 7 s. 4.4 words inserted by S.I. 2020/1557 Sch. 1 para. 37(5)(b)(i)
- Annex 7 s. 4.6 words inserted by S.I. 2020/1557 Sch. 1 para. 37(5)(d)(i)
- Annex 7 s. 7.3 words inserted by S.I. 2020/1557 Sch. 1 para. 37(7)(a)
- Annex 7 s. 7.3 words inserted by S.I. 2020/1557 Sch. 1 para. 37(7)(b)(i)
- Annex 7 s. 7.3 words inserted by S.I. 2020/1557 Sch. 1 para. 37(7)(c)(i)
- Annex 7 s. 10.1.2 words inserted by S.I. 2020/1557 Sch. 1 para. 37(8)(b)
- Annex 7 s. 1 words substituted by S.I. 2020/1557 Sch. 1 para. 37(2)(b)
- Annex 7 s. 2 words substituted by S.I. 2020/1557 Sch. 1 para. 37(3)(a)
- Annex 7 s. 2 words substituted by S.I. 2020/1557 Sch. 1 para. 37(3)(b)
- Annex 7 s. 3.1 words substituted by S.I. 2020/1557 Sch. 1 para. 37(4)
- Annex 7 s. 4.2 words substituted by S.I. 2020/1557 Sch. 1 para. 37(5)(a)(ii)(bb)
- Annex 7 s. 4.4 words substituted by S.I. 2020/1557 Sch. 1 para. 37(5)(b)(ii)
- Annex 7 s. 4.5 words substituted by S.I. 2020/1557 Sch. 1 para. 37(5)(c)
- Annex 7 s. 4.6 words substituted by S.I. 2020/1557 Sch. 1 para. 37(5)(d)(ii)
- Annex 7 s. 4.6 words substituted by S.I. 2020/1557 Sch. 1 para. 37(5)(d)(iii)
- Annex 7 s. 6.1 words substituted by S.I. 2020/1557 Sch. 1 para. 37(6)
- Annex 7 s. 10.1.1 words substituted by S.I. 2020/1557 Sch. 1 para. 37(8)(a)
- Annex 7 s. 4.2(f) words substituted by S.I. 2023/850 art. 14(2)
- Annex 4 s. 1.1 word omitted by S.I. 2020/1557 Sch. 1 para. 34(3)(a)(iii)
- Annex 4 s. 1.1 word substituted by S.I. 2020/1557 Sch. 1 para. 34(3)(a)(i)
- Annex 4 s. 2.6 word substituted by S.I. 2020/1557 Sch. 1 para. 34(4)(c)(i)
- Annex 4 s. 1.6 heading words inserted by S.I. 2020/1557 Sch. 1 para. 34(3)(d)(i)
- Annex 4 s. 1.6 words inserted by S.I. 2020/1557 Sch. 1 para. 34(3)(d)(ii)(aa)
- Annex 4 s. 2.3 words inserted by S.I. 2020/1557 Sch. 1 para. 34(4)(b)(i)
- Annex 4 s. 2.3 words inserted by S.I. 2020/1557 Sch. 1 para. 34(4)(b)(ii)
- Annex 4 s. 2.3 words inserted by S.I. 2020/1557 Sch. 1 para. 34(4)(b)(iii)
- Annex 4 s. 2.3 words inserted by S.I. 2020/1557 Sch. 1 para. 34(4)(b)(iv)
- Annex 4 s. 2.3 words inserted by S.I. 2020/1557 Sch. 1 para. 34(4)(b)(v)
- Annex 4 s. 2.3 words inserted by S.I. 2020/1557 Sch. 1 para. 34(4)(b)(vi)
- Annex 4 s. 2.3 words inserted by S.I. 2020/1557 Sch. 1 para. 34(4)(b)(vii)(bb)
- Annex 4 s. 2.6 words inserted by S.I. 2020/1557 Sch. 1 para. 34(4)(c)(iii)(bb)
- Annex 4 s. 1.1 words omitted by S.I. 2020/1557 Sch. 1 para. 34(3)(a)(ii)
- Annex 4 s. 1.4 words omitted by S.I. 2020/1557 Sch. 1 para. 34(3)(c)(i)
- Annex 4 s. 2.3 words omitted by S.I. 2020/1557 Sch. 1 para. 34(4)(b)(vii)(aa)
- Annex 4 s. 1.3 words substituted by S.I. 2020/1557 Sch. 1 para. 34(3)(b)(i)

- Annex 4 s. 1.3 words substituted by S.I. 2020/1557 Sch. 1 para. 34(3)(b)(ii)
- Annex 4 s. 1.4 words substituted by S.I. 2020/1557 Sch. 1 para. 34(3)(c)(ii)
- Annex 4 s. 1.6 words substituted by S.I. 2020/1557 Sch. 1 para. 34(3)(d)(ii)(bb)
- Annex 4 s. 2.1 words substituted by S.I. 2020/1557 Sch. 1 para. 34(4)(a)(i)(aa)
- Annex 4 s. 2.1 words substituted by S.I. 2020/1557 Sch. 1 para. 34(4)(a)(i)(bb)
- Annex 4 s. 2.1 words substituted by S.I. 2020/1557 Sch. 1 para. 34(4)(a)(ii)
- Annex 4 s. 2.6 words substituted by S.I. 2020/1557 Sch. 1 para. 34(4)(c)(ii)
- Annex 4 s. 2.6 words substituted by S.I. 2020/1557 Sch. 1 para. 34(4)(c)(iii)(aa)
- Annex 4 s. 2.7 words substituted by S.I. 2020/1557 Sch. 1 para. 34(4)(d)
- Annex 6 para. 1(c) omitted by S.I. 2022/1173 art. 24(2)(a)
- Annex 6 s. 1 word substituted by S.I. 2020/1557 Sch. 1 para. 36(2)(a)
- Annex 6 s. 1 words inserted by S.I. 2020/1557 Sch. 1 para. 36(2)(b)(i)
- Annex 6 s. 1 words inserted by S.I. 2020/1557 Sch. 1 para. 36(2)(b)(ii)
- Annex 6 s. 4 words substituted by S.I. 2020/1557 Sch. 1 para. 36(3)
- Annex 6 para. 1(d) words substituted by S.I. 2022/1173 art. 24(2)(b)
- Art. 2(1) Art. 2 renumbered as Art. 2(1) by S.I. 2020/1557 Sch. 1 para. 4(2)
- Art. 2.1(1) substituted by S.I. 2020/1557 Sch. 1 para. 4(3)(a)
- Art. 2(2)(3) inserted by S.I. 2020/1557 Sch. 1 para. 4(4)
- Art. 2.1(3) words inserted by S.I. 2020/1557 Sch. 1 para. 4(3)(b)
- Art. 2.1(4) words inserted by S.I. 2020/1557 Sch. 1 para. 4(3)(c)
- Art. 2.1(5) words inserted by S.I. 2020/1557 Sch. 1 para. 4(3)(d)
- Art. 2.1(10) words substituted by S.I. 2020/1557 Sch. 1 para. 4(3)(e)
- Art. 2.1(11) words substituted by S.I. 2020/1557 Sch. 1 para. 4(3)(f)
- Art. 2.1(14) substituted by S.I. 2020/1557 Sch. 1 para. 4(3)(g)
- Art. 2.1(15) omitted by S.I. 2020/1557 Sch. 1 para. 4(3)(h)
- Art. 2.1(19)-(23) inserted by S.I. 2020/1557 Sch. 1 para. 4(3)(i)
- Art. 2a inserted by S.I. 2020/1557 Sch. 1 para. 5
- Art. 3a inserted by S.I. 2020/1557 Sch. 1 para. 7
- Art. 4(1)(1A) substituted for Art. 4(1) by S.I. 2020/1557 Sch. 1 para. 8(3)
- Art. 4(2)(a) words omitted by S.I. 2020/1557 Sch. 1 para. 8(4)(a)(ii)
- Art. 4(2)(a) words substituted by S.I. 2020/1557 Sch. 1 para. 8(4)(a)(i)
- Art. 4(2)(b) words inserted by S.I. 2020/1557 Sch. 1 para. 8(4)(b)(i)
- Art. 4(2)(b) words inserted by S.I. 2020/1557 Sch. 1 para. 8(4)(b)(ii)
- Art. 4(2)(c) substituted by S.I. 2020/1557 Sch. 1 para. 8(4)(c)
- Art. 4(3)(4) inserted by S.I. 2020/1557 Sch. 1 para. 8(5)
- Art. 5(3a) inserted by S.I. 2022/1173 art. 20(2)
- Annex 8 inserted by S.I. 2023/850 art. 15
- Art. 8(6)(7) inserted by S.I. 2020/1557 Sch. 1 para. 12(5)
- Art. 8(7)(c) inserted by S.I. 2021/1455 art. 30(2)
- Art. 10(5)(b) words inserted by S.I. 2020/1557 Sch. 1 para. 14(5)(a)(i)
- Art. 10(5)(b) words inserted by S.I. 2020/1557 Sch. 1 para. 14(5)(a)(ii)
- Art. 10(5)(d) word substituted by S.I. 2020/1557 Sch. 1 para. 14(5)(b)(ii)
- Art. 10(5)(d) words inserted by S.I. 2020/1557 Sch. 1 para. 14(5)(b)(i)
- Art. 15a inserted by S.I. 2020/1557 Sch. 1 para. 18
- Art. 16(2)(a)-(d) words substituted by S.I. 2023/850 art. 12(2)
- Art. 16(2)(d) word substituted by S.I. 2020/1557 Sch. 1 para. 19(4)(a)(ii)
- Art. 16(10)-(12) inserted by S.I. 2020/1557 Sch. 1 para. 19(11)
- Art. 16(10) words substituted by S.I. 2023/850 art. 12(4)
- Art. 16(12) words substituted by S.I. 2023/850 art. 12(5)(a)
- Art. 16(12)(a) words substituted by S.I. 2023/850 art. 12(5)(b)
- Art. 16(12)(b) words substituted by S.I. 2023/850 art. 12(5)(c)
- Art. 16a16b inserted by S.I. 2020/1557 Sch. 1 para. 20
- Art. 17(1) Art. 17 renumbered as Art. 17(1) by S.I. 2020/1557 Sch. 1 para. 21(2)
- Art. 17(1) words substituted by S.I. 2020/1557 Sch. 1 para. 21(3)(a)
- Art. 17(1)(a) words omitted by S.I. 2020/1557 Sch. 1 para. 21(3)(b)
- Art. 17(1)(b) words inserted by S.I. 2020/1557 Sch. 1 para. 21(3)(c)
- Art. 17(1)(c) words inserted by S.I. 2020/1557 Sch. 1 para. 21(3)(d)
- Art. 17(2) inserted by S.I. 2020/1557 Sch. 1 para. 21(4)

- Art. 18(A1)(A2) inserted by S.I. 2020/1557 Sch. 1 para. 22(3)
- Art. 18(1)(a) words inserted by S.I. 2020/1557 Sch. 1 para. 22(4)(a)(ii)
- Art. 18(1)(a) words substituted by S.I. 2023/850 art. 13(2)
- Art. 18(1)(b) words substituted by S.I. 2020/1557 Sch. 1 para. 22(4)(b)
- Art. 18(2A) inserted by S.I. 2020/1557 Sch. 1 para. 22(6)
- Art. 18(7) inserted by S.I. 2020/1557 Sch. 1 para. 22(9)
- Art. 18a inserted by S.I. 2020/1557 Sch. 1 para. 23
- Art. 25(3)(b) words substituted by S.I. 2022/1173 art. 22(2)
- Art. 25(6)(b) words substituted by S.I. 2022/1173 art. 22(3)
- Art. 25(8)(a) words substituted by S.I. 2022/1173 art. 22(4)
- Art. 25(9)(b) words substituted by S.I. 2022/1173 art. 22(5)
- Art. 25(10)(c)(d) inserted by S.I. 2022/1173 art. 22(6)