Headquarters,
Johnstown Castle Estate,
County Wexford, Ireland

GREENHOUSE GAS EMISSIONS PERMIT

Permit Register Number: IE-GHG168-10430-4

Operator: DuPont Nutrition Manufacturing Ireland Limited
Arthur Cox Building
10 Earlsfort Terrace
Dublin 2
DO2 T380

Installation Name: DuPont Nutrition Ireland

Site Name: DuPont Nutrition Manufacturing Ireland Limited

Location: Wallingstown
Little Island
Cork
Ireland

Introductory Note

This introductory note does not form a part of the Greenhouse Gas Emissions Permit.

This Greenhouse Gas Emissions Permit authorises the holder to undertake named activities resulting in emissions of Carbon Dioxide from the listed emission sources. It also contains requirements that must be met in respect of such emissions, including monitoring and reporting requirements. This Greenhouse Gas Emissions Permit places an obligation on the Operator to surrender allowances to the Agency equal to the annual reportable emissions of carbon dioxide equivalent from the installation in each calendar year, no later than four months after the end of each such year.

Contact with Agency:

If you contact the Agency about this Greenhouse Gas Emissions Permit please quote the following reference: Greenhouse Gas Emissions Permit Nº IE-GHG168-10430.

All correspondence in relation to this permit should be addressed to:

Email: help.ets@epa.ie

By Post: Climate Change Unit, Environmental Protection Agency
P.O. Box 3000, Johnstown Castle Estate,
Co. Wexford

Updating of the permit:

This Greenhouse Gas Emissions Permit may be updated by the Agency, subject to compliance with Condition 2. The current Greenhouse Gas Emissions Permit will normally be available on the Agency's website at www.epa.ie and ETSWAP.

Surrender of the permit:

Before this Greenhouse Gas Emissions Permit can be wholly or partially surrendered, a written application must be made to the on-line ETS portal, and written permission received from, the Agency through ETSWAP.

Transfer of the permit or part of the permit:

Before this Greenhouse Gas Emissions Permit can be wholly or partially transferred to another Operator a joint written application to transfer this Greenhouse Gas Emissions Permit must be made (by both the existing and proposed Operators) to, and written permission received from, the Agency through the on-line ETS portal ETSWAP.

Licence held pursuant to the Environmental Protection Agency Act 1992, as amended. (as of the date of this permit)**:**

Status Log

Current Permit

Permit number	Date application received	Date Permit issued	Comment
IE-GHG168-10430-4	20 December 2019	24 February 2020	Update of Operator name from FMC Manufacturing Ltd to DuPont Nutrition Manufacturing Ireland Ltd. Update of installation name from "FMC International" to "DuPont Nutrition Ireland" and site name from "FMC Manufacturing Ltd" to "DuPont Nutrition Manufacturing Ireland Limited". Update of the thermal input capacity details of emission source S6 from 5.48MW to 6.67MW. Inclusion of the additional emission source S14 Generator and source stream GO-3. Removal of the emission sources S7 and S8 CHP-1 and CHP-2 and associated metering device.

Previous Permits

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG168-10430-1	GHG Permit Application	05 July 2013	02 August 2013	
IE-GHG168-10430-2	GHG Variation	18 December 2013	14 April 2014	Inclusion of the source stream Acetylene.

Permit number	Change Type	Date application received	Date Permit issued	Comment
IE-GHG168-10430-3	GHG Variation	17 December 2018	17 January 2019	The replacement of 2 No. Fire pumps with a single fire pump of similar capacity. Removal of (S10) and emission point reference (A113b). S9 capacity updated to 0.42MW. Replacement of S6 boiler (capacity 3.25 MW) with a new boiler (capacity 5.48 MW).

End of Introductory Note

Glossary of Terms

For the purposes of this permit the terms listed in the left hand column shall have the meaning given in the right hand column below:

The Agency	Environmental Protection Agency.
Agreement	Agreement in writing.
Allowance	Permission to emit to the atmosphere one tonne of carbon dioxide equivalent during a specified period issued for the purposes of Directive 2003/87/EC by the Agency or by a designated national competent authority of a Member State of the European Union.
Annual Reportable Emissions	Reportable Emissions of carbon dioxide made in any calendar year commencing from 1 January 2005 or the year of commencement of the activity, whichever is the later.
A & V Regulation	Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council and any amendments or revisions thereto.
Category A Installation	As defined in Article 19.2 (a) of the M&R Regulation.
Category B Installation	As defined in Article 19.2 (b) of the M&R Regulation.
Category C Installation	As defined in Article 19.2 (c) of the M&R Regulation.
The Directive	Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.
Emissions	The release of greenhouse gases into the atmosphere from sources in an installation.
EPA	Environmental Protection Agency.
Fall-Back Methodology	As defined in Article 22 of the M&R Regulation.
GHG	Greenhouse gas.
GHG Permit	Greenhouse gas emissions permit.
Greenhouse Gas	Any of the gases in Schedule 2 of the Regulations.
IPC/IE	Integrated Pollution Control/Industrial Emissions.
Installation	Any stationary technical unit where one or more activities listed in Schedule 1 to the Regulations are carried out. Also any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution. References to an installation include references to part of an installation.

Installation with low emissions	As defined in Article 47 of the M&R Regulation.
Major Source Streams	As defined in Article 19.3 (c) of the M&R Regulation.
M&R Regulation	Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and any amendments or revisions thereto.
Mis-statement	An omission, misrepresentation or error in the Operators reported data, not considering the uncertainty permissible pursuant to Article 12(1)(a) of Regulation (EU) no 601/2012.
N/A	Not applicable.
Monitoring Plan	The Plan submitted and approved in accordance with Condition 3.1 of this permit and attached at Appendix 1.
Non-conformity	Any act or omission by the Operator, either intentional or unintentional, that is contrary to the greenhouse gas emissions permit and the requirements of the Monitoring Plan.
The National Administrator	The person so designated in accordance with the requirements of any Regulations adopted as provided for under Article 19.3 of Directive 2003/87/EC.
The Operator (for the purposes of this permit)	DuPont Nutrition Manufacturing Ireland Limited
"operator"	Any person who operates or controls an installation or to whom decisive economic power over the functioning of the installation has been delegated.
Person	Any natural or legal person.
Reportable emissions	The total releases to the atmosphere of carbon dioxide (expressed in tonnes of carbon dioxide equivalent) from the emission sources specified in Table 2 and arising from the Schedule 1 activities which are specified in Table 1.
The Regulations	European Communities (Greenhouse Gas Emissions Trading) Regulations 2012 (S.I. No 490 of 2012) and any amendments or revisions thereto.
The Verifier	A legal person or another legal entity carrying out verification activities pursuant to Regulation (EU) No 600/2012 and accredited by a national accreditation body pursuant to Regulation (EC) No 765/2008 and Regulation (EU) No 600/2012 or a natural person otherwise authorised, without prejudice to Article 5(2) of Regulation (EC) No 765/2008, at the time a verification report is issued.
The Registry	The Registry as provided for under Article 19 of Directive 2003/87/EC.

Schedule 1	Schedule 1 to the Regulations.

Reasons for the Decision

The Agency is satisfied, on the basis of the information available, that subject to compliance with the conditions of this permit, the Operator is capable of monitoring and reporting emissions in accordance with the requirements of the Regulations.

Activities Permitted

Pursuant to the Regulations the Agency issues this Greenhouse Gas Emissions Permit, subject to any subsequent revisions, corrections or modifications it deems appropriate, to:

The Operator:

DuPont Nutrition Manufacturing Ireland Limited
Arthur Cox Building
10 Earlsfort Terrace
Dublin 2
DO2 T380

Company Registration Number: 152876

to carry out the following

Categories of activity:

Annex 1 Activity
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)

at the following installation(s):

DuPont Nutrition Ireland **Installation number:** 130

located at

Wallingstown
Little Island
Cork
Ireland

subject to the five conditions contained herein, with the reasons therefor and associated tables attached thereto.

Conditions

Condition 1. The Permitted Installation

1.1 This permit is being granted in substitution for the previous GHG permit granted to the Operator as listed in the Status Log of this GHG permit.

1.2 The Operator is authorised to undertake the activities and/or the directly associated activities specified in Table 1 below resulting in the emission of carbon dioxide:

Table 1 - Activities which are listed in Schedule 1 of the Regulations and other directly associated activities carried out on the site:

Installation No.: 130

Activity Description
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)

Directly Associated Activity Description
(S 12) Wastewater treatment

1.3 Carbon dioxide from Schedule 1 activities shall be emitted to atmosphere only from the emission sources as listed in Table 2 below:

Table 2 Emission Sources and Capacities:

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S1	Bowen Dryer	5.23	MW
S2	Niro 1 Dryer	5.23	MW
S3	Niro 2 Dryer	8.26	MW
S4	Fluidised Bed Dryer	0.9	MW
S5	Boiler	3.9	MW
S6	Boiler	6.67	MW
S9	Fire Pump	0.42	MW

Emission Source Reference	Emission Source Description	Capacity	Capacity Units
S11	Engineering Block Boiler	0.18	MW
S13	Acetylene Welding Workshop	0.31	MW
S14	Generator	0.16	MW

1.4 The activity shall be controlled, operated and maintained so that emissions of carbon dioxide shall take place only as set out in this GHG Emissions Permit. The permit does not control emissions of gases other than carbon dioxide. All agreed plans, programmes and methodologies required to be carried out under the terms of this permit, become part of this permit.

1.5 This GHG Permit is for the purposes of GHG emissions permitting under the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012 and any amendments to the same only and nothing in this permit shall be construed as negating the Operator's statutory obligations or requirements under any other enactments or regulations unless specifically amended by the Regulations.

1.6 Any reference in this permit to 'installation' shall mean the installation as described in the Greenhouse Gas Emissions Permit application and any amendments approved by the Agency.

Reason: To describe the installation and clarify the scope of this permit.

Condition 2. Notification

2.1 No alteration to, or reconstruction in respect of, the activity or any part thereof which would, or is likely to, result in a change in:

2.1.1 the nature or functioning of the installation;

2.1.2 the capacity of the installation as detailed in this permit;

2.1.3 the fuels used at the installation;

2.1.4 the range of activities to be carried out at the installation

that may require updating of the GHG permit shall be carried out or commenced without prior notice to and without the prior written agreement of the Agency.

2.2 The Operator shall notify the Agency in writing of the cessation of all or part of any activity listed in Table 1 of this permit no later than one month from the date of cessation or by 31 December of the year of cessation, whichever is sooner.

2.3 The Operator shall apply for an update of this GHG Permit where there is a change to the Operator name and/or registered address of the Operator, within seven days of the change.

2.4 For installations or parts of installations which have not come into operation when the application for this permit was made the Operator shall notify the Agency of the date of commencement of the activity within seven days of commencement.

2.5 The Operator shall notify the Agency in writing within three days of becoming aware of any factors which may prevent compliance with the conditions of this permit.

2.6 The Operator shall submit to the Agency by 21 January of each year a declaration of operability. The declaration submitted shall be in the format required by the Agency.

2.7 All notifications required under Condition 2 above shall be made to the address given in the Explanatory Note included with this permit.

2.8 The Operator shall submit to the Agency by 31 December of each year all relevant information about any planned or effective changes to the capacity, activity level and operation of an installation. The information submitted shall be in the format required by the Agency.

Reason: To provide for the notification of updated information on the activity.

Condition 3. Monitoring and Reporting

3.1 The Operator shall monitor and record greenhouse gas emissions on site in accordance with the M&R Regulation and the approved Monitoring Plan attached at Appendix 1 to this GHG permit and in compliance with any other guidance approved by the Agency for the purposes of implementing the Directive and/or the Regulations.

3.2 The Operator shall modify the monitoring plan in any of the following situations:

3.2.1 new emissions occur due to new activities carried out or due to the use of new fuels or materials not yet contained in the monitoring plan;

3.2.2 the change of availability of data, due to the use of new measurement instrument types, sampling methods or analysis methods, or for other reasons, leads to higher accuracy in the determination of emissions;

3.2.3 data resulting from the previously applied monitoring methodology has been found incorrect;

3.2.4 changing the monitoring plan improves the accuracy of the reported data, unless this is technically not feasible or incurs unreasonable costs;

3.2.5 the monitoring plan is not in conformity with the requirements of the M&R Regulation and the Agency requests a change;

3.2.6 it is necessary to respond to the suggestions for improvement of the monitoring plan contained in the verification report.

The Operator shall notify any proposals for modification of the monitoring plan to the Agency without undue delay. Any significant modifications of the monitoring plan, as defined in Article 15 of the M&R Regulation, shall be subject to approval by the Agency. Where approved these changes shall be implemented within a timeframe agreed by the Agency.

3.3 Temporary changes to the monitoring methodology:

3.3.1 Where it is for technical reasons temporarily not feasible to apply the tier in the monitoring plan for the activity data or each calculation factor of a fuel or material stream as approved by the Agency, the Operator shall apply the highest achievable tier until the conditions for application of the tier approved in the monitoring plan have been restored. The Operator shall take all necessary measures to allow the prompt restoration of the tier in the approved monitoring plan. The Operator shall notify the temporary change to the monitoring methodology without undue delay to the Agency specifying:

(i) The reasons for the deviation from the tier;

(ii) in detail, the interim monitoring methodology applied by the Operator to determine the emissions until the conditions for the application of the tier in the monitoring plan have been restored;

(iii) the measures the Operator is taking to restore the conditions for the application of the tier in the approved monitoring plan;

(iv) the anticipated point in time when application of the approved tier will be resumed.

3.3.2 A record of all non-compliances with the approved monitoring plan shall be maintained on-site and shall be available on-site for inspection by authorised persons of the Agency and/or by the Verifier at all reasonable times.

3.4 The Operator shall appoint a Verifier to ensure that, before their submission, the reports required by Condition 3.5 below are verified in accordance with the criteria set out in Schedule 5 of the Regulations, the A&V Regulation and any more detailed requirements of the Agency.

3.5 The written report of the verified annual reportable emissions and the verification report in respect of each calendar year shall be submitted to the Agency by the Operator no later than 31 March of the following year. The reports shall be in the format required by the Agency and meet the criteria set out in the M&R and A&V Regulations.

3.6 The Operator shall enter the verified annual reportable emissions figure for the preceding year into the Registry no later than 31 March of the following year. This figure shall be electronically approved by the Verifier in the registry no later than 31 March of each year.

3.7 Where an Operator is applying the Fall-Back methodology, the Operator shall assess and quantify each year the uncertainties of all parameters used for the determination of the annual emissions in accordance with the ISO Guide to the Expression of Uncertainty in Measurement or another equivalent internationally accepted standard and include the verified results in the written report of the verified annual reportable emissions to be submitted to the Agency by 31 March each year.

3.8 An Operator shall submit to the Agency for approval a report containing the information detailed in (i) or (ii) below, where appropriate, by the following deadlines:

(a) for a category A installation, by 30 June every four years;

(b) for a category B installation, by 30 June every two years;

(c) for a category C installation, by 30 June every year.

(i) Where the Operator does not apply at least the tiers required pursuant to the first subparagraph of Article 26(1) and to Article 41(1) of the M&R Regulation, the Operator shall provide a justification as to why it is technically not feasible or would incur unreasonable costs to apply the required tiers. Where evidence is found that measures needed for reaching those tiers have become technically feasible and do not incur unreasonable costs, the Operator shall notify the Agency of appropriate modifications to the monitoring plan and submit proposals for implementing appropriate measures and its timing.

(ii) Where the Operator applies a fall-back monitoring methodology, the Operator shall provide a justification as to why it is technically not feasible or would incur unreasonable costs to apply at least tier 1 for one or more major or minor source streams. Where evidence is found that measures needed for reaching at least tier 1 for those source streams have become technically feasible and do not incur unreasonable costs, the Operator shall notify the Agency of appropriate modifications to the monitoring plan, submit proposals and a timeframe for implementing appropriate measures.

3.9 Where the verification report states outstanding non conformities, misstatements or recommendations for improvements the Operator shall submit a report to the Agency for approval

by 30 June of the year in which the verification report is issued. This requirement does not apply to the Operator of an installation with low emissions where the verification report contains recommendations for improvements only. The report shall describe how and when the Operator has rectified or plans to rectify the non-conformities identified and to implement recommended improvements. Where recommended improvements would not lead to an improvement of the monitoring methodology this must be justified by the Operator. Where the recommended improvements would incur unreasonable costs the Operator shall provide evidence of the unreasonable nature of the costs. The Operator shall implement the improvements specified by the Agency in response to the report submitted in accordance with this Condition in accordance with a timeframe set by the Agency.

3.10 The Operator shall make available to the Verifier and to the Agency any information and data relating to emissions of carbon dioxide which are required in order to verify the reports referred to in Condition 3.5 above or as required by the Agency to facilitate it in establishing benchmarks and/or best practice guidance.

3.11 Provision shall also be made for the transfer of environmental information, in relation to this permit, to the Agency's computer system, as may be requested by the Agency.

3.12 The Operator shall retain all information as specified in the M&R Regulation for a period of at least 10 years after the submission of the relevant annual report.

3.13 A record of independent confirmation of capacities listed in this permit shall be available on-site for inspection by authorised persons of the Agency at all reasonable times.

3.14 The Operator shall keep records of all modifications of the monitoring plan. The records shall include the information specified in Article 16.3 of the M&R Regulation.

3.15 The Operator shall ensure that members of the public can view a copy of this permit and any reports submitted to the Agency in accordance with this permit at all reasonable times. This requirement shall be integrated with the requirements of any public information programme approved by the Agency in relation to any other permit or licence held by the Operator for the site.

Reason: To provide for monitoring and reporting in accordance with the Regulations.

Condition 4. Allowances

4.1 Surrender of Allowances

4.1.1 The Operator shall, by 30 April in each year, surrender to the Agency, or other appropriate body specified by the Agency, allowances equal to the annual reportable emissions in the preceding calendar year.

4.1.2 The number of allowances to be surrendered shall be the annual reportable emissions for the preceding calendar year plus such allowances as may be necessary to cover any earlier calendar year in respect of which allowances remain outstanding and due. This includes allowances to cover the amount of any annual reportable emissions in respect of which allowances were not surrendered in accordance with Condition 4.1.1 in the previous year, and the amount of any reportable emissions which were discovered during the previous year to have been unreported in reports submitted under Condition 3 in that or in earlier years.

4.1.3 In relation to activities or parts of activities which have ceased to take place and have been notified to the Agency in accordance with Condition 2.2 above, the Operator shall surrender to the Agency allowances equal to the annual reportable emissions from such activities in the preceding calendar year or part thereof, together with such allowances as

may be necessary to cover any earlier calendar year in respect of which allowances remain outstanding and due as described in Condition 4.1.2 above.

4.1.4 The Operator may, from 2008 onwards, subject to the provisions of the Regulations and the relevant National Allocation Plan for that compliance year, surrender emission reduction units (ERUs) and certified emission reduction units (CERs) in place of allowances.

4.2 The holding, transfer, surrender and cancellation of allowances shall be in accordance with the requirements of any Regulations adopted as provided for under Article 19.3 of Directive 2003/87/EC, any amendment or revision to the same and any guidance issued by the Agency or the National Administrator.

4.3 The Operator shall provide the National Administrator with all the necessary information for the opening of an Operator holding account for the installation described in Condition 1 of this permit within twenty working days of the issue of this permit, unless such an account is already open.

Reason: *To provide for the surrendering, holding, transfer and cancellation of allowances in respect of reported emissions.*

Condition 5. Penalties

5.1 Any Operator who fails to comply with Condition 4.1 above shall be subject to the provisions of the Regulations, including, but not limited to the payment of penalties.

Reason: To provide for the payment of excess emissions penalties as required under the Regulations.

Sealed by the seal of the Agency on this the 24 February 2020:

PRESENT when the seal of the Agency was affixed hereto:

_____

Ms. Annette Prendergast
Inspector/ Authorised Person

Appendix 1 to Greenhouse Gas Emissions Permit Number IE-GHG168-10430

Monitoring Plan

1. Guidelines & Conditions

1. Directive 2003/87/EC as amended by Directive 2009/29/EC (hereinafter "the (revised) EU ETS Directive") requires operators of installations which are included in the European Greenhouse Gas Emission Trading Scheme (the EU ETS) to hold a valid GHG emission permit issued by the relevant Competent Authority and to monitor and report their emissions and have the reports verified by an independent and accredited verifier.

The Directive can be downloaded from:

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:PDF

2. The Monitoring and Reporting Regulation (Commission Regulation (EU) No 601/2012) (hereinafter the "MRR") defines further requirements for monitoring and reporting.

The MRR can be downloaded from:

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:181:0030:0104:EN:PDF

Article 12 of the MRR sets out specific requirements for the content and submission of the monitoring plan and its updates. Article 12 outlines the importance of the Monitoring plan as follows:

The monitoring plan shall consist of a detailed complete and transparent documentation of the monitoring methodology of a specific installation [or aircraft operator] and shall contain at least the elements laid down in Annex I.

Furthermore Article 74(1) states:

Member States may require the operator and aircraft operator to use electronic templates or specific file formats for submission of monitoring plans and changes to the monitoring plan as well as for submission of annual emissions reports tonne-kilometre data reports verification reports and improvement reports. Those templates or file format specifications established by the Member States shall at least contain the information contained in electronic templates or file format specifications published by the Commission

3. All Commission guidance documents on the Monitoring and Reporting Regulation will be published at the link below as they become available:

http://ec.europa.eu/clima/policies/ets/monitoring/index_en.htm

(a) Information sources:

EU Websites:

EU-Legislation: http://eur-lex.europa.eu/en/index.htm
EU ETS general: http://ec.europa.eu/clima/policies/ets/index_en.htm

Monitoring and Reporting in the EU ETS: http://ec.europa.eu/clima/policies/ets/monitoring/index_en.htm

Environmental Protection Agency Website:

http://www.epa.ie

Environmental Protection Agency Contact:

GHGpermit@epa.ie

2. Application Details

The Installation Name, Site Name and the address of the site of the installation are detailed below. The Site Name and address can be updated from the Organisation Details Page on the ETSWAP website. The Installation Name can only be updated by your Competent Authority.

Installation name	DuPont Nutrition Ireland
Site name	DuPont Nutrition Manufacturing Ireland Limited
Address	Wallingstown Little Island Cork Ireland
Grid reference of site main entrance	174850 71833
Licence held pursuant to the Environmental Protection Agency Act 1992, as amended.	No
Has the regulated activity commenced at the Installation?	Yes
Date of Regulated Activity commencement	04 May 2010

This information is only required to identify the first relevant reporting year of an installation. If the installation was in operation from the beginning of 2008 and held a Greenhouse Gas Emissions Permit from this point, 1 January 2008 will be used where the actual date of commencement is not readily known.

3. About the Operator

The information about the "Operator" is listed below. The "Operator" is defined as the person who it is proposed will have control over the relevant Regulated Activities in the installation in respect of which this application is being made.

(b) Operator Details

The name of the operator and where applicable the company registration number are detailed below. These details can only be updated by the Environmental Protection Agency.

Operator name	DuPont Nutrition Manufacturing Ireland Limited
Company Registration Number	152876

Operator Legal status

The legal status of the operator is:	Company / Corporate Body

(c) Company / Corporate Body

Is the trading / business name different to the operator name?	Yes
Trading / business name	DuPont Nutrition Manufacturing Ireland Limited

Registered office address

Address Line 1	Arthur Cox Building
Address Line 2	10 Earlsfort Terrace
City/Town	Dublin 2
County	N/A
Postcode	DO2 T380

Principal office address

Is the principal office address different to the registered office address?	No

Holding company

Does the company belong to a holding company?	No

(d) Operator Authority

Does the operator named above have the authority and ability to:

a.	manage site operations through having day-to-day control of plant operation including the manner and rate of operation	Yes
b.	ensure that permit conditions are effectively complied with	Yes
c.	control monitor and report specified emissions	Yes
d.	be responsible for trading in Allowances so that at the end of a reporting period allowances can be balanced against reported emissions.	Yes

4. Service Contact

e. Service Contact

Address	Wallingstown Little Island Cork Ireland

5. Installation Activities

f. Installation Description

Below is a description of the installation and its activities, a brief outline description of the site and the installation and the location of the installation on the site. The description also includes a non-technical summary of the activities carried out at the installation briefly describing each activity performed and the technical units used within each activity.

DuPont Nutrition Ireland is part of the DuPont Corporation, one of the world's leaders in products for electronics, imaging, transportation, industrial, nutrition, biosciences, safety and construction industries. The company has a production facility located at Wallingstown, Little Island, Co. Cork. The facility manufactures a range of excipients which are derived from cellulosic materials. An excipient is an inactive substance that serves as a vehicle for drug delivery. The facility covers a site of 44,781 m2. Hours of operation are 24 hours a day, 7 days a week, 365 days a year. The main process involves the cooking of wood pulp and the subsequent drying of the cellulose slurry in spray dryers and fluid bed dryers. The dry powder product is then packed for shipment in drums, boxes or bulk bags.

Carbon emissions from the site are from the combustion of Natural Gas, which is used on the site to fire 3 direct spray dryers, 1 fluidised bed dryer and 2 boilers. The total installed capacity of the combustion plant on the site is 31.26 MW. Emissions will be calculated based on gas imported on the site to run the combustion plant. In addition a De-Minimis quantity of gas oil is combusted in the firepump and engineering block boiler, a De-minimus quantity of acetylene is combusted in the welding workshop and a De-Minimis quantity of gas oil is combusted in the back-up generator.

g. Annex 1 Activities

The table below lists the technical details for each Annex 1 activity carried out at the installation.

Note that 'capacity' in this context means:

- Rated thermal input (for combustion installations) which is defined as the rate at which fuel can be burned at the maximum continuous rating of the installation multiplied by the calorific value of the fuel and expressed as megawatts thermal.
- Production capacity for those specified Annex I activities for which production capacity determines ETS eligibility.

Annex 1 Activity	Total Capacity	Capacity units	Specified Emissions
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)	31.26	MW	Carbon Dioxide

h. Site Diagram

The table below lists attachments (if available) that provide a simple diagram showing emissions sources source streams sampling points and metering/measurement equipment.

Attachment	Description
FMC GHG EP drawing.pdf	FMC GHG Emission Point Diagram
FMC GHG EP drawing Rev 1.pdf	Revised Emission Points Site Drawing
FMC GHG emission Master_Nov 2015_Rev 1.pdf	Revised Emission Points Site Drawing 2018
GHG emission Master_Dec2019_Layout.pdf	Revised Emission Points Site Drawing 2019

i. Estimated Annual Emissions

Detail of the estimated annual emission of CO_2 equivalent. This information enables categorisation of the installation in accordance with Article 19 of the MRR and is based on the average verified annual emissions of the previous trading period data OR if this data is not available or is inappropriate a conservative estimate of annual average emissions including transferred CO_2 excluding CO_2 from biomass.

Estimated Annual Emissions (tonnes $CO_{2(e)}$) 32276

Installation Category: A

6. Emissions Details

j. About your emissions

Annex I of the Monitoring and Reporting Regulations (MRR) requires that monitoring plans include a description of "the installation" and activities to be carried out and monitored including a list of emission sources and source streams. The information provided in this template relates to the Annex I activity(ies) comprised in the installation in question and should relate to a single installation. It includes any activities carried out by the operator and does not include related activities carried out by other operators.

k. Emission Sources

The table below lists all the emission sources at the installation, which may include directly associated activities/excluded activities.

Emission Source Reference	Emission Source Description
S1	Bowen Dryer
S2	Niro 1 Dryer
S3	Niro 2 Dryer
S4	Fluidised Bed Dryer
S5	Boiler
S6	Boiler
S9	Fire Pump
S11	Engineering Block Boiler
S 12	Wastewater treatment
S13	Acetylene Welding Workshop
S14	Generator

The table below lists the emission sources which are linked to the Regulated Activities at the installation.

Emission Source Reference	Emission Source Description
S1	Bowen Dryer
S2	Niro 1 Dryer
S3	Niro 2 Dryer
S4	Fluidised Bed Dryer
S5	Boiler
S6	Boiler
S9	Fire Pump
S11	Engineering Block Boiler
S13	Acetylene Welding Workshop
S14	Generator

l. Emission Points

The table below lists all the emission points at the installation, which may include directly associated activities/excluded activities.

Emission Point Reference	Emission Point Description
A32a	Bowen Dryer Stack

Emission Point Reference	Emission Point Description
A32b	Niro 1 Stack
A32c	Niro 2 Stack
A3.51	Fluidised bed dryer stack
A42A	Boiler stack
A42B	Boiler Stack
A113a	Fire pump exhaust
A114	Engineering block boiler
WWTP	Wastewater treatment
A115	Acetylene welding workshop
EBG	Backup generator exhaust

m. Source Streams (fuels and/or materials)

The table below lists the source streams which are used in Schedule 1 Activities at the installation.

Source Stream Reference	Source Stream Type	Source Stream Description
NG-1	Combustion: Other gaseous & liquid fuels	Natural Gas
GO-1	Combustion: Commercial standard fuels	Gas/Diesel Oil
GO-2	Combustion: Commercial standard fuels	Gas/Diesel Oil
ACT-1	Combustion: Other gaseous & liquid fuels	Acetylene
N/A	Other	n/a
G0-3	Combustion: Commercial standard fuels	Gas/Diesel Oil

n. Emissions Summary

The table below provides a summary of the emission source and source stream details in the installation.

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
NG-1	S1,S2,S3,S4,S5,S6	A3.51,A32a,A32b,A32c,A42A,A42B	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous

Source streams (Fuel / Material)	Emission Source Refs.	Emission Point Refs.	Annex 1 Activity
			or municipal waste)
GO-1	S9	A113a	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
GO-2	S11	A114	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
ACT-1	S13	A115	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
G0-3	S14	EBG	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)

o. Excluded Activities

Certain activities that result in greenhouse gas emissions may be excluded under the EU ETS Directive for example truly mobile sources such as vehicle emissions.

Do you have any excluded activities which need to be identified in your monitoring plan? Yes

Detail of these activities:

Source Stream Refs	Emission Source Ref	Emission Point Ref
N/A	S 12	WWTP

7. Low Emissions Eligibility

p. Low Emissions Eligibility

The operator may submit a simplified monitoring plan for an installation where no nitrous oxide activities are carried out and it can be demonstrated that:

(a) the average verified annual emissions of the installation during the previous trading period was less than 25 000 tonnes $CO_{2(e)}$ per year or;

(b) where this data is not available or inappropriate a conservative estimate shows that emissions for the next 5 years will be less than 25 000 tonnes $CO_{2(e)}$ per year.

Note: the above data shall include transferred CO_2 but exclude CO_2 stemming from biomass.

Does the installation satisfy the criteria for installations with low emissions (as defined by Article 47 of the MRR)?	No

8. Monitoring Approaches

q. Monitoring Approaches

Emissions may be determined using either a calculation based methodology ("calculation") or measurement based methodology ("measurement") except where the use of a specific methodology is mandatory according to the provisions of the MRR. [MRR Article 21].

Note: the operator may subject to competent authority approval combine measurement and calculation for different sources. The operator is required to ensure and demonstrate that neither gaps nor double counting of reportable emissions occurs.

Please specify whether or not you propose to apply the following monitoring approaches. Select all monitoring approaches that are applicable to you. The consecutive sections will become mandatory based on the selected approaches.

Calculation	Yes
Measurement	No
Fall-back approach	No
Monitoring of N_2O	No
Monitoring of PFC	No
Monitoring of transferred / inherent CO_2	No

9. Calculation

r. Approach Description

The calculation approach including formulae used to determine annual CO_2 emissions:

The annual green house gas emissions from the site come from the combustion of natural gas, the combustion of gas oil, diesel and acetylene.

The emissions from the combustion of Natural gas will be calculated as follows:

Energy Provider bills give a value for Gross Calorific Value of the gas supplied each month and the Cubic Meters of gas supplied, corrected to 288.15K. The quantity of gas combusted in cubic meters and the gross calorific value of gas for each month and the kWh of gas combusted will be entered in to a spreadsheet. 3 values entered from each gas bill for each month. The sum of the 12 entries for cubic meters of gas supplied taken from the gas bills each month will be corrected to 273.15K by using the equation Vs (Nm3) = (Va * 273.15) / 288.15. The sum of the 12 entries for monthly kWh's combusted on the site from the gas bills will be multiplied by the net calorific value conversion factor specified in the "country specific net calorific values and CO2 emission factors for use in the annual installation emission report" document relevant for that specific year published on the EPA website. This figure will then be converted to TJ by multiplying by 3.6 X 10^-6. The country specific emission factor for natural gas for the year under review is then multiplied by the total gas combusted that year in TJ and by the oxidation factor (1 in the case of natural gas) to give the total tCO2 emitted from the combustion of natural gas on the site. The total TJ combusted on the site is divided by the total normal cubic meters corrected to 273.15K to give the weighted net calorific value for the gas combusted on the site and this is entered into the annual installation emission report.

The emissions from the combustion of gas oil will be calculated as follows:

The emissions from the engineering block boiler will be calculated by adding up the quantity of Gas Oil delivered to the boiler tank. The level of gas oil in the tank at the end of each year will be recorded. If the level in the tank is higher than the previous years reading, the difference will be deducted from the total quantity delivered, and if the level is lower the difference will be added to the total quantity delivered to give the total quantity of gas oil combusted in the engineering block boiler in that year. The quantity of gas oil delivered is multiplied by the density of gas oil, the oxidation factor for gas oil (1) and by the net calorific value from the "country specific net calorific values and CO2 emission factors for use in the annual installation emission report" for the year under review and by the emission factor for gas oil from the same document to give the tCO2 emitted as a result of the combustion of gas oil in the engineering block boiler.

The CO2 emissions from the combustion of gas oil in the fire pump will be estimated by multiplying the rated fuel consumption of the engine by the run hours in the year under review as recorded by the engine run hour meters, the density of gas oil, the oxidation factor for gas oil (1), the country specific NCV for gas oil and the emission factor for gas oil.

The CO2 emissions from the combustion of gas oil in the generator will be estimated by multiplying the rated fuel consumption of the generator by the run hours in the year under review as recorded by the engine run hour meters, the density of gas oil, the oxidation factor for diesel oil (1), the country specific NCV for gas oil and the emission factor for gas oil.

The CO2 emissions from the combustion of acetylene is calculated by determining the acetylene consumed on site in the year multiplied by the emission factor, oxidation factor and NCV for acetylene. The acetylene consumed on site in the year is calculated based on site deliveries of acetylene and the difference in stock recorded in the annual stock take.

The CO2 emissions resulting from the combustion of natural gas, gas oil and acetylene are summed to find the total CO2 emissions from the installation per year.

s. Measurement Devices

Below is a description of the specification and location of the measurement systems used for each source stream where emissions are determined by calculation

Also a description of all measurement devices including sub-meters and meters used to deduct non-Annex I activities to be used for each source and source stream.

Source Stream Refs.	Emission Source Refs.	Measurement Device Ref.	Type of Measurement Device	Measurement Range	Metering Range Units	Specified Uncertainty (+/- %)	Location
NG-1	S1,S2,S3,S4,S5,S6	3401302164/0	Turbine meter	100-2000	Nm3/h	1	At main entrance to the site - See GHG emission Master_Dec2019_Layout
GO-1	S9	M1	Fire Pump run hours	n/a	n/a	n/a	n/a
GO-2	S11	M2	Estimated from purchase records	n/a	n/a	n/a	n/a
ACT-1	S13	Purchase records	Balance	n/a	n/a	n/a	n/a
G0-3	S14	M3	Generator run time hours/minutes	n/a	n/a	n/a	n/a

Source Stream Refs.	Measurement Device Ref.	Determination Method	Instrument Under Control Of	Conditions Of Article 29(1) Satisfied	Invoices Used To Determine Amount Of Fuel Or Material	Trade Partner And Operator Independent
NG-1	3401302164/0	Continual	Trade partner	Yes	Yes	Yes
GO-1	M1	Batch	Operator	N/A	N/A	N/A
GO-2	M2	Batch	Trade partner	Yes	Yes	Yes
ACT-1	Purchase records	Batch	Trade partner	Yes	Yes	Yes
G0-3	M3	Batch	Operator	N/A	N/A	N/A

t. Applied Tiers

The table below identifies the tiers applied against the relevant input data for each source stream and confirms whether a standard (MRR Article 24) or mass balance (MRR Article 25) approach is applied.

(i) The highest tiers as defined in Annex II of the MRR should be used by Category B and C installations to determine the activity data and each calculation factor (except the oxidation factor and conversion factor) for each major source stream. Category A installations should apply as a minimum the tiers listed in Annex V.

(ii) Operators may apply a tier one level lower than those referred to in sub paragraph (i) above for Category C installations and up to two levels lower for Category A and B installations with a minimum of tier 1 if the operator can demonstrate to the satisfaction of the competent authority that this is not technically feasible or would lead to unreasonable cost to apply the higher tier. The justification for not applying the higher tier should be recorded when completing the tier table.

(iii) The competent authority may allow an operator to apply even lower tiers than those referred to in the sub paragraph (ii) with a minimum of tier 1 for a transition period of up to three years if the operator can demonstrate to the satisfaction of the competent authority that this is not technically feasible or would lead to unreasonable cost to apply the higher tier and provides an improvement plan detailing how and by when at least the tier referred to in sub paragraph (ii) will be achieved. The improvement plan should be referenced in subsequent table and provided to the competent authority at the time of submission of this plan.

(iv) For minor source streams operators shall apply the highest tier which is technically feasible and will not lead to unreasonable costs with a minimum of tier 1 for activity data and each calculation factor. For de-minimis source streams operators may use conservative estimations rather than tiers unless a defined tier can be achieved without additional effort (MRR Article 26(2)).

(v) Installations with low emissions as identified in section 6(d) may apply as a minimum tier 1 for determining activity data and calculation factors for all source streams unless higher accuracy is achievable without additional effort.

* Note 1: For commercial standard fuels the minimum tiers listed in Annex V of the MRR may be applied for all activities in all installations.

* Note 2: If you are intending to apply a fall-back approach please complete the table below and select "n/a" for the tiers to be applied for each source stream where a fall-back approach is used. Section 10 "Fall-back" must also be completed for these source streams.

* Note 3: For biomass or mixed fuels the emission factor is the preliminary emission factor as defined in Definition 35 Article 3 of the MRR.

Source Stream Refs.	**Emission Source Refs.**	**Measurement Device Refs.**	**Overall Metering Uncertainty (less than +/- %)**	**Applied Monitoring Approach**	**Activity Data Tier Applied**	**Net Calorific Value Tier Applied**	**Emission Factor Tier Applied**	**Carbon Content Tier Applied**	**Oxidation Factor Tier Applied**	**Conversion Factor Tier Applied**	**Biomass Fraction Tier Applied**	**Estimated Emissions $tCO_{2(e)}$**	**% of Total Estimated Emissions**	**Source Category**	**Highest Tiers Applied**	**Justification for not applying the highest tiers**	**Improvement Plan Reference (where applicable)**
NG-1	S1,S2,S3,S4,S5,S6	34013 02164/ 0	<1.5%	Standard	4	2b	2a	N/A	1	N/A	N/A	32198	99.76	Major	Yes	n/a	n/a
GO-1	S9	M1	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	0.58	0	De-minimis	Yes	n/a	n/a
GO-2	S11	M2	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	77.6	0.24	De-minimis	Yes	n/a	n/a
ACT-1	S13	Purchase records	N/A	Standard	No tier	1	1	N/A	1	N/A	N/A	0	0	De-minimis	Yes	n/a	n/a
G0-3	S14	M3	N/A	Standard	No tier	2a	2a	N/A	1	N/A	N/A	0	0	De-minimis	Yes	n/a	n/a

Total Estimated Emissions for Calculation (tonnes $CO_{2(e)}$) 32276.18

u. Uncertainty Calculations

The table below lists evidence attached to the application that demonstrates compliance with the applied tiers in accordance with Article 12 of the MRR.

Attachment	**Description**
935 FMC Gas Meter uncertainty Rev C.xlsx	Revised gas meter uncertainty calc

v. Applied tiers

Applied tiers for each source stream

Source Stream Ref.	Emission Source Refs.	Activity Data Tier Applied	Net Calorific Value Tier Applied	Emission Factor Tier Applied	Carbon Content Tier Applied	Oxidation Factor Tier Applied	Conversion Factor Tier Applied	Biomass Fraction Tier Applied
NG-1	S1,S2,S3,S4,S5,S6	4	2b	2a	N/A	1	N/A	N/A
GO-1	S9	No tier	2a	2a	N/A	1	N/A	N/A
GO-2	S11	No tier	2a	2a	N/A	1	N/A	N/A
ACT-1	S13	No tier	1	1	N/A	1	N/A	N/A
G0-3	S14	No tier	2a	2a	N/A	1	N/A	N/A

w. Justification for Applied tiers

Justifications for the applied tiers for each major source stream where highest tiers are not currently achieved.

Source Stream Ref.	Emission Source Refs.	Justification for the applied tier	Improvement Plan Reference (where applicable)
N/A	N/A	N/A	N/A

10. Calculation Factors

x. Default Values

The table below lists, for each parameter, where default values are to be used for calculation factors.

Source Stream Refs.	Emission Source Refs.	Parameter	Reference Source	Default Value applied (where appropriate)
NG-1	S1,S2,S3,S4,S5,S6	EF, Oxidation Factor	EPA Country Specific Net Calorific Values and CO2 emission factors for use in the Annual Installation Emissions Report	n/a
G0-3,GO-1,GO-2	S11,S14,S9	NCV, EF, Oxidation Factor	EPA Country Specific Net Calorific Values and CO2 emission factors for use in the Annual Installation Emissions Report	n/a
ACT-1	S13	NCV, EF, Oxidation Factor	EPA Tier 1 Net Calorific Values and CO2 emission factors for use in the Annual Installation Emissions Report	n/a

Sampling and Analysis

Do you undertake sampling and analysis of any of the parameters used in the calculation of your CO_2 emissions? No

11. Management

y. Monitoring and Reporting Responsibilities

Responsibilities for monitoring and reporting emissions from the installation are listed below:

Relevant job titles/posts and provide a succinct summary of their role relevant to monitoring and reporting are listed below.

Job Title / Post	**Responsibilities**
Process Engineer	1. Collecting Data for gas combustion which are a source of major emissions. This data will come in the form of 12 Monthly gas bills which specify the GCV, kWh and SCM of gas supplied to the site. 2. Collect invoices for all deliveries of gas oil received for engineering block boiler for the year under review and enter data into spreadsheet. 3. Collect invoices for all deliveries of acetylene for the year under review and enter data into spreadsheet. 4. Carryout stock take of Gas Oil in Office boiler fuel tank, carryout stock take of Diesel Oil in generator fuel tank and acetylene gas cylinders in workshop at the start of each year. 5. Record run hours of the fire water pump as listed on the hour counter located on the engine. 6. Record run hours of the emergency backup generator as listed on the hour counter located on the engine. 7. Complete Annual Installation Emissions Report for Emission Trading.
IT Manager	Quality assurance of information technology used for data flow activities
Human Resources	Co-ordination of company training and review procedures

Attachment	**Description**
N/A	N/A

z. Assignment of Responsibilities

Details of the procedure used for managing the assignment of responsibilities for monitoring and reporting within the installation and for managing the competencies of responsible personnel in accordance with Article 58(3)(c) of the MRR:

This procedure identifies how the monitoring and reporting responsibilities for the roles identified above are assigned and how training and reviews are undertaken.

Title of procedure	Data Flow
Reference for procedure	558 GHG Emission Analysis & Review & 421 Procedure for Identification of Training Needs and Development of Plant Training Plans
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	The process engineer and maintenance manager are the assigned responsible persons for managing the GHG permit at DuPont as defined in document 558 GHG Emission Analysis and Review. The data flow diagram in Appendix 1 of the aforementioned document is colour coded to highlight the responsible person and associated responsibilities. Control activities are included to ensure that a person not involved in calculating emissions and preparing the AEM reviews the report. Company procedure 421 outlines the company policy to determine the necessary competence required for personnel performing work affecting product quality or any aspect of Health, Safety & the Environment. Where the competence does not exist by way of skills, education or experience, the company will take action to provide the necessary training to satisfy the needs. The company will ensure adequate means of evaluating the effectiveness of actions taken and training provided, and maintain appropriate records of education, skills training & experience completed. An example of the actions taken include preparation of a training plan each year to identify training needs in various areas and the performance of this plan is evaluated as part of the Annual Quality Management Review.
Post or department responsible for the procedure and for any data generated	Process Engineer and Human Resources
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A
List of EN or other standards applied	N/A

aa. Monitoring Plan Appropriateness

Details of the procedure used for regular evaluation of the monitoring plan's appropriateness covering in particular any potential measures for the improvement of the monitoring methodology:

Title of procedure	558 GHG Emission Analysis & Review
Reference for procedure	Monitoring Plan Review
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	An annual review of the monitoring plan is undertaken by the process engineer when compiling the AEM to ensure that the plan in place is appropriate for the installation. This includes evaluation of the emission sources and source streams and a review of current tiers to ensure they meet legal requirements and are appropriate for the installation. Finally the process engineer will evaluate the methodology applied to create improvements in the system, taking into account any issues raised during verification and also the quality policy of the organisation.
Post or department responsible for the procedure and for any data generated	Process Engineer
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A
List of EN or other standards applied	N/A

bb. Data Flow Activities

Details of the procedures used to manage data flow activities in accordance with Article 57 of the MRR:

Title of procedure	558 GHG Emission Analysis & Review
Reference for procedure	Data Collection and Emission Calculation Methods
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Specific data is required in order to complete the annual GHG emission report. The 'Data Collection and Emission Calculation Methods" procedure outlines the relevant steps to ensure the AEM is completed correctly. In summary the following activities are undertaken by the process engineer: -Invoices for gas, gas oil, diesel oil and acetylene are collected from the relevant supply companies and the consumption figures are entered into the spreadsheet "GHG Emission Data Collection [year]" where the 12 month data is calculated. -On the 1st of January each year the annual run hours for the fire pumps, backup generator, the level in the office block boiler and an acetylene cylinder stock take are recorded and entered into the spreadsheet. -Calibration certs for metering equipment are requested

	from Gas Networks Ireland in January of each year.
Post or department responsible for the procedure and for any data generated	Process Engineer
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A
List of EN or other standards applied	N/A
List of primary data sources	-Gas Networks Ireland -Energy Invoices from the relevant operator -Gas oil invoices -Diesel oil invoices -Readings taken on site
Description of the relevant processing steps for each specific data flow activity. Identify each step in the data flow and include the formulas and data used to determine emissions from the primary data. Include details of any relevant electronic data processing and storage systems and other inputs (including manual inputs) and confirm how outputs of data flow activities are recorded	Data Collection The process engineer is responsible for the collection of all the required data to complete the GHG emission review and the annual installation report. The receiver of all fuel invoices & any corrective data must forward a copy of these to the process engineer. The monthly gas bills are collected from the energy supply company. Each monthly bill states the volume of gas in standard cubic meters, the gross calorific value kWh/SCM and the quantity of energy in kWh for the gas combusted at DuPont for that month. These 3 separate figures are entered into spread sheet "GHG Emission Data and Calculation" and the sum of the 12 months is calculated in the spread sheet. The annual run hours on the fire pump engine is recorded at the start of each year on or near the 1st of January, and these 2 values are entered into the "GHG Emission Data and Calculation" spread sheet. The density of the gas oil supplied to the tank which supplies the fire pumps is taken as 0.86kg/l and this value is entered in the "GHG Emission Data and Calculation" spread sheet. The CO2 emissions from the combustion of diesel oil in the generator will be estimated by multiplying the rated fuel consumption of the generator by the run hours in the year under review as recorded by the engine run hour meters, the density of diesel oil, the oxidation factor for diesel oil (1), the country specific NCV for diesel oil and the emission factor for diesel oil. The level in the office boiler oil tank is recorded at the start of each year in the "GHG Emission Data and Calculation" spread sheet. The quantities of oil delivered to the engineering office boiler tank during the calendar year under review are entered in the same spreadsheet. The density of oil is taken as 0.86kg/l and this value is entered

in the "GHG Emission Data and Calculation" spread sheet.

The quantity of acetylene is recorded at the start of each year in the "GHG Emission Data and Calculation" spread sheet. The quantities of acetylene delivered during the calendar year under review are entered in the same spreadsheet.

In January the process engineer must contact Gais Networks Ireland to obtain the most recent calibration report for the 2 gas meters on the site. The data for the year under review will be compared against the previous years data as a check for errors. In the first year of reporting the data will be compared against the projected emissions submitted in the application for GHG permit. Any variations will be investigated by the process engineer to ensure there is a valid reason for the variance.

Emission Calculation Methods

The kWh figure from each of the 12 gas bills is added up to give the total kWh gas combusted on the site in the year under review. The gross calorific value (GCV) is given on the gas bill. This must be converted to net calorific value (NCV) for use with the country specific net calorific & CO2 emission factors published annually on the EPA website. The conversion factor is given on the same document as the country specific emission factors. The energy value in kWh (NCV) is then converted to TJ by multiplying by 3.6 X 10-6. The emission factor for natural gas is then multiplied by the total TJ of gas combusted in the year and by the oxidation factor for Natural Gas combustion to give the tonnes of CO2 emitted from the site through the combustion of natural gas for the year under review. This figure is entered into the Annual Installation Emissions report.

A sample calculation for 2010 is:

Total gas from 12 Gas Bills: 144,561,912 kWh

NCV Country Specific Emission Factor: 56.873TCO2/TJ

GCV to NCV Conversion Factor from country specific emission factors: 0.9028

kWh to TJ 3.6 x 10-6

144,561,912 kWh * 56.873 * 0.9028 * 3.6 * 10-6 * 1 = 26,721 TCO2 emitted from DuPont in 2010 through the

combustion of natural gas.

The sum of the volume of gas combusted is corrected for temperature, by the following equation:

Nm3 = Va *273.15/288.15 where Va is the annual gas volume combusted as per the gas bills.

This figure is then entered in the Annual Installation Emissions report.

The weighted net calorific value for the gas combusted is then calculated by dividing the total TJ combusted on the site by the temperature corrected volume and this value is entered in the Annual Installation Emissions report.

The emissions from the fire pump is e calculated by multiplying the sum of the run hours of the fire pump by the rated fuel consumption in litres by the density of gas oil by the emission factor, oxidation factor and net calorific value for gas oil from the EPA published Country Specific Net Calorific Values for use in Annual Installation Emissions Report.

A sample calculation is:

6 hrs * 44 l/h * 0.86 kg/l * 43.31 TJ/kt * 73.3 t CO2/TJ * 1 / 1000000 = 0.688 T CO2

This information is then entered into the Annual Installation Emissions Report.

The emissions from the backup generator is e calculated by multiplying the sum of the run hours of the generator by the rated fuel consumption in litres by the density of diesel oil by the emission factor, oxidation factor and net calorific value for gas oil from the EPA published Country Specific Net Calorific Values for use in Annual Installation Emissions Report.

The emissions from the engineering office boiler is calculated by multiplying the sum of the gas oil delivered to the boilers oil tank (adjusted by the difference in stock recorded in the annual stock take) by the density of gas oil and the emission factor, oxidation factor and net calorific value for gas oil from the EPA published Country Specific Net Calorific Values for use in Annual Installation Emissions Report.

The emissions from the welding workshop is calculated by determining the acetylene consumed on site in the year multiplied by the emission factor, oxidation factor and net calorific value for acetylene from the EPA published Country Specific Net Calorific Values for use in Annual Installation Emissions Report. The acetylene consumed on site in the year is calculated based on site deliveries of acetylene and the difference in stock recorded in the annual stock take.

Submit relevant documents to record data flow activities

Attachment	**Description**
GHG M&R Audit form R1 redlined.pdf	Redlined revised Audit Form
GHG M&R Audit form R1.pdf	Revised Audit Form
GHG M&R Stock take form R1.pdf	Revised Stock Take Form
GHG M&R Stock take form R1 redlined.pdf	Redlined Revised Stock Take Form
GHG M&R Audit form R2.pdf	GHG M&R Audit Form 2018
GHG M&R Stock take form R2.pdf	GHG M&R Stock take form 2018
GHG M&R Audit form R3.pdf	Revised Audit Form 2019
GHG M&R Stock take form R3.pdf	Revised Stock Form 2019

cc. Assessing and Controlling Risks

Details of the procedures used to assess inherent risks and control risks in accordance with Article 58 of the MRR:

Title of procedure	558 GHG Emission Analysis & Review
Reference for procedure	Risk Assessment and Internal Audit
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Risk Assessment The various risks associated with the collection of data and calculation of emissions are outlined under the section 'Risk Assessment'. Risks are controlled by ensuring: - Calibration of GNI meters is carried out annually.

	- Monthly consumption figures and annual on-site reads are evaluated against previous data to ensure errors have not occurred during data input. Reasons for variance must be established and understood. -Any reconciliations for gas consumption must be included in the AEM. If the reconciliation process takes places after the AEM has been submitted for the year, the EPA must be notified immediately though GHGpermit@epa.ie. Internal Audit An internal audit must be carried out by the maintenance manager as per the checks specified on the GHG M&R Audit form.
Post or department responsible for the procedure and for any data generated	Process Engineer
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A
List of EN or other standards applied	N/A

dd. Quality Assurance of Metering / Measuring Equipment

Details of the procedures used to ensure quality assurance of measuring equipment in accordance with Article 58 and 59 of the MRR.

Title of procedure	558 GHG Emission Analysis & Review
Reference for procedure	Data Collection
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Calibration certs for GNI metering equipment must be requested from Gas Networks Ireland annually. These records are reviewed when received. Appropriate action will be taken with third party suppliers where non-compliance with required performance is identified.
Post or department responsible for the procedure and for any data generated	Process Engineer
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A
List of EN or other standards applied	N/A

ee. Quality Assurance of Information Technology used for Data Flow Activities

Details of the procedures used to ensure quality assurance of information technology used for data flow activities in accordance with Article 58 and 60 of the MRR:

Title of procedure	Access Control Management Policy, Back-Up retention Policy, Business Continuity and Recovery Policy, Network Security Policy.
Reference for procedure	Information Technology Procedures
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Quality assurance of IT is controlled by numerous company policies as outlined in the following paragraphs. The Access Control Management Policy defines the rules for physical and logical access controls for DuPont's IT resources. Only authenticated users can access company computer systems, networks, applications or websites which contain sensitive or proprietary information about DuPont. Minimum authentication credentials include a username and password and all passwords must comply with DuPont Password Standards. The objective of the Back-Up Retention Policy is to ensure back up files are available to support business continuity. The minimum back up frequency is defined for the following services: email servers and network file servers, application servers and databases and voice-mail servers. The objective of the Business Continuity and Recovery Policy is to ensure that reasonable measures are implemented to survive an interruption and to reestablish normal business operations on all critically defined computer systems. The policy defines the necessary elements to be included in the location specific, IT Business Continuity and Recovery Plan, which include: identification of systems and applications currently in use, business impact analysis, back up strategy, recovery strategy, recovery team organisation and responsibilities, detailed continuity and recovery processes, training and maintenance procedures. The Network Security Policy applies to all DuPont IT assets that constitute components of DuPont's LANs and WANs and applies to all employees, contractors, consultants, tempories and any other authorized external parties performing services for DuPont. The policy outlines the need to ensure virtual security in addition to physical security to maintain the integrity of the network. The following elements are discussed in the procedure: authentication, establishing connections with external networks, modem connections with partners, establishing connections to the internet, remote connections to DuPont's network, Antivirus/patch management, extra-net security, and network activity monitoring.
Post or department responsible for the procedure and for any data generated	IT Manager
Location where records are kept	Electronic Document Management System (Edoc)

Name of IT system used	N/A
List of EN or other standards applied	N/A

ff. Review and Validation of Data

Details of the procedures used to ensure regular internal reviews and validation of data in accordance with Articles 58 and 62 of the MRR.

Title of procedure	558 GHG Emission Analysis & Review
Reference for procedure	Data Collection and Independent Verification
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Data Collection Monthly consumption figures and annual on-site reads are evaluated against previous data and compared to meter readings for natural gas consumption, previous month/year consumption and production statistics to ensure errors have not occurred during data input. Reasons for variance must be established and understood. On completion of the AIER the data is compared to the previous year as a check for errors. Any variations are investigated by the process engineer to ensure there is a valid reason for the variance. Independent Verification -The gas bills, GHG Emission Data and Calculation spread sheet and annual installation emissions report are presented for verification to an independent accredited verifier. They will verify that the report is accurate and will issue an opinion statement based on their assessment.
Post or department responsible for the procedure and for any data generated	Process Engineer
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A
List of EN or other standards applied	N/A

gg. Corrections and Corrective Actions

Details of the procedures used to handle corrections and corrective actions in accordance with Articles 58 and 63 of the MRR:

Title of procedure	558 GHG Emission Analysis & Review
Reference for procedure	Internal Audit and Risk Assessment
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Internal Audit The internal audit process reviews the various elements of

	data flow and control activities. The GHG M&R Audit form requires the internal auditor to summarize the findings, listing any non conformance and/or corrective actions required to ensure the process functions effectively. Risk Assessment Errors can occur in the communication process between Gais Networks Ireland and the meters on-site, which may result in corrections being issued to previous bills. If this occurs after the annual installation report has been issued, the report must be modified to reflect the adjusted figures and the correction verified by an accredited verifier. The EPA must be notified through GHGpermit@epa.ie, immediately on discovering any errors in the data after the annual installation report has been issued.
Post or department responsible for the procedure and for any data generated	Process Engineer
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A
List of EN or other standards applied	N/A

hh. Control of Outsourced Activities

Details of the procedures used to control outsourced processes in accordance with Articles 59 and 64 of the MRR.

Title of procedure	n/a
Reference for procedure	n/a
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	n/a
Post or department responsible for the procedure and for any data generated	n/a
Location where records are kept	n/a
Name of IT system used	N/A
List of EN or other standards applied	N/A

ii. Record Keeping and Documentation

Details of the procedures used to manage record keeping and documentation:

Title of procedure	558 GHG Emission Analysis & Review
Reference for procedure	Documentation
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	All of the original documentation must be kept on file for a period not less than 10 years. It is the responsibility of the

	process engineer to maintain the file. All spreadsheets and calculations must be saved on the DuPont server for a period not less than 10 years. All of the data specified in Annex IX of the MRR for stationary installations of relevance to this installation will be retained for 10 years in accordance with requirements of Art. 66 of the MRR.
Post or department responsible for the procedure and for any data generated	Process Engineer
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A
List of EN or other standards applied	N/A

jj. Risk Assessment

The results of a risk assessment that demonstrates that the control activities and procedures are commensurate with the risks identified:

Attachment	Description
558 GHG ANALYSIS REVIEW Revision 4 redlined.pdf	Redlined 558 GHG ANALYSIS REVIEW Rev4
558 GHG ANALYSIS REVIEW Revision 5.pdf	GHG Analysis Review Rev 5 -2015
558 GHG ANALYSIS REVIEW Revision 5 - Redlined.pdf	GHG Analysis Rev 5 - Red line
558 GHG ANALYSIS REVIEW Revision 6 .pdf	Revised GHG Analysis Review December 2019

kk. Environmental Management System

Does your organisation have a documented Environmental Management System?	Yes
Is the Environmental Management System certified by an accredited organisation?	Yes
The standard to which the Environmental Management System is certified:	ISO 14001

12. Changes in Operation

ll. Changes in Operation

Article 24(1) of Commission Decision 2011/278/EC requires that Member States must ensure that all relevant information about any planned or effective changes to the capacity activity level and operation of an

installation is submitted by the operator to the competent authority by 31 December each year. Article 12(3) of the MRR further provides that Member States may require information to be included in the monitoring plan of an installation for the purposes of meeting these requirements.

Details of the procedure used to ensure regular reviews are carried out to identify any planned or effective changes to the capacity activity level and operation of the installation that have an impact on the installation's allocation:

The procedure specified below cover the following:

- planning and carrying out regular checks to determine whether any planned or effective changes to the capacity activity level and operation of an installation are relevant under Commission Decision 2011/278/EC; and
- Procedures to ensure such information is submitted to the competent authority by 31 December of each year.

Title of procedure	558 GHG Analysis and Review
Reference for procedure	Changes in Operation Procedure
Diagram reference	N/A
Brief description of procedure. The description should cover the essential parameters and operations performed	Regular reviews are carried out to identify any planned or effective changes to the capacity, activity level and operation of the installation that have an impact on the installation's allocation under Commission Decision 2011/278/EC. Where changes are identified the application form for amending amounts allocated free of charge is completed and submitted to the EPA by 31 December.
Post or department responsible for the procedure and for any data generated	Process Engineer
Location where records are kept	Electronic Document Management System (Edoc)
Name of IT system used	N/A

13. Abbreviations

mm. Abbreviations Acronyms or definitions

Abbreviations acronyms or definitions that have been used in this monitoring plan:

Abbreviation	Definition
N/A	N/A

14. Additional Information

Any other information:

Attachment	Description
FMC 3 St.1 30-08-11.pdf	Gas Metering Calibration Serial No 80011124
FMC 1 St.1 30-08-11.pdf	Gas Metering Calibration Serial No 75282
Summary of Changes to FMC GHG Permit Application Dec 2013.pdf	Summary of changes to this application
FMC1 Str1 01_04_17.pdf	FMC 1 - Calibration Cert
FMC3 Str1 29_07_17.pdf	FMC3 Calibration Cert
!2 tonne Boiler Technical Specification.pdf	Boiler Datasheet
0935-EL-0001-R0 Boiler Thermal Capacity Calculation.pdf	Boiler Thermal Input Capacity
0935-EL-0002-R0 Summary of Changes to GHG Permit 2018.pdf	Summary of Changes to GHG Permit 2018
GHG168IN P3 Notification Accepted.pdf	Fire Pump Notification
FMC Manufacturing Limited - change of name cert to Dupont Nutrition Manufacturing Ireland Limited.PDF	Certificate of Incorporation detailing the name change from FMC Manufacturing ltd. to DuPont Nutrition Manufacturing Ireland ltd.
CHP Removal.pdf	Decommissioning of CHP engines and plant.
Boiler and Generator commissioning.pdf	Commissioning of generator and capacity change of boiler.
Bosch - Final commissioning Report.pdf	Commissioning of boiler capacity change.
PSE 66 KVA GEN COM REPORT 22 OCT 2018.pdf	Commissioning report for generator.
0935-EL-0001-R1 Boiler Thermal Capacity Calculation.pdf	Boiler Thermal Input Capacity Change 2019
0935-EL-0002-R0 Summary of Changes to GHG Permit 2019.pdf	Summary of changes to permit variation 2019

15. Confidentiality

nn. Confidentiality Statement

It is the Environmental Protection Agency's policy to make information received by it in the course of its work open to inspection by any person on request. This is in accordance with the provisions of the European Communities (Access to Information on the Environment) Regulations 2007 to 2011.

In the event that you considered that some of the information being submitted of a confidential nature, then the nature of this information and the reasons why it should be considered confidential, with reference to the European Communities (Access to Information on the Environment) Regulations 2007 to 2011 and any amendments must be explicitly requested using the facility below. The Board of the Environmental Protection Agency will consider the requests and if the information can be deemed as confidential and necessary.

Notwithstanding any request for confidentiality, the Environmental Protection Agency explicitly reserves the right to release data to the Commission, including emissions and allocations to the public, on the basis that the data will be used for the purposes foreseen in Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

Please tick this box if you consider that any part of your form should be treated as commercially confidential/sensitive:	false

END of Appendix I.