# Duynie Ingredients – LVOC BAT Assessment

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Site: Wrexham

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# Quality Assurance

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# 1. Introduction

An Environmental Permit application has been submitted to Natural Resources Wales (NRW) on behalf of Duynie Ingredients Ltd (Duynie) to allow for the permitted operation of a modified starch manufacturing facility at Coed Aben Road, Wrexham Industrial Estate, Clwyd, LL13 9UH.

NRW have since issued a request for more information in the form of a Schedule 5 Notice, due on 23 June 2025, to support their assessment of the Environmental Permit application. Included within this Notice was the following:

*"Submit a Best Available Techniques (BAT) Assessment for the LVOC sector"*

The Duynie site modifies starch to produce a range of product materials including wallpaper paste flake and drilling starches for use in the geological drilling industries. It has been determined that the site should be classed as an Organic Chemicals manufacturing installation and should be permitted in accordance with Part A(1), Section 4.1(a)(ii) of Schedule1 to The Environmental Permitting (England and Wales) Regulations 2016 (EPR):

> *"Producing organic chemicals such as organic compounds containing oxygen."*

Given this classification of the Duynie site, the most applicable BAT guidance for the Duynie site is the *"Production of Large Volume Organic Chemicals"* (LVOC) BAT Conclusions (BATc).

A site visit to the Duynie site was undertaken to assist with the BAT assessment requested as part of NRW's Schedule 5 Notice. During this site visit, it was identified that the original Environmental Permit application may not accurately represent the current operations of the Duynie site. Arthian Ltd (Arthian) have communicated the inaccuracies within the original Environmental Permit application to NRW. Due to this, some BAT conditions could not be fully assessed and require data which can only be obtained at a later date, after the Schedule 5 Notice deadline.

# 2. LVOC BAT Assessment

The following section assesses the Duynie site against each BAT Conclusion contained within the LVOC BATc guidance document. Where a BAT Conclusion is not relevant to the Duynie site, as it pertains to operations not undertaken at the site, this is noted below.

## 2.1 General BAT Conclusions

**BAT 1**

BAT is to monitor channelled emissions to air from process furnaces/heaters in accordance with EN standards and with at least the minimum frequency given in the BAT 1 Table within the LVOC BATc guidance document. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

**Duynie Response**

Duynie operate 3 horizontal reactors for the mixing of refined starch with sodium monochloroacetic acid (SMCA) and caustic, steam produced from the site's boilers is injected into these reactors to provide a heat source. Duynie also operate 5 drying units which utilise rollers to reduce the moisture content of the starch once it has exited the horizontal reactors, steam produced from the site's boilers is applied to the exterior of these rollers to provide a heat source. Finally, Duynie operate a flash dryer unit which also utilises steam from the site's boilers.

The proposed CHP system may also be utilised to provide steam for the reactor/dryer processes.

In accordance with LVOC BAT, process furnaces/heaters are defined as:

*"-combustion units whose flue-gases are used for the thermal treatment of objects or feed material through direct contact, e.g. in drying processes or chemical reactors; or*

*-combustion units whose radiant and/or conductive heat is transferred to objects or feed material through a solid wall without using an intermediary heat transfer fluid, e.g. furnaces or reactors heating a process stream used in the (petro-)chemical industry such as steam cracker furnaces."*

No combustion takes place in the 3 horizontal reactors, 5 drying units or flash dryer utilised at the Duynie site and therefore, they cannot be classed as process furnaces/heaters. The site boilers and CHP would be classed as process furnaces/heaters, however, are regulated by the Medium Combustion Plant Directive (MCPD) which came into effect more recently than LVOC BAT and should be used to assess the site's boilers and CHP system.

Therefore, BAT 1 is not applicable to the Duynie site.

**BAT 2**

BAT is to monitor channelled emissions to air other than from process furnaces/heaters in accordance with EN standards and with at least the minimum frequency given in the BAT 2 Table within the LVOC BATc guidance document. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

**Duynie Response**

The following table details the most recent emission points from the Duynie site that have been provided to NRW:

| Emission Point | Source |
|---|---|
| A1 | Heat Exchanger/Dust Extractor |
| A2 | Boilers |
| A3 | CHP |
| A4 | Scrubber |

However, as recently discussed with NRW, there may be an additional 12 emission points to air associated with the site, as detailed below:

- 3x horizontal reactor emission points;
- 5x dryer unit emission points;
- 2x new steam boiler units; and
- 2x dust extraction units, associated with product packaging processes.

It was originally thought that emissions from the site's dryer units were directed to emission point A1, however, this may not be the case and Duynie are actively looking at confirming the ducting associated with the dryer units. This will also allow for confirmation of the number of emission points associated with the dryers, it may be that ducting from these units is combined in the site's roof cavity.

Duynie will also look to investigate the ducting associated with the SMCA holding tank, it may be that emissions from this holding tank are also sent to the scrubber unit for abatement.

Additionally, a dust extractor unit is not associated with emission point A1, this unit is a flash dryer and therefore, emission point A1 should be associated with a heat exchanger and flash dryer.

As discussed with NRW, Duynie are actively looking to install two new natural gas-fired steam boilers to replace the site's current steam boilers. Given their proposed thermal inputs, it is considered appropriate that these boilers will be regulated under MCPD and not LVOC BAT.

The following provides an initial assessment of the site's emission points against LVOC BAT, however, Duynie are actively looking to conduct air emissions monitoring on the site's emission points (namely A1, A4 and those associated with the dust extraction units, reactors and dryers) to produce a waste gas inventory. This inventory will allow for definitive substances relevant to each emission point to be identified and an appropriate air emissions monitoring programme, in line with LVOC BAT, to be produced.

The following table does not include substances associated with process/sources which are not relevant to the Duynie site. All combustion plant associated with, or expected to be associated with MCPD have also not been included as LVOC BAT is not applicable to these emission points.

| Emission Point | Substance/Parameter | Standard | Minimum Monitoring Frequency | Comment |
|---|---|---|---|---|
| A1 (Heat Exchanger/Flash Dryer) | Benzene | No EN standard available | Once every month.<br><br>Until deemed to be not relevant by the waste gas inventory, in which case this substance should be removed.<br><br>Or<br><br>Until emissions levels are deemed to be sufficiently stable, in which case the monitoring frequency should be reduced. | Likely to be only emissions of dust or steam from this emission point, however, this should be confirmed. |
| | Dust | EN 13284-1 | | |
| | Gaseous chlorides, expressed as HCl | EN 1911 | | |
| | $SO_2$ | EN 14791 | | |
| | TVOC | EN 12619 | | |
| A4 (Scrubber) | Benzene | No EN standard available | Once every month.<br><br>Until deemed to be not relevant by the waste gas inventory, in which case this substance should be removed.<br><br>Or<br><br>Until emissions levels are deemed to be sufficiently stable, in which case the monitoring frequency should be reduced. | Likely to only be emissions of gaseous chlorides from this emission point, however, this should be confirmed.<br><br>The scrubber is used to abate process off-gases from the storage of monochloroacetic acid (MCA) and potentially SMCA. The scrubber media used is water. |
| | Dust | EN 13284-1 | | |
| | Gaseous chlorides, expressed as HCl | EN 1911 | | |
| | $SO_2$ | EN 14791 | | |
| | TVOC | EN 12619 | | |
| | Benzene | No EN standard available | Once every month. | |

| Emission Point | Substance/Parameter | Standard | Minimum Monitoring Frequency | Comment |
|---|---|---|---|---|
| 3x horizontal reactor emission points | Dust | EN 13284-1 | Until deemed to be not relevant by the waste gas inventory, in which case this substance should be removed.<br><br>Or<br><br>Until emissions levels are deemed to be sufficiently stable, in which case the monitoring frequency should be reduced. | Likely to only be emissions of TVOC, gaseous chlorides and steam, however, this should be confirmed.<br><br>The reactors mix refined starch with SMCA and sodium hydroxide. |
| | Gaseous chlorides, expressed as HCl | EN 1911 | | |
| | $SO_2$ | EN 14791 | | |
| | TVOC | EN 12619 | | |
| 5x dryer unit emission points | Benzene | No EN standard available | Once every month.<br><br>Until deemed to be not relevant by the waste gas inventory, in which case this substance should be removed.<br><br>Or<br><br>Until emissions levels are deemed to be sufficiently stable, in which case the monitoring frequency should be reduced. | Likely only to be emissions of steam, however, this should be confirmed.<br><br>Starch is in gel form within the dryer rollers. Steam is the only substance used in this process. |
| | Dust | EN 13284-1 | | |
| | Gaseous chlorides, expressed as HCl | EN 1911 | | |
| | $SO_2$ | EN 14791 | | |
| | TVOC | EN 12619 | | |
| 2x dust extraction units | Dust | EN 13284-1 | Once every month.<br><br>Until deemed to be not relevant by the waste gas | Units only used for dust extraction purposes from product packaging activities. |

| Emission Point | Substance/Parameter | Standard | Minimum Monitoring Frequency | Comment |
|---|---|---|---|---|
| | | | inventory, in which case this substance should be removed.<br><br>Or<br><br>Until emissions levels are deemed to be sufficiently stable, in which case the monitoring frequency should be reduced. | |

**BAT 3**

To reduce emissions to air of CO and unburnt substances from process furnaces/heaters, BAT is to ensure an optimised combustion.

Optimised combustion is achieved by good design and operation of the equipment which includes optimisation of the temperature and residence time in the combustion zone, efficient mixing of the fuel and combustion air, and combustion control. Combustion control is based on the continuous monitoring and automated control of appropriate combustion parameters (e.g. $O_2$, CO, fuel to air ratio, and unburnt substances).

**Duynie Response**

See BAT 1

Duynie do not utilise any process furnaces/heaters which should be assessed under the terms of LVOC BAT and therefore BAT 3 is not applicable.

**BAT 4**

To reduce $NO_X$ emissions to air from process furnaces/heaters, BAT is to use one or a combination of the techniques given below.

a. Choice of fuel
b. Staged combustion
c. Flue-gas recirculation (external)
d. Flue-gas recirculation (internal)
e. Low $NO_x$ burner (LNB) or ultra-low $NO_x$ burner (ULNB)
f. Use of inert diluents
g. Selective catalytic reduction (SCR)
h. Selective non-catalytic reduction (SNCR)

BAT-associated emission levels (BAT-AELs): See Table 2.1 and Table 10.1 of the LVOC BATc document.

**Duynie Response**

See BAT 1

Duynie do not utilise any process furnaces/heaters which should be assessed under the terms of LVOC BAT and therefore BAT 4 is not applicable.

**BAT 5**

To prevent or reduce dust emissions to air from process furnaces/heaters, BAT is to use one or a combination of the techniques given below.

a. Choice of fuel
b. Atomisation of liquid fuel
c. Fabric, ceramic or metal filter

**Duynie Response**

See BAT 1

Duynie do not utilise any process furnaces/heaters which should be assessed under the terms of LVOC BAT and therefore BAT 5 is not applicable.

**BAT 6**

To prevent or reduce $SO_2$ emissions to air from process furnaces/heaters, BAT is to use one or both of the techniques given below.

a. Choice of fuel
b. Caustic scrubbing

**Duynie Response**

See BAT 1

Duynie do not utilise any process furnaces/heaters which should be assessed under the terms of LVOC BAT and therefore BAT 6 is not applicable.

**BAT 7**

To reduce emissions to air of ammonia which is used in selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) for the abatement of $NO_X$ emissions, BAT is to optimise the design and/or operation of SCR or SNCR (e.g. optimised reagent to $NO_X$ ratio, homogeneous reagent distribution and optimum size of the reagent drops).

BAT-associated emission levels (BAT-AELs) for emissions from a lower olefins cracker furnace when SCR or SNCR is used: Table 2.1 of the LVOC BATc document.

**Duynie Response**

Duynie do not utilise SCR or SNCR for the control of NOx emissions from the combustion sources (boiler plant) installed at the site.

**BAT 8**

To reduce the load of pollutants sent to the final waste gas treatment, and to increase resource efficiency, BAT is to use an appropriate combination of the techniques given below for process off-gas streams.

a. Recovery and use of excess generated hydrogen
b. Recovery and use of organic solvents and unreacted organic raw materials
c. Use of spent air
d. Recovery of HCl by wet scrubbing for subsequent use
e. Recovery of $H_2S$ by regenerative amine scrubbing for subsequent use
f. Techniques to reduce solids and/or liquids entrainment

**Duynie Response**

The only form of final waste gas treatment utilised by the Duynie site is the scrubber unit. Currently this unit is associated with the MCA holding tank (and, potentially, the SMCA holding tank) and is typically only required during deliveries of MCA to the site as this may agitate the MCA already contained within the holding tank. Therefore, the quantity of HCl expected to be absorbed within the scrubber media (water) is expected to be minimal.

This will be verified through the monitoring suggested in BAT 2. Should it be determined that there are non-negligible quantities of HCl emitted through the scrubber. Duynie will investigate the potential for recovering HCl absorbed within the scrubber media for further use. However, it is expected that this will not be an economically feasible option for Duynie.

Duynie do not generate nor require hydrogen.

Duynie do not utilise organic solvents. Unreacted organic raw materials are already recovered by the site and re-used in process operations, however, this has no impact on final waste gas treatment as the scrubber unit is only associated with the MCA, and potentially, the SMCA holding tank.

Duynie do no generate nor require low-purity nitrogen and so, the use of spent air is not feasible for the site.

Duynie do not utilise any sour water stripping units and so, $H_2S$ recover is not feasible for the site.

There should be no solids or liquids entering the scrubber unit.

**BAT 9**

To reduce the load of pollutants sent to the final waste gas treatment, and to increase energy efficiency, BAT is to send process off-gas streams with a sufficient calorific value to a combustion unit. BAT 8a and 8b have priority over sending process off-gas streams to a combustion unit.

**Duynie Response**

The process off-gas streams which are sent to the scrubber unit arise from the MCA holding tank, and potentially, the SMCA holding tank. These streams have a minimal calorific value and therefore, it is not economically feasible for the site to send the streams to a combustion unit.

**BAT 10**

To reduce channelled emissions of organic compounds to air, BAT is to use one or a combination of the techniques given below.

a. Condensation
b. Adsorption
c. Wet Scrubbing
d. Catalytic oxidiser
e. Thermal oxidiser

**Duynie Response**

The scrubber unit is only used to abate emissions from the MCA holding tank, and potentially, the SMCA holding tank. There is expected to be minimal emissions of organic compounds from these sources, this will be confirmed in the monitoring which is proposed to be undertaken by the Duynie site (see BAT 2).

This monitoring will also confirm the quantity of organic compounds emitted by the site's other air emission sources (see BAT 2). Should it be identified that there are substantial levels of organic compound emissions from any of these sources, Duynie will investigate the possibility of re-routing these emissions to the site scrubber.

It is unlikely that substantial organic compound emissions will be observed from any of the air emission sources at the Duynie site. The feasibility of the scrubber unit's current operation (i.e., media, capacity etc.) will also require investigation to determine whether it can effectively abate emissions of organic compounds.

**BAT 11**

To reduce channelled dust emissions to air, BAT is to use one or a combination of the techniques given below.

a. Cyclone
b. Electrostatic precipitator
c. Fabric filter
d. Two-stage dust filter
e. Ceramic/metal filter
f. Wet dust scrubbing

**Duynie Response**

Two dust control equipment (DCE) units are utilised by the Duynie site, each with an individual air emission point as detailed in BAT 2. The units are used to abate dust emissions from the following plant:

- 5x dryer units; and
- Starch bagging

Each unit utilises fabric sock filters to abate dust. The filter socks are replaced every 12 months in line with a written schedule developed by the site.

These should be the only areas of the site where any channelled emissions of dust are observed, however, it will be identified, through the monitoring proposed in BAT 2, if substantial dust emissions are seen at any other emission point. If dust emissions are observed, Duynie will investigate the feasibility of installing additional DCE plant.

**BAT 12**

To reduce emissions to air of sulphur dioxide and other acid gases (e.g. HCl), BAT is to use wet scrubbing.

**Duynie Response**

Duynie utilise a wet scrubber unit to abate potential emissions of acid gases. This unit is currently associated with the MCA holding tank and potentially, the SCMA holding tank.

Should it be identified that substantial acid gas emissions are observed form any other emission point during the monitoring proposed in BAT 2, Duynie will investigate the feasibility or re-routing these emissions to this scrubber unit.

**BAT 13**

To reduce emissions to air of $NO_X$, CO, and $SO_2$ from a thermal oxidiser, BAT is to use an appropriate combination of the techniques given below.

a. Removal of high levels of $NO_x$ precursors from the process off-gas streams
b. Choice of support fuel
c. Low-$NO_x$ burner (LNB)
d. Regenerative thermal oxidiser (RTO)
e. Combustion optimisation
f. Selective catalytic reduction (SCR)
g. Selective non-catalytic reduction (SNCR)

**Duynie Response**

Duynie do not operate nor have a requirement to operate a thermal oxidiser.

**BAT 14**

To reduce the waste water volume, the pollutant loads discharged to a suitable final treatment (typically biological treatment), and emissions to water, BAT is to use an integrated waste water management and treatment strategy that includes an appropriate combination of process-integrated techniques, techniques to recover pollutants at source, and pretreatment techniques, based on the information provided by the inventory of waste water streams specified in the CWW BAT conclusions.

**Duynie Response**

The Duynie site currently operates under a trade effluent consent obtained from Welsh Water for the discharge of trade effluent to sewer. The following conditions are set in this trade effluent consent:

| Parameter | Limit | Unit |
|---|---|---|
| Daily Volume | 360 | $m^3$ |
| Discharge Rate | 4.2 | l/s |
| Temperature | 43 | °C |
| pH | 5 - 10 | None |
| Suspended Solids | 800 | mg/l |
| Settled Chemical Oxygen Demand | 3,000 | mg/l |
| Fats, Oils and Greases | 100 | mg/l |
| Phosphate | 15 | mg/l |
| Ammonia | 25 | mg/l |
| Sulphate | 500 | mg/l |
| Sulphide | 2 | mg/l |

The conditions set in the site's trade effluent discharge consent have been specified by Welsh Water to ensure that the site's effluent will not have a negative impact on the final water body which it is discharged to, following treatment in Welsh Water's Five Fords Wastewater Treatment Works. Should Welsh Water receive emissions from the Duynie installation which do not meet the consent conditions, Welsh Water will inform Duynie.

The majority of the site's trade effluent is generated from the operation of the starch refinery area of the site and the cleaning processes used in this area. Effluent typically contains solid starch, cleaning chemicals (usually sodium hypochlorite) and water.

The Duynie site are typically compliant with this trade effluent consent, however, some breaches of the consent have been observed, usually surrounding the level of suspended solids discharged to sewer.

Duynie already utilise multiple treatment techniques to reduce the suspended solids load which is discharged to sewer. This includes the following:

- In-line polymer dosing;
- Decanting

The site allows solids to settle in an IBC located in a bunded tray prior to discharge to sewer.

However, as the site occasionally breach the suspends solids limit seen in the trade effluent consent, an assessment of the site's trade effluent management and treatment techniques has been undertaken by a third-party with suitable experience in this area. It was identified that the polymer currently dosed into the site's effluent prior to discharge may not be the most suitable and as such, Duynie are actively looking to replace the use of this polymer with one that will more effectively reduce the suspended solids load.

The Duynie site are proposing to install pH and flow meters within the trade effluent discharge line to allow for improved effluent management and are also looking to implement an automatic in-line pH control system which will measure the pH levels within the effluent and dose effectively using an acid or base. Additionally, Duynie are investigating the possibility of greatly reducing the level of starch drying which takes place within the starch refinery which will lower the quantity of solid starch within the site's trade effluent and therefore, lessen the suspended solids load.

Duynie also utilise process-integrated techniques to reduce the quantity of effluent sent to sewer and the suspended solids load of this effluent. Effluent generated by the starch refinery is firstly sent to a holding pit where a portion of this effluent is pumped back into the refinery process where there is capacity to do so.

There should be no discharge from the starch mixing tanks, however, any spillages from these tanks are collected in a separate drainage system with no discharge point. Where possible, spillages collected in this drainage system are pumped to a bag filter which separates any starch and water. The starch is then re-used in the process while the water is discharged to sewer. Should it be determined that the bag filter cannot be utilised for a spillage, Duynie employ a third-party contractor to collect spillages contained in the mixing tank drainage system and dispose of them effectively.

Duynie also re-circulate scrubber media water to avoid unnecessary discharge to sewer.

It is thought that the improvements to effluent management and treatment which are actively being investigated by Duynie, along with the site's process-integrated techniques, demonstrate good practice.

**BAT 15**

To increase resource efficiency when using catalysts, BAT is to use a combination of the techniques given below.

a. Catalyst selection
b. Catalyst protection
c. Process optimisation
d. Monitoring of catalyst performance

**Duynie Response**

Duynie do not utilise catalysts in any site processes.

**BAT 16**

To increase resource efficiency, BAT is to recover and reuse organic solvents.

**Duynie Response**

Duynie do not use any organic solvents in any site processes.

**BAT 17**

To prevent or, where that is not practicable, to reduce the amount of waste being sent for disposal, BAT is to use an appropriate combination of the techniques given below.

a. Addition of inhibitors to distillation systems
b. Minimisation of high-boiling residue formation in distillation systems
c. Material recovery (e.g., by distillation, cracking)
d. Catalyst and adsorbent regeneration
e. Use of residues as fuel

**Duynie Response**

Duynie do not utilise any distillation systems.

Starch which may be discharged to the site drains is re-used in site processes (see BAT 14). This starch is unsuitable for use as fuel.

Duynie do not utilise catalysts in any site processes.

**BAT 18**

To prevent or reduce emissions from equipment malfunctions, BAT is to use all of the techniques given below.

a. Identification of critical equipment
b. Asset reliability programme for critical equipment
c. Back-up systems for critical equipment

**Duynie Response**

Duynie maintain an equipment list which includes information on all critical equipment.

The site utilise Standard Operating Procedures (SOPs) and have implemented a preventative maintenance programme for all site equipment. Effective process control measures are also installed on all site tanks and reactors. The site operate a Supervisory Control and Data Acquisition (SCADA) system which records and monitors data from the relevant site processes.

Should it be identified that the site's critical equipment is not operating effectively, production will stop, and the site will investigate the root cause of the issue. All incidents are recorded by the site and Duynie operate a continuous improvement programme.

**BAT 19**

To prevent or reduce emissions to air and water occurring during other than normal operating conditions, BAT is to implement measures commensurate with the relevance of potential pollutant releases for:

(i) start-up and shutdown operations
(ii) other circumstances (e.g., regular and extraordinary maintenance work and cleaning operations of the units and/or of the waste gas treatment system) including those that could affect the proper functioning of the installation.

**Duynie Response**

The Duynie site have developed and utilise start-up and shutdown procedures for all process equipment. Start-ups and shutdowns are only undertaken by the appropriately trained personnel.

The site operate a preventative maintenance programme, should it be identified that any maintenance may result in potential pollutant release, the site will stop production while maintenance is ongoing. Discharge from the site's cleaning operations is discharged to sewer, in-line polymer dosing and a decanter is utilised to treat this discharge (see BAT 14).

## 2.2 BAT Conclusions for Lower Olefins Production

The Duynie site does not produce lower olefins through the use of a steam cracking process and therefore, BAT 20 - 23 are not applicable.

## 2.3 BAT Conclusions for Aromatics Production

The Duynie site does not aromatic organic compounds and, therefore, BAT 24 – 30 are not applicable.

## 2.4 BAT Conclusions for Ethylbenzene and Styrene Monomer Production

The Duynie site does not produce ethylbenzene or styrene monomer and therefore, BAT 31 – 44 are not applicable.

## 2.5 BAT Conclusions for Formaldehyde Production

The Duynie site does not produce formaldehyde and therefore, BAT 45 – 47 are not applicable.

## 2.6 BAT Conclusions for Ethylene Oxide and Ethylene Glycols Production

The Duynie site does not produce ethylene oxide or ethylene glycols and therefore, BAT 48 – 55 are not applicable.

## 2.7 BAT Conclusions for Phenol Production

The Duynie site does not produce phenol and therefore, BAT 56 – 60 are not applicable.

### 2.8 BAT Conclusions for Ethanolamines Production

The Duynie site does not produce ethanolamines and therefore, BAT 61 – 63 are not applicable.

### 2.9 BAT Conclusions for Toluene Diisocyanate (TDI) and Methylene Diphenyl Diisocyanate (MDI) Production

The Duynie site does not produce TDI or MDI and, therefore, BAT 64 – 74 are not applicable

### 2.10 BAT Conclusions for Ethylene Dichloride and Vinyl Chloride Monomer Production

The Duynie site does not produce ethylene dichloride or vinyl chloride monomers and therefore, BAT 75 – 85 are not applicable.

### 2.11 BAT Conclusions for Hydrogen Peroxide Production

The Duynie site does not produce hydrogen peroxide and therefore, BAT 86 – 90 are not applicable.