



ENVIRONMENT  
AGENCY

## Permit with introductory note

Pollution Prevention and Control (England & Wales) Regulations 2000

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Barry Thermosets Plant  
Hexion Speciality Chemicals UK  
Limited  
Sully Moors Road  
Barry  
Glamorgan  
CF64 5YU

Permit number

PP3238LX

# Barry Thermosets Plant Permit Number PP3238LX

## Introductory note

### This introductory note does not form a part of the permit

The main features of the installation are as follows. Barry Thermosets Plant is located in Barry, South Wales, and manufactures a range of phenolic resins, ace hardeners and furans and is currently commissioning a styrenated phenol plant. The primary activities carried out at the installation are:

- Polymers (various grades of phenolic resin) manufacture as defined in Section 4.1 Part A(1)(a)(viii) Producing organic chemicals such as plastic materials, such as polymers, synthetic fibres and cellulose-based fibres.
- Styrenated phenol manufacture as defined in Section 4.1 Part A(1)(a)(ii) Producing organic chemicals such as organic compounds containing oxygen such as alcohols, aldehydes, ketones, carboxylic acids, esters, ethers, peroxides, phenols, epoxy resins.

The following directly associated activities are also carried out at the installation and are integral to the operation of the primary activities:

- Biological treatment of non hazardous waste (effluent treatment) as defined in Section 5.3 Part A(1)(c)(i) Biological treatment, not being treatment specified in any paragraph other than paragraph D8 of Annex IIA to the Council Directive 75/442/EEC, which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 in that Annex...
- 18.5MW combustion plant for steam raising

Novalac phenolic resin production, Novalac powder processing, cashew nut shell liquor, esterified resole production and Ace hardener production are the main production activities at the installation. The Novalac resin and powder plants are ceasing operation by the end of 2006 in addition to the associated phenol recovery unit.

The Barry Thermosets Plant operates an environmental management system, which has been certified to ISO 14001. The Operator has signed up to a Climate Change Levy agreement with DEFRA. The installation is classified under the COMAH Regulations 1999 as an 'upper tier' site and consequently, the Operator has submitted a safety report and an accident management plan is in place.

#### Status Log of the permit

| Detail   | Date      | Response Date |
|--|-----------|---------------|
| Application PP3238LX   | 29/03/06  |               |
| Additional information requested   | 29/8/2006 | 11/09/06      |
| Additional information received in response to improvement condition 8.36 from variation CA4145 to IPC authorisation AJ9075. |           | 28/07/06      |
| Permit determined  | 15/12/06  |               |

#### Other PPC permits relating to this installation

| Operator | Permit Number | Date of Issue |
|----------|---------------|---------------|
| None     |               |               |

**Superseded or Partially Superseded Licences/Authorisations/Consents relating to this installation**

| <b>Holder</b>     | <b>Reference Number</b> | <b>Date of Issue</b> | <b>Fully or Partially Superseded</b> |
|-------------------|-------------------------|----------------------|--------------------------------------|
| IPC Authorisation | AJ9075                  | 05/01/94             | Fully superseded                     |
| IPC Variation     | AZ5154                  | 10/02/98             | Fully superseded                     |
| IPC Variation     | BE0775                  | 30/11/98             | Fully superseded                     |
| IPC Variation     | BG3996                  | 4/10/99              | Fully superseded                     |
| IPC Variation     | BH3681                  | 12/05/00             | Fully superseded                     |
| IPC Variation     | BJ3497                  | 10/11/00             | Fully superseded                     |
| IPC Variation     | CA4145                  | 28/04/06             | Fully superseded                     |

**Other existing Licences/Authorisations/Registrations relating to this site**

| <b>Holder</b> | <b>Reference Number</b> | <b>Date of issue</b> |
|---------------|-------------------------|----------------------|
| None          |                         |                      |

End of Introductory Note

**Permit**

Pollution Prevention and Control  
(England and Wales) Regulations 2000

## Permit

Permit number

**PP3238LX**

The Environment Agency (the Agency) in exercise of its powers under Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No 1973) hereby authorises Hexion Speciality Chemicals UK Limited ("**the operator**"),

whose registered office (or principal office) is

**Hexion Speciality Chemicals UK Limited**  
**Sully Moors Road**  
**Barry**  
**South Glamorgan**  
**CF64 5YU**

company registration number 867053

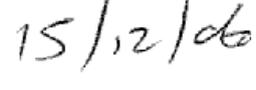
to operate an installation at

**Barry Thermosets Plant**  
**Sully Moors Road**  
**Barry**  
**South Glamorgan**  
**CF64 5YU**

to the extent authorised by and subject to the conditions of this permit.

Signed

Date

|   |   |
|---|---|
|  |  |
|---|---|

B Price

Authorised to sign on behalf of the Agency

# Conditions

## 1 Management

### 1.1 General management

1.1.1 The activities shall be managed and operated:

- (a) in accordance with a management system, which identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents and non-conformances and those drawn to the attention of the operator as a result of complaints; and
- (b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

### 1.2 Accidents that may cause pollution

1.2.1 The operator shall:

- (a) maintain and implement an accident management plan;
- (b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;
- (c) make any appropriate changes to the plan identified by a review.

### 1.3 Energy efficiency

1.3.1 The operator shall:

- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
- (b) review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and
- (c) take any further appropriate measures by a review.

### 1.4 Efficient use of raw materials

1.4.1 The operator shall:

- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
- (b) maintain records of raw materials and water used in the activities;
- (c) review and record at least every 4 years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

- (d) take any appropriate further measures identified by a review.

## **1.5 Avoidance, recovery and disposal of wastes produced by the activities**

1.5.1. The operator shall:

- (a) take appropriate measures to ensure that waste produced by the activities is avoided or reduced, or where waste is produced it is recovered wherever practicable or otherwise disposed of in a manner which minimises its impact on the environment;
- (b) review and record at least every 4 years whether changes to those measures should be made; and
- (c) take any further appropriate measures identified by a review.

## **1.6 Site security**

1.6.1. Site security measures shall prevent unauthorised access to the site, as far as practicable.

# **2. Operations**

## **2.1 Permitted activities**

2.1.1 The operator is authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).

## **2.2 The site**

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 2 to this permit.

## **2.3 Operating techniques**

2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1 table S1.2, unless otherwise agreed in writing by the Agency.

2.3.2 No raw materials or fuels listed in schedule 3 table S3.1 shall be used unless they comply with the specifications set out in that table.

## **2.4 Off-site conditions**

There are no off-site conditions under this section.

## **2.5 Improvement programme**

2.5.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Agency.

2.5.2 Except in the case of an improvement which consists only of a submission to the Agency, the operator shall notify the Agency within 14 days of completion of each improvement.

## **2.6 Pre-operational conditions**

There are no pre-operational conditions in this permit.

## **2.7 Closure and decommissioning**

- 2.7.1 The operator shall maintain and operate the activities so as to prevent or where that is not practicable, to minimise, any pollution risk on closure and decommissioning.
- 2.7.2 The operator shall maintain a site closure plan which demonstrates how the activities can be decommissioned to avoid any pollution risk and return the site to a satisfactory state.
- 2.7.3 The operator shall carry out and record a review of the site closure plan at least every 4 years.
- 2.7.4 The site closure plan (or relevant part thereof) shall be implemented on final cessation or decommissioning of the activities or part thereof.

## **2.8 Site protection and monitoring programme**

- 2.8.1 The operator shall, within 2 months of the issue of this permit, submit a site protection and monitoring programme.
- 2.8.2 The operator shall implement and maintain the site protection and monitoring programme and shall carry out and record a review of it at least every 4 years.

# **3. Emissions and monitoring**

## **3.1 Emissions to water, air or land**

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 4 tables S4.1, S4.2 and S4.3.
- 3.1.2 The limits given in schedule 4 shall not be exceeded.
- 3.1.3 Total annual emissions from the emission points set out in tables schedule 4 S4.1, S4.2 and S4.3 of a substance listed in schedule 4 table S4.4 shall not exceed the relevant limit in table S4.4.

## **3.2 Transfers off-site**

- 3.2.1 Records of all the wastes sent off site from the activities, for either disposal or recovery, shall be maintained.

## **3.3 Fugitive emissions of substances**

- 3.3.1 Fugitive emissions of substances (excluding odour, noise and vibration) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including those specified in schedule 1 table S1.4, have been taken to prevent or where that is not practicable, to minimise, those emissions.

- 3.3.2 All liquids, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

### **3.4 Odour**

- 3.4.1 Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency unless the operator has used appropriate measures, to prevent or where that is not practicable to minimise the odour.

### **3.5 Noise and vibration**

- 3.5.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures to prevent or where that is not practicable to minimise the noise and vibration.

### **3.6 Monitoring**

- 3.6.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake monitoring for the parameters, at the locations and at not less than the frequencies specified in the following tables in schedule 4 to this permit:
- (a) point source emissions specified in tables S4.1, S4.2 and S4.3;
- 3.6.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.6.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme specified in condition 3.6.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Agency.
- 3.6.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 4 tables S4.1, S4.2 and S4.3 unless otherwise specified in that schedule.
- 3.6.5 Within 6 months of the issue of this permit (unless otherwise agreed in writing by the Agency) the site reference data identified in the site protection and monitoring programme shall be collected and submitted to the Agency.

## **4. Information**

### **4.1 Records**

- 4.1.1 All records required to be made by this permit shall:
- (a) be legible;
  - (b) be made as soon as reasonably practicable;

- (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
  - (d) be retained, unless otherwise agreed in writing by the Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
    - (i) the site protection and monitoring programme.
- 4.1.2 Any records required to be made by this permit shall be supplied to the Agency within 14 days where the records have been requested in writing by the Agency.
- 4.1.3 All records required to be held by this permit shall be held on-site and shall be available for inspection by the Agency at any reasonable time.

## 4.2 Reporting

- 4.2.1 A report or reports on the performance of the activities over the previous year shall be submitted to the Agency by 31 January (or other date agreed in writing by the Agency) each year. The report(s) shall include as a minimum:
- (a) a review of the results of the monitoring and assessment carried out in accordance with this permit against the relevant assumptions, parameters and results in the assessment of the impact of the emissions submitted with the application;
  - (b) where the operator's management system encompasses annual improvement targets, a summary report of the previous year's progress against such targets;
  - (c) the annual production /treatment data set out in schedule 5 table S5.2;
  - (d) the performance parameters set out in schedule 5 table S5.3 using the forms specified in table S5.4 of that schedule; and
  - (e) details of any contamination or decontamination of the site which has occurred.
- 4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 5 table S5.1;
  - (b) for the reporting periods specified in schedule 5 table S5.1 and using the forms specified in schedule 5 table S5.4 ; and
  - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.3 The operator shall, unless notice under this condition has been served within the preceding 4 years, submit to the Agency, within 6 months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.
- 4.2.4 All reports and notifications required by the permit shall be sent to the Agency using the contact details supplied in writing by the Agency
- 4.2.5 The results of reviews and any changes made to the site protection and monitoring programme shall be reported to the Agency, within 1 month of the review or change.

## 4.3 Notifications

- 4.3.1 The Agency shall be notified without delay following the detection of:
- (a) any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution;
  - (b) the breach of a limit specified in the permit;
  - (c) any significant adverse environmental effects.
- 4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 6 to this permit within the time period specified in that schedule.
- 4.3.3 Prior written notification shall be given to the Agency of the following events and in the specified timescales:
- (a) as soon as practicable prior to the permanent cessation of any of the activities;
  - (b) cessation of operation of part or all of the activities for a period likely to exceed 1 year; and
  - (c) resumption of the operation of part or all of the activities after a cessation notified under (b) above.
- 4.3.4 The Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.
- 4.3.5 Where the Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.6 The Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- (a) any change in the operator's trading name, registered name or registered office address;
  - (b) any change to particulars of the operator's ultimate holding company (including details of an ultimate holding company where an operator has become a subsidiary); and
  - (c) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

### Climate Change Agreement

- 4.3.7 Where the operator has entered into a climate change agreement with the Government, the Agency shall be notified within one month of:
- (a) a decision by the Secretary of State not to re-certify the agreement;
  - (b) a decision by either the operator or the Secretary of State to terminate the agreement; and
  - (c) any subsequent decision by the Secretary of State to re-certify such an agreement.

## **4.4 Interpretation**

4.4.1 In this permit the expressions listed in schedule 7 shall have the meaning given in that schedule.

# Schedule 1 - Operations

**Table S1.1 activities**

| Activity listed in Schedule 1 of the PPC Regulations   | Description of specified activity                       | Limits of specified activity  |
|--|---|---|
| Section 4.1 Part A(1)(a)(viii).  | Polymer (various grades of phenolic resin) manufacture. | From receipt of raw materials to production of finished products.                         |
| Section 4.1 Part A(1)(a)(ii) Producing organic chemicals such as organic compounds containing oxygen such as alcohols, aldehydes, ketones, carboxylic acids, esters, ethers, peroxides, phenols, epoxy resins. | Styrenated phenol manufacture.                          | From receipt of raw materials to production of finished products.                         |
| Section 5.3 Part A(1)(c)(i).   | Biological treatment of non-hazardous waste.            | From receipt of effluent to discharge to controlled water.                                |
| <b>Directly Associated Activity</b>  |   |   |
| Steam generation.  | Steam raising boiler plant fired on natural gas or oil. | From receipt of fuel to release of combustion products including oil receipt and storage. |

**Table S1.2 Operating techniques**

| Description | Parts  | Date Received |
|-------------|--|---------------|
| Application | Sections 2.2.1.2, 2.2.1.3, 2.2.2.2, 2.2.5, 2.74. | 29/03/06      |

**Table S1.3 Improvement programme requirements**

| Reference | Requirement  | Date   |
|-----------|--|--|
| IC1       | The Operator shall provide a correlation report for COD and BOD <sub>5</sub> in the effluent discharged from point W1 to enable re-assessment of environmental impact. The analytical methods to be used shall be submitted to the Agency for approval before commencement of the study.   | 01/07/07   |
| IC2       | The Operator shall prepare a site closure plan having regard to Section 2.2.11 of the Agency Guidance Note for the Speciality Organic Chemicals Sector S4.02. The plan shall be submitted to the Agency for approval.  | 01/07/07   |
| IC3       | The Operator shall complete a revised environmental assessment for air emissions from emissions points A1, A2, A3 and A5 having regard to the Environment Agency's guidance document H1 Environmental Assessment and Appraisal of BAT, or similar, following proposed plant closures. A written report summarising the findings shall be submitted to the Agency for approval.   | 01/08/07   |
| IC4       | <p>The Operator shall carry out an optimisation study for the operation of the installation effluent treatment plant. This shall include but not be limited to:</p> <ul style="list-style-type: none"> <li>▪ Completion of a revised environmental assessment for water emissions having regard to the Environment Agency's guidance document H1 Environmental Assessment and Appraisal of BAT, or similar, following proposed plant closures;</li> <li>▪ Investigation of methods to reduce formaldehyde levels in effluent emitted via W1.</li> <li>▪ Development of a procedure to carry out regular inspection of sludge build up in the clean lagoon, including removal of sludge, and determine an upper threshold to protect emission limit values applied to releases from W1;</li> <li>▪ Prevention of spillage.</li> </ul> <p>A report shall be submitted to the Agency detailing findings and a timetable for the implementation of any improvements identified. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the proposals. The proposed measures shall be implemented by the Operator from the date of approval in writing by the Agency.</p> | <p>Revision of Environmental Assessment<br/>01/08/07</p> <p>Completion of improvement condition<br/>01/10/07</p> |
| IC5       | The Operator shall investigate methods of reducing oxides of nitrogen emissions to air via A2 whilst burning natural gas to the benchmarks outlined in 'PG 1/3(95) Boilers and Furnaces, 20-50 MW Net Rated Thermal Input'. A report shall be submitted to the Agency detailing the findings and a timetable for the implementation of any improvements identified. The proposed measures shall be implemented by the Operator from the date of approval in writing by the Agency.   | 01/10/07   |
| IC6       | The Operator shall undertake an assessment of subsurface structures and their potential to cause fugitive emissions to surface water and groundwater. The assessment shall take into account the requirements of section 2.2.5 of the Agency Guidance Note Guidance for the Speciality Organic Chemicals Sector S4.02. A written report summarising the findings shall be submitted to the Agency for approval including a timescale for implementation of any improvements identified. The proposed measures shall be implemented by the Operator from the date of approval in writing by the Agency.   | 01/11/07   |
| IC7       | The Operator shall investigate improvements to the diesel storage tank offloading and fill points having regard to Section 2.2.5 of Environment Agency Guidance Note S4.02. A report shall be submitted to the Agency detailing the findings and a timetable for the implementation of any improvements identified. The proposed measures shall be implemented by the Operator from the date of approval in writing by the Agency.   | 01/02/08   |
| IC8       | The Operator shall develop a written procedure for recording quantity, nature, origin and fate of all waste arising from activities carried out at the installation. The procedure shall be submitted to the Agency for approval and implemented from the date of approval in writing by the Agency. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report.  | 01/04/08   |

**Table S1.3 Improvement programme requirements continued**

| <b>Reference</b> | <b>Requirement</b>  | <b>Date</b> |
|------------------|---|-------------|
| IC9              | The Operator shall investigate methods of reducing, recovering or recycling contaminated scrap metal and liquid resins which are currently disposed of to landfill. The results of the investigation shall be submitted to the Agency with a timetable for any proposed measures to be carried out. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the report. The proposed improvements shall be implemented by the Operator from the date of approval in writing by the Agency. | 01/06/08    |
| IC10             | The Operator shall carry out a direct toxicity assessment of the effluent discharged from W1 and submit the results to the Environment Agency in writing.   | 01/06/08    |
| IC11             | A written procedure shall be submitted to the agency detailing the measures to be used so that monitoring equipment, personnel and organisations employed for the emissions monitoring programme shall have either MCERTS certification or accreditation in accordance with condition 3.6.3. The notification requirements of condition 2.5.2 shall be deemed to have been complied with on submission of the procedure. The procedure shall be implemented by the Operator from the date of approval in writing by the Agency                  | 01/02/10    |

**Table S1.4 Appropriate measures for fugitive emissions**

| <b>Measure</b>   | <b>Dates</b> |
|--|--------------|
| A fugitive emission management plan shall be submitted to the Agency, detailing the measures to be used to control fugitives emissions from tanks and vessels and shall be accordance with Section 2.2.4 of the Agency Guidance Note S4.02 Speciality Organic Chemicals. The plan shall be implemented by the operator from the date of approval in writing by the Agency. | 06/06/08     |

## Schedule 2 - Site plan



## Schedule 3 - Waste types, raw materials and fuels

**Table S3.1 Raw materials and fuels**

| <b>Raw materials and fuel description</b> | <b>Specification</b>                               |
|---|--|
| Diesel Oil                                | Not more than 0.2% sulphur content until 31/12/07. |
| Diesel Oil                                | Not more than 0.1% sulphur content after 01/01/08  |

## Schedule 4 – Emissions and monitoring

**Table S4.1 Point source emissions to air – emission limits and monitoring requirements**

| Emission point ref. & location  | Parameter   | Source  | Limit (including unit)                           | Reference period | Monitoring frequency | Monitoring standard or method                   |
|---|---|---|--|------------------|----------------------|---|
| A1 [Point A1 on site plan in Schedule 2]  | Oxides of nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> ) | Boiler Plant  | 180 mg/m <sup>3</sup> when firing on natural gas | Spot sample      | Annually             | ISO 10849 or as agreed by the Agency.           |
| A1 [Point A1 on site plan in Schedule 2]  | Oxides of nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> ) | Boiler Plant  | 220 mg/m <sup>3</sup> when firing on oil         | Spot sample      | Annually             | ISO 10849 or as agreed by the Agency.           |
| A1 [Point A1 on site plan in Schedule 2]  | Carbon monoxide   | Boiler Plant  | 140 mg/m <sup>3</sup>                            | Spot sample      | Annually             | ISO12039 or as agreed by the Agency.            |
| A2 [Point A2 on site plan in schedule 2]  | Phenol  | Reactor R1, R2, R4, R5, R6, R10 vents and Reactor R3 via fume scrubber. | 10 mg/m <sup>3</sup>                             | Spot sample      | Every three months   | BS13649/NIO SH 2546 or as agreed by the Agency. |
| A2 [Point A2 on site plan in schedule 2]  | Formaldehyde  | Reactor R1, R2, R4, R5, R6, R10 vents and Reactor R3 via fume scrubber. | 2 mg/m <sup>3</sup>                              | Spot sample      | Every three months   | BS13649/NIO SH 2541 or as agreed by the Agency. |
| A2 [Point A2 on site plan in schedule 2]  | Styrene mg/m <sup>3</sup>   | Reactor R1, R2, R4, R5, R6, R10 vents and Reactor R3 via fume scrubber. | -  | Spot sample      | Every three months   | BS13649 NIOSH 1501 or as agreed by the Agency.  |
| A3 [Point A3 on site plan in schedule 2]  | -   | Reactor 10 solids charging system exhaust                               | -  | -                | -                    | -   |
| A5 [Point A5 on site plan in schedule 2]  | -   | Station blender transfer blower (B1020 outlet) via bag filters          | -  | -                | -                    | -   |
| A8, A9, A10, A16, (as described in Table 2.2.4-1 Potential Fugitive Emissions to Air) | -   | Tank vents  | -  | -                | -                    | -   |

**Table S4.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements**

| Emission point ref. & location                           | Parameter   | Source                   | Limit (incl. unit)    | Reference period                 | Monitoring frequency                        | Monitoring standard or method                                      |
|--|---|--------------------------|-----------------------|----------------------------------|---|--|
| W1 on site plan in schedule 2 emission to Severn Estuary | Daily discharge. Maximum volume of effluent discharged under dry conditions determined by no significant rainfall over the previous 48 hours on the Barry site. | Effluent Treatment plant | 6800m <sup>3</sup>    | Instantaneous                    | Daily                                       | As agreed by the Environment Agency.                               |
| W1 on site plan in schedule 2 emission to Severn Estuary | Daily discharge. Maximum volume of effluent discharged.   | Effluent Treatment plant | 15900m <sup>3</sup>   | Instantaneous                    | Daily                                       | As agreed by the Agency.   |
| W1 on site plan in schedule 2 emission to Severn Estuary | Flow  | Effluent Treatment plant | 0.19m <sup>3</sup> /s | Instantaneous                    | Continuous reported as peak daily flow rate | As agreed by the Agency.   |
| W1 on site plan in schedule 2 emission to Severn Estuary | Monohydric phenol   | Effluent Treatment plant | 10mg/l                | 24-hour flow proportional sample | Weekly                                      | SCA Blue Book Method or as agreed by the Agency.                   |
| W1 on site plan in schedule 2 emission to Severn Estuary | Total suspended solids  | Effluent Treatment plant | 150mg/l               | 24-hour flow proportional sample | Weekly                                      | BS EN 872 or as agreed by the Agency.                              |
| W1 on site plan in schedule 2 emission to Severn Estuary | Chemical Oxygen Demand  | Effluent Treatment plant | 1000mg/l              | 24-hour flow proportional sample | Weekly                                      | BS ISO 15705:2002, BS 6068-2.80:2002 or as agreed by the Agency.   |
| W1 on site plan in schedule 2 emission to Severn Estuary | Methanol  | Effluent Treatment plant | 50mg/l                | 24-hour flow proportional sample | Weekly                                      | BS EN ISO 15680:2003 BS 6068-2.85:2003 or as agreed by the Agency. |
| W1 on site plan in schedule 2 emission to Severn Estuary | Vinyl chloride  | Effluent Treatment plant | 10mg/l                | 24-hour flow proportional sample | Weekly                                      | BS EN ISO 15680:2003 BS 6068-2.85:2003 or as agreed by the Agency. |
| W1 on site plan in schedule 2 emission to Severn Estuary | Acrylonitrile   | Effluent Treatment plant | 50mg/l                | 24-hour flow proportional sample | Weekly                                      | BS EN ISO 15680:2003 BS 6068-2.85:2003 or as agreed by the Agency. |
| W1 on site plan in schedule 2 emission to Severn Estuary | Free formaldehyde   | Effluent Treatment plant | 10mg/l                | 24-hour flow proportional sample | Weekly                                      | As agreed by the Agency  |
| W1 on site plan in schedule 2 emission to Severn Estuary | Ethylene dichloride   | Effluent Treatment Plant | 2mg/l                 | 24-hour flow proportional sample | Weekly                                      | BS EN 135006 or as agreed by the Agency.                           |
| W1 on site plan in schedule 2 emission to Severn Estuary | Styrene   | Effluent Treatment plant | None                  | 24-hour flow proportional sample | Weekly                                      | As agreed by the Agency  |
| W1 on site plan in schedule 2 emission to Severn Estuary | pH  | Effluent Treatment plant | 6-9                   | Instantaneous                    | Continuous reported as daily average        | BS6068-2.50 or as agreed by the Agency.                            |

**Table S4.4 Annual limits**

| Substance          | Medium | Limit (including unit) |
|--------------------|--------|------------------------|
| Monohydric phenol  | Water  | 10950 kg/ year         |
| Methanol           | Water  | 43800 kg/year          |
| Ethylenedichloride | Water  | 700 kg/year            |
| Vinyl chloride     | Water  | 7000 kg/year           |
| Acrylonitrile      | Water  | 51000 kg/year          |
| Free formaldehyde  | Water  | 10950 kg/year          |

**Table S4.8 Process monitoring requirements**

| Emission point reference or source or description of point of measurement | Parameter                           | Monitoring frequency | Monitoring standard or method | Other specifications |
|---|-------------------------------------|----------------------|-------------------------------|----------------------|
| E1 on site plan in schedule 2 emission from BAFF treatment plant          | Suspended solids                    | Weekly               | None specified                | None                 |
| E1 on site plan in schedule 2 emission from BAFF treatment plant          | Free formaldehyde mg/m <sup>3</sup> | Weekly               | None specified                | None                 |
| E1 on site plan in schedule 2 emission from BAFF treatment plant          | Monohydric phenol mg/m <sup>3</sup> | Weekly               | None specified                | None                 |
| E1 on site plan in schedule 2 emission from BAFF treatment plant          | Methanol mg/m <sup>3</sup>          | Weekly               | None specified                | None                 |
| E1 on site plan in schedule 2 emission from BAFF treatment plant          | Chemical oxygen demand              | Weekly               | None specified                | None                 |

## Schedule 5 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

| <b>Table S5.1 Reporting of monitoring data</b>                   |   |                         |                      |
|--|---|-------------------------|----------------------|
| <b>Parameter</b>   | <b>Emission or monitoring point/reference</b> | <b>Reporting period</b> | <b>Period begins</b> |
| Emissions to air<br>Parameters as required by condition 3.6.1.   | A1 and A2                                     | Every 12 months         | 01/01/07             |
| Emissions to water<br>Parameters as required by condition 3.6.1  | W1  | Every 3 months          | 01/01/07             |
| Emissions to lagoon<br>Parameters as required by condition 3.6.1 | E1  | Every 3 months          | 01/01/07             |

| <b>Table S5.2: Annual production/treatment</b> |              |
|--|--------------|
| <b>Parameter</b>                               | <b>Units</b> |
| Total production                               | Tonnes       |

| <b>Table S5.3 Performance parameters</b> |                                |                      |
|--|--------------------------------|----------------------|
| <b>Parameter</b>                         | <b>Frequency of assessment</b> | <b>Units</b>         |
| Water usage/Tonne product                | Annually                       | Tonnes/tonne product |
| Energy usage/Tonne product               | Annually                       | MWh/tonne product    |

| <b>Table S5.4 Reporting forms</b> |  |                     |
|-----------------------------------|--|---------------------|
| <b>Media/parameter</b>            | <b>Reporting format</b>  | <b>Date of form</b> |
| Air                               | Form air 1 or other form as agreed in writing by the Agency        | 01/01/07            |
| Water                             | Form water 1 or other form as agreed in writing by the Agency      | 01/01/07            |
| Water usage                       | Form water usage1 or other form as agreed in writing by the Agency | 01/01/07            |
| Energy usage                      | Form energy 1 or other form as agreed in writing by the Agency     | 01/01/07            |

# Schedule 6 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the PPC Regulations.

## Part A

|                                |  |
|--------------------------------|--|
| Permit Number                  |  |
| Name of operator               |  |
| Location of Installation       |  |
| Time and date of the detection |  |

|   |  |
|---|--|
| <b>(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution</b> |  |
| <b>To be notified within 24 hours of detection</b>  |  |
| Date and time of the event  |  |
| Reference or description of the location of the event   |  |
| Description of where any release into the environment took place  |  |
| Substances(s) potentially released  |  |
| Best estimate of the quantity or rate of release of substances  |  |
| Measures taken, or intended to be taken, to stop any emission   |  |
| Description of the failure or accident.   |  |

|   |  |
|---|--|
| <b>(b) Notification requirements for the breach of a limit</b>                      |  |
| <b>To be notified within 24 hours of detection unless otherwise specified below</b> |  |
| Emission point reference/ source  |  |
| Parameter(s)  |  |
| Limit   |  |
| Measured value and uncertainty  |  |
| Date and time of monitoring   |  |
| Measures taken, or intended to be taken, to stop the emission                       |  |

| Time periods for notification following detection of a breach of a limit |                     |
|--|---------------------|
| Parameter  | Notification period |
|  |                     |
|  |                     |
|  |                     |

| (c) Notification requirements for the detection of any significant adverse environmental effect |  |
|---|--|
| To be notified within 24 hours of detection   |  |
| Description of where the effect on the environment was detected                                 |  |
| Substances(s) detected  |  |
| Concentrations of substances detected   |  |
| Date of monitoring/sampling   |  |

**Part B - to be submitted as soon as practicable**

|  |  |
|--|--|
| Any more accurate information on the matters for notification under Part A.  |  |
| Measures taken, or intended to be taken, to prevent a recurrence of the incident   |  |
| Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission |  |
| The dates of any unauthorised emissions from the installation in the preceding 24 months.  |  |

|                  |  |
|------------------|--|
| <b>Name*</b>     |  |
| <b>Post</b>      |  |
| <b>Signature</b> |  |
| <b>Date</b>      |  |

\* authorised to sign on behalf of Hexion Speciality Chemicals UK Ltd.

## Schedule 7 - Interpretation

"*accident*" means an accident that may result in pollution.

"*annually*" means once every year.

"*application*" means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 4 to the PPC Regulations.

"*authorised officer*" means any person authorised by the Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

"*emissions to land*", includes emissions to groundwater.

"*fugitive emission*" means an emission to air, water or land from the activities which is not controlled by an emission limit.

"*groundwater*" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

"*land protection guidance*", means Agency guidance "H7 - Guidance on the protection of land under the PPC Regime: application site report and site protection monitoring programme".

"MCERTS" means the Environment Agency's Monitoring Certification Scheme.

"*notify/notified without delay*" means that a telephone call can be used, whereas all other reports and notifications must be supplied in writing, either electronically or on paper.

"PPC Regulations" means the Pollution, Prevention and Control (England and Wales) Regulations SI 2000 No.1973 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"*quarter*" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"*site protection and monitoring programme*" means a document which meets the requirements for site protection and monitoring programmes described in the Land Protection Guidance.

"*year*" means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- (a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- (b) in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content

END OF PERMIT