

Permit Number: EPR/BU5453IY  
 Operator: AGC Chemicals Europe Limited  
 Facility: AGC Chemicals Europe, Hillhouse

Form Number: Air 8 / 2017

**Reporting of periodically monitored emissions to air for the period from ...July 2022... to ...December 2022...**

| Emission Point | Parameter                                                                 | Emission Limit Value | Reference Period             | Result [1]   | Test Method [2] | Result Date and Time [3] | Uncertainty [4] | Comments                                                       |
|----------------|---------------------------------------------------------------------------|----------------------|------------------------------|--------------|-----------------|--------------------------|-----------------|----------------------------------------------------------------|
| A1             | Carbon monoxide (CO)                                                      | No limit set         | A period of stable operation | 5.73 kg/hr   | In-house method | 25/07/2022 to 31/07/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
|                |                                                                           | 25 tonnes            | Annually                     | 30.86 tonnes | Calculation     | 01/01/2022 to 31/12/2022 |                 | Total tonnage emitted for period 1 January to 31 December 2022 |
| A1             | Tetrafluoroethylene (TFE)<br>Class B Volatile Organic Compounds (VOC) [5] | 2 kg/hour            | A period of stable operation | 1.59 kg/hr   | In-house method | 22/08/2022 to 28/08/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
|                |                                                                           | 7 tonnes             | Annually                     | 3.27 tonnes  | Calculation     | 01/01/2022 to 31/12/2022 |                 | Total tonnage emitted for period 1 January to 31 December 2022 |
| A1             | Trifluoromethane (R23)<br>Class A VOC [5]                                 | 500 g/hour           | A period of stable operation | 0.44 kg/hr   | In-house method | 22/08/2022 to 28/08/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
| A1             | Difluoromethane (R32)<br>Class A VOC [5]                                  | 100 g/hour           | A period of stable operation | 0.03 kg/hr   | In-house method | 15/08/2022 to 21/08/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
| A1             | Trifluoroethylene (3FE)<br>Class B VOC [5]                                | 2 kg/hour            | A period of stable operation | 0.05 kg/hr   | In-house method | 24/10/2022 to 30/10/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
|                |                                                                           | 5 tonnes             | Annually                     | 0.04 tonnes  | Calculation     | 01/01/2022 to 31/12/2022 |                 | Total tonnage emitted for period 1 January to 31 December 2022 |
| A1             | Pentafluoroethane (R125)<br>Class A VOC [5]                               | 100 g/hour           | A period of stable operation | 0.28 kg/hr   | In-house method | 12/12/2022 to 18/12/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
| A1             | Chlorodifluoromethane (R22)<br>Class A VOC [5]                            | 100 g/hour           | A period of stable operation | 0.46 kg/hr   | In-house method | 12/12/2022 to 18/12/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
| A2             | Tetrafluoroethylene (TFE)<br>Class B VOC [5]                              | 2 kg/hour            | A period of stable operation | 0.03 kg/hr   | In-house method | 21/11/2022 to 27/11/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
|                |                                                                           | 5 tonnes             | Annually                     | 0.13 tonnes  | Calculation     | 01/01/2022 to 31/12/2022 |                 | Total tonnage emitted for period 1 January to 31 December 2022 |
| A2             | Hexafluoropropylene (HFP)<br>Class B VOC [5]                              | 2 kg/hour            | A period of stable operation | 0.02 kg/hr   | In-house method | 14/11/2022 to 20/11/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |
|                |                                                                           | 5 tonnes             | Annually                     | 0.02 tonnes  | Calculation     | 01/01/2022 to 31/12/2022 |                 | Total tonnage emitted for period 1 January to 31 December 2022 |
| A2             | Chlorodifluoromethane (R22)<br>Class A VOC [5]                            | 800 g/hour           | A period of stable operation | 0.81 kg/hr   | In-house method | 19/12/2022 to 25/12/2022 |                 | Highest weekly average for period 1 July to 31 December 2022   |

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| Emission Point | Parameter                                    | Emission Limit Value | Reference Period                                           | Result [1]             | Test Method [2] | Result Date and Time [3] | Uncertainty [4]           | Comments                                                                                                                                                                                                                                            |
|----------------|----------------------------------------------|----------------------|------------------------------------------------------------|------------------------|-----------------|--------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A4             | Hydrogen Fluoride (HF)                       | No limit set         | Sample to be collected when lubricant oven is in operation | 40.6 mg/m <sup>3</sup> | In-house method | 23/02/2022               | +/-5.76 mg/m <sup>3</sup> | Measurement of uncertainty associated with the result as stated by the external test house on the report. HF monitoring on A4 was not completed during Q3/Q4 2022. HF monitoring is planned to be completed January, May, and November during 2023. |
|                |                                              | 250 kg               | Annually                                                   | 120.78 kg              | Calculation     | 01/01/2022 to 31/12/2022 |                           | Based on FL1679 & FL1680 production tonnage for 2022: 32.77t and HF monitoring undertaken February 2022.                                                                                                                                            |
| A5             | SAA-1000                                     | No limit set         | A period of stable operation                               | 0.12 mg/m <sup>3</sup> | In-house method | 24/02/2022               | +/-0.02 mg/m <sup>3</sup> | SAA-1000 monitoring on A5 was not completed during Q3/Q4 2022. SAA-1000 monitoring is planned to be completed March, June, September and December during 2023.                                                                                      |
| A6             | Tetrafluoroethylene (TFE)<br>Class B VOC [5] | No limit set         | A period of stable operation                               | 0.19 tonnes            | Calculation     | 01/07/2022 to 31/12/2022 |                           |                                                                                                                                                                                                                                                     |

- [1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
- [2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
- [3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
- [4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.
- [5] Class A VOCs to be expressed as individual VOCs and Class B VOCs to be expressed as carbon.

Signed\*: [REDACTED]

Date: 31/01/2023

(\*authorised to sign as representative of AGC Chemicals Europe Limited)

Permit Number: EPR/BU5453IY  
 Operator: AGC Chemicals Europe Limited  
 Facility: AGC Chemicals Europe, Hillhouse

Form Number: Water 1 / 2017

**Reporting of periodically monitored emissions to water (other than to sewer) for the period from ...July 2022... to ...December 2022...**

| Emission Point                                                                                                                      | Parameter                                                                                          | Emission Limit Value                                                                                                                    | Reference Period               | Result [1]                                                                                           | Test Method [2]                                               | Sample Date and Times [3]                                                                                                                                                    | Uncertainty [4] | Comments                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring requirements relevant to the effluent release from the thermal treatment plant scrubber (from Table S3.3 of the permit)  |                                                                                                    |                                                                                                                                         |                                |                                                                                                      |                                                               |                                                                                                                                                                              |                 |                                                                                                                                                                                           |
| W1                                                                                                                                  | Cadmium (Cd) and Thallium (Tl) and their compounds expressed as cadmium/thallium                   | The limit is applicable to the effluent from the thermal treatment plant scrubber outlet, defined as W4 in Table S3.4 of the permit.[5] | Flow proportional sample       | Ca: <0.01 mg/l<br>Tl: 0.01 mg/l                                                                      | BS EN ISO 15586                                               | Ca: all monthly samples <0.01 mg/l<br>Th: December                                                                                                                           |                 | Highest monthly result for period 1 July to 31 December 2022<br><br>Note: Thermal treatment plant scrubber was not operational during this period.                                        |
| W1                                                                                                                                  | Arsenic (As), Lead (Pb), Chromium (Cr), Copper (Cu), Nickel (Ni) and Zinc (Zn) and their compounds |                                                                                                                                         | Flow proportional sample       | As: 0.01 mg/l<br>Pb: <0.01 mg/l<br>Cr: 0.02 mg/l<br>Cu: <0.01 mg/l<br>Ni: 0.02 mg/l<br>Zn: 0.02 mg/l | BS EN ISO 15586                                               | As: July, August, September and November.<br>Pb and Cu: all monthly samples <0.01 mg/l.<br>Cr: July, November and December.<br>Ni: July, August, and September.<br>Zn: July. |                 | Highest monthly result for period 1 July to 31 December 2022<br><br>Note: Thermal treatment plant scrubber was not operational during this period.                                        |
| W1                                                                                                                                  | Dioxins and furans                                                                                 |                                                                                                                                         | Flow proportional sample       | Total 2,3,7,8-Furans<br>0.0092 ng/l<br>Total 2,3,7,8-Dioxins<br>0.0092 ng/l                          | BS ISO 18073                                                  | 20/07/2022                                                                                                                                                                   |                 | Highest monthly result for period 1 July to 31 December 2022<br><br>Note: Thermal treatment plant scrubber was not operational during this period.<br><br>Awaiting December 2022 results. |
| Emission limits and monitoring requirements relevant to the effluent releases from the installation (from Table S3.3 of the permit) |                                                                                                    |                                                                                                                                         |                                |                                                                                                      |                                                               |                                                                                                                                                                              |                 |                                                                                                                                                                                           |
| W1                                                                                                                                  | Suspended Solids                                                                                   | 150 mg/l [6]                                                                                                                            | Flow weighted composite sample | 142.40 mg/l                                                                                          | In-house method                                               | 18/07/2022                                                                                                                                                                   |                 | Highest daily result for period 1 July to 31 December 2022                                                                                                                                |
| W1                                                                                                                                  | Chemical Oxygen Demand                                                                             | No limit set                                                                                                                            | Spot sample                    | 1950 mg/l                                                                                            | In-house method based on BS ISO 15705:2002, BS 6068-2.80:2022 | w/c 15/08/2022                                                                                                                                                               |                 | Highest weekly spot sample result for period 1 July to 31 December 2022                                                                                                                   |
| W1                                                                                                                                  | Fluoride (expressed as Fluorides)                                                                  | No limit set                                                                                                                            | Flow weighted composite sample | 9.90 mg/l                                                                                            | Ion chromatography                                            | August and September 2022                                                                                                                                                    |                 | Highest monthly result for period 1 July to 31 December 2022                                                                                                                              |
| W1                                                                                                                                  | Octylphenolethoxylate                                                                              | No limit set                                                                                                                            | Flow weighted composite sample | <0.01 µg/ml                                                                                          | In-house method                                               | All results <0.01 µg/ml                                                                                                                                                      |                 | Highest monthly result for period 1 July to 31 December 2022<br><br>Awaiting December 2022 results.                                                                                       |
| W1                                                                                                                                  | SAA-1000                                                                                           | No limit set                                                                                                                            | Flow weighted composite sample | 9.9 µg/ml                                                                                            | In-house method                                               | November 2022                                                                                                                                                                |                 | Highest monthly result for period 1 July to 31 December 2022<br><br>Awaiting December 2022 results.                                                                                       |

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| Emission Point                                                                                                                                                                        | Parameter                                                              | Emission Limit Value | Reference Period                   | Result [1]                                                                 | Test Method [2]                                 | Sample Date and Times [3]              | Uncertainty [4] | Comments                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------|------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| W1                                                                                                                                                                                    | Mercury (Hg)                                                           | 0.05 mg/l [5]        | Flow proportional sample           | 0.01 mg/l                                                                  | BS EN ISO 17852                                 | August 2022                            |                 | Highest monthly result for period 1 July to 31 December 2022                                                                                                       |
|                                                                                                                                                                                       |                                                                        | 1 kg                 | Annually                           | 0 Kg                                                                       | Calculation                                     | N/A                                    |                 | Total tonnage emitted for period 1 January to 31 December 2022<br>Product is produced using a non-mercury process with a product specification of Hg <0.001 mg/kg. |
| W1                                                                                                                                                                                    | pH minimum                                                             | 5                    | Daily average                      | 6.30                                                                       | pH meter                                        | 03/08/2022 and 01/12/2022              |                 | Lowest pH result from the daily effluent composite sample for period 1 July to 31 December 2022                                                                    |
| W1                                                                                                                                                                                    | pH maximum                                                             | 8.5                  | Daily average                      | 7.78                                                                       | pH meter                                        | 02/08/2022                             |                 | Highest pH result from the daily effluent composite sample for period 1 July to 31 December 2022                                                                   |
| W1                                                                                                                                                                                    | Temperature maximum                                                    | 40°C                 | n/a                                | 37.52°C                                                                    | Temperature sensor                              | 19/07/22                               |                 | Highest Temperature Reading for period 1 July to 31 December 2022                                                                                                  |
| W1                                                                                                                                                                                    | Flow maximum                                                           | No limit set         | Daily average                      | 57m <sup>3</sup>                                                           | MCERTs flow meter                               | 23/11/2022                             |                 | Highest Daily Total for period 1 July to 31 December 2022                                                                                                          |
| <b>Emission limits for effluent release from the Thermal Treatment Plant scrubber (W4) – discharging to the on-site effluent treatment plant (W1)</b> (from Table S3.4 of the permit) |                                                                        |                      |                                    |                                                                            |                                                 |                                        |                 |                                                                                                                                                                    |
| W4                                                                                                                                                                                    | Total Suspended Solids                                                 | 30 mg/l [7]          | Flow weighted composite sample [9] | Unable to calculate. See IC4 report.                                       | As set out in Table S3.3 of the permit [9] [10] | As measured and reported for W1 above. |                 | Note: Thermal treatment plant scrubber was not operational during this period.                                                                                     |
|                                                                                                                                                                                       |                                                                        | 45 mg/l [8]          |                                    |                                                                            |                                                 |                                        |                 |                                                                                                                                                                    |
| W4                                                                                                                                                                                    | Mercury and its compounds, expressed as mercury                        | 0.03 mg/l            | Flow proportional sample [9]       | As measured and reported for W1 above. It is not possible to measure at W4 | As set out in Table S3.3 of the permit [9]      | As measured and reported for W1 above. |                 |                                                                                                                                                                    |
| W4                                                                                                                                                                                    | Cadmium and thallium and their compounds expressed as cadmium/thallium | 0.05 mg/l            | Flow proportional sample [9]       |                                                                            | As set out in Table S3.3 of the permit [9]      | As measured and reported for W1 above. |                 |                                                                                                                                                                    |
| W4                                                                                                                                                                                    | As and its compounds expressed as As                                   | 0.15 mg/l            | Flow proportional sample [9]       |                                                                            | As set out in Table S3.3 of the permit [9]      | As measured and reported for W1 above. |                 |                                                                                                                                                                    |
| W4                                                                                                                                                                                    | Pb and its compounds expressed as Pb                                   | 0.20 mg/l            | Flow proportional sample [9]       |                                                                            | As set out in Table S3.3 of the permit [9]      | As measured and reported for W1 above. |                 |                                                                                                                                                                    |
| W4                                                                                                                                                                                    | Cr and its compounds expressed as Cr                                   | 0.50 mg/l            | Flow proportional sample [9]       |                                                                            | As set out in Table S3.3 of the permit [9]      | As measured and reported for W1 above. |                 |                                                                                                                                                                    |
| W4                                                                                                                                                                                    | Cu and its compounds expressed as Cu                                   | 0.50 mg/l            | Flow proportional sample [9]       |                                                                            | As set out in Table S3.3 of the permit [9]      | As measured and reported for W1 above. |                 |                                                                                                                                                                    |



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| Emission Point | Parameter                            | Emission Limit Value | Reference Period             | Result [1]                                                                 | Test Method [2]                            | Sample Date and Times [3]              | Uncertainty [4] | Comments                                                                       |
|----------------|--------------------------------------|----------------------|------------------------------|----------------------------------------------------------------------------|--------------------------------------------|----------------------------------------|-----------------|--------------------------------------------------------------------------------|
| W4             | Ni and its compounds expressed as Ni | 0.50 mg/l            | Flow proportional sample [9] | As measured and reported for W1 above. It is not possible to measure at W4 | As set out in Table S3.3 of the permit [9] | As measured and reported for W1 above. |                 | Note: Thermal treatment plant scrubber was not operational during this period. |
| W4             | Zn and its compounds expressed as Zn | 1.50 mg/l            | Flow proportional sample [9] |                                                                            | As set out in Table S3.3 of the permit [9] | As measured and reported for W1 above. |                 |                                                                                |
| W4             | Dioxins and furans                   | 0.30 ng/l            | Flow proportional sample [9] |                                                                            | As set out in Table S3.3 of the permit [9] | As measured and reported for W1 above. |                 |                                                                                |

- [1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
- [2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases, the principal technique is stated, for example gas chromatography.
- [3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
- [4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.
- [5] The limit is applicable to the effluent from the thermal treatment plant scrubber outlet, defined as W4 in Table S3.4 of the permit.
- [6] A limit of 250 mg/l is effective during maintenance of the on-site effluent treatment processes. This limit can be applied for a maximum of 28 days during a year.
- [7] Compliance is achieved when 95% of the measurements do not exceed the limit.
- [8] Compliance is achieved when 100% of the measurements do not exceed the limit.
- [9] Monitoring carried out at W1 shall be used to determine compliance with the limits at W4.
- [10] Reporting will be against the W1 limit of 150mg/l

Signed\*: [REDACTED]

Date: 31/01/2023

(\*authorised to sign as representative of AGC Chemicals Europe Limited)