Part B Permit Application Supporting Document – Aston Martin Lagonda Ltd Wellesbourne Unit 8

Doc Reference: AstonMartinWellesbourneUnit8PartBPermit-supporting-info2023.pdf

---

---

1. Introduction

This document supports the application submitted by Aston Martin Lagonda Ltd (AML) for a new Local Authority Pollution Prevention and Control ('LAPPC') Part B permit at its car manufacturing facility in Wellesbourne Unit 8 within Warwickshire. The installation will utilise newly installed individual paint spraying booths to provide paint production support for the Valhalla and AM370 vehicles.

2. B2 The Installation

B2.1 Describe the proposed installation and activities and identify the foreseeable emissions to air from each stage of the process (this will include any foreseeable emissions during start up, shut down and any breakdown/abnormal operation)

The installation is used for the preparation and painting of motor vehicle bodies with a capacity of approximately 1000 bodies/year.

The following activities will be carried out on site.

1. Raw Material Storage (Paints, Solvents)
2. Paint Mixing
3. Surface Preparation
4. Paint Application (Primer, Base Coat & Clear Coat)
5. Finishing

The process is a coating process involving the preparation and painting of motor vehicle bodies using 0.5 tonnes or more of organic solvents in any 12-month period, as prescribed in **Section 6.4 Part B (a)(iv)** of the Environmental Permitting Regulations. The detailed guidance for the process is contained in Process Guidance Note PG6/47(11) - "Paint Application in Vehicle Manufacturing". This Note applies as although it is expected that the process will consume between 0.5 - 5 tonnes of organic solvent in a 12-month period from Q3 2023 – Q3 2024, this figure is anticipated to increase to +5 tonnes of organic solvent in the period between Q3 2024 and Q3 2025 (see Table 1.1).

	Total Volume					Total VOC and Isocyanate [kg]	
Row Labels	Sum of AM370	Sum of AM370 Graphics	Sum of Valhalla	Sum of Valhalla Graphics	Sum of Valhalla Solvent	Sum of Total VOC [Kg]	Sum of Total Isocyanates [kg]
2023	15	39	1	1		297	1.716
2024	95	385	46	61	12	3156	18.003
2025	180	648	36	144	12	5201	30.024
2026							
Grand Total	290	1072	83	206	24	8654	49.743

Table 1.1: Anticipated VOC and Isocyanate usage (kg) (based on planned production figures and VOC & Isocyanate volumes present in degreasers, primers, basecoats, clear coats, topcoats & ground coats)

1. Raw Material Storage
   The major raw materials used within the installation include solvent thinners, solvent borne primer resin and hardener (2K Isocyanate), waterborne and solvent borne base coats, solvent borne clearcoat resin and hardener (2K Isocyanate), solvent and waterborne degreasers, and spray gun cleaning solvent. All material is stored in designated areas, with ventilation provided as required, and handled in a safe manner. Foreseeable emissions to air include fugitive emissions of Volatile Organic Carbon (VOC) and odour during storage and release of hazardous substances to air from leaks and spillages.

2. Paint Mixing
   Paint mixing, where required, is carried out within a designated area known as the Paint Mixing Room, with the paint being diluted with solvent thinners to the required specification and ventilation provided as required. Quantities prepared are proportionate to the work being carried out. The mixed paint is then manually transferred to the paint booths via PPS containers. Pre-mixed paint may also be used (basecoat) and transferred to the paint booths via PPS.

   The spray guns are cleaned in a dedicated cleaning room in an automatic equipment cleaning machine. A water-based material is used for cleaning spray guns used to spray water-based paint and a solvent material is used to clean spray guns used to spray solvent based paint. To extend the life of the cleaning materials it is circulated through dedicated ‘little blue’ filters. The spray guns are finally rinsed in fresh material which will drain to the collection containers under the machine.
   When the water-based material becomes no longer usable the container is sealed and collected for disposal by an authorised disposal agent.
   When the solvent based material becomes no longer usable an internal pump is used to transfer the spent solvent to a solvent recycling machine. To reduce the amount of solvent evaporation from the gun wash machine through the extraction vent an automatic solvent extraction valve is utilised. The recycled clean solvent is then used again for the clean flushing solvent. The condensed dry material cake left over from the solvent recovery process is sealed in a polythene bag and disposed of by an authorized disposal agent as hazardous waste organised via our on-site waste management company.

   Foreseeable emissions to air include fugitive emissions of VOC and odour during paint mixing or cleaning and release of hazardous substances to air from leaks and spillages.

3. Surface Preparation
   The car body transfers into the paint shop from either Gaydon or St Athan main factories where it is prepared for paint application which consists of several stages. Body panels are scuffed through a sanding operation to ensure a perfect surface for paint application, which is carried out in specialised enclosures fitted with filtration equipment. The dust extraction system captures dusts created by the sanding process and these are collected via a cyclone system, into plastic bags. Bags are checked daily to assess whether they are full and require changing. Once removed the bags are tied and placed into a lidded skip within the hazardous waste storage area. Critical areas

are masked to protect them during spraying operations. Slave tooling is fitted for any additional parts which also need painting e.g. wingmirrors. Sealing is carried out to prevent water ingress, protect cut edges from the atmosphere or for soundproofing purposes. Following that the surfaces are cleaned and degreased to ensure the vehicle body is free from all contaminants. Solvent impregnated wipes are used for this purpose where required, used wipes are placed into a separate lidded hazardous waste storage bin which when required to be emptied the bag is tied for transfer to the waste storage area. Cleaning is undertaken both manually using tak-cloths and a solvent cleaner as well as compressed air. A final inspection is then undertaken, and any defects identified within the body panels are repaired. This can include applying etch primer to prevent corrosion or coating composite panels with a primer carried out within the paint booths.

Foreseeable emissions to air include particulate matter (dust) emissions from the sanding operations and fugitive emissions of VOC and odour during cleaning/degreasing operations.

4. Paint Application
   The coating application is carried out in three stages.

   Stage one of the spraying process is the primer application within a paint combi booth. Several coats of primer are applied manually using HVLP spray guns. Primer provides a smooth even surface to aid the adhesion of the basecoat. After spraying, the primer is allowed to flash off and then dry within the combi booth (70C for 45mins). Once the car body has been oven cured it enters the flatting stage which is a series of sanding operations within a ventilated enclosure. As above, dusts created from sanding are captured by the filtration system and are collected in plastic bags and replaced as necessary as above.

   Stage two of the spraying process is the basecoat application within a paint combi booth. Several coats of waterborne basecoat are applied manually using HVLP spray guns until the desired colour effect and quality is achieved. After spraying, the basecoat is allowed to flash off using a heated process (47C 20mins) within the combi booth

   Stage three of the spraying process is the clearcoat application within the paint combi booth. Several coats of clearcoat are applied using HVLP spray guns. After spraying, the clearcoat is allowed to flash off and then dry within the paint combi booth at (85C for 60mins). Once the car body has been oven cured it enters the finishing stage described below.

   <u>Spray Booth Operation</u>

   All incoming air is passed through fabric panel air filters that are fitted into the booth ceilings. This ensures that no dust enters the spray booths. All outgoing (exhaust) air is extracted below the floor of the booth through a dry filtration system to ensure all paint residue from overspray is captured and to maintain downdraught of particulates within the spray booth. Spare filters are stored on site, these are replaced after 156 hours of operation. Once removed these filters are placed into sealed plastic bags and transferred to our waste area for disposal as hazardous waste.
   All paint residue captured within the dry filters is removed from site by an authorised contractor.

   <u>Oven Operation</u>

   The paint combi booths are fitted with direct fired burners whereby 90% of the air is recycled. The remaining 10% of the air is “bled off” in line with legal requirements to ensure the concentration of combustible gas never reaches the lower explosive limit.

   Foreseeable emissions to air include point and fugitive emissions of VOC, particulate matter (dust) and odour during paint application and fugitive particulate matter (dust) emissions from the sanding operations.

5. Finishing

After curing the car body is sanded, polished, and inspected for defects. Dust particles created are removed using dry wipes and these wipes are bagged as above. The filtration system collects any remaining dust particles, and these are collected by bags as above. Should any defects be found these are rectified by various methods depending on their severity. On completion the car bodies are transferred to Gaydon plant for final assembly.

B2.2 Once all foreseeable emissions have been identified in the proposed installation activities, each emission should be characterised (including odour) and quantified.

Atmospheric emissions should be categorised under the following

i. point source, (e.g. chimney / vent, identified by a number and detailed on a plan)
ii. fugitive source (e.g. from stockpiles / storage areas).

If any monitoring has been undertaken, please provide the details of emission concentrations and quantify in terms of mass emissions. If no monitoring has been undertaken, please state this.

(Emission concentration = e.g. milligrams per cubic metre of air; mass emission = e.g. grams per hour, tonnes per year)

1. Point source emission from paint application and rework exhaust stacks (Particulate matter, VOCs, Odour (Potential))
2. Point source emission from RTO plant stack (VOCs, oxides of nitrogen, carbon monoxide, Odour (Potential))
3. Minimal fugitive emissions from storage, paint mixing/cleaning, surface preparation, paint application and finishing/rework activities (VOC, Odour (Potential))
4. Minimal fugitive emissions from surface preparation, paint application and finishing/rework activities (Particulate matter)

Point source emission points are identified on Drawing:

Unit 8 Site Plan inc Boundary.pdf

No monitoring has been undertaken as the facility is not yet operational.

B2.3 For each emission identified from the installations' activities describe the current and proposed technology and other techniques for preventing or, where that is not practicable, reducing the emissions into the air. If no techniques are currently used and the emission goes directly to the environment, without abatement or treatment then this should be stated.

Release Source	Emission	Control techniques
Storage and handling of organic solvents and materials containing organic solvents	VOC	▪ Use of enclosed storage, mixing and transfer systems. ▪ Coating materials are kept within a dedicated bunded store ▪ All products kept sealed / lidded prior to use. ▪ Controlled handling procedures. ▪ Mixing and blending of coating materials are kept to the minimum required for the operation ▪ Solvent wipes are pre-impregnated.

		▪ Dry cloths may have solvent cleaner applied to them via a piston dispenser. ▪ Solvent contaminated PPE / rags/ wipes are stored in lidded bins and kept in sealed bags prior to collection for disposal in the waste area. Skips are lidded. Wastes are collected regularly. ▪ Solvent cleaning equipment is lidded, for the cleaning of spray guns and ancillary equipment. ▪ Waste solvents created from cleaning of equipment is kept in sealed drums. ▪ Spill kits available for use as required, trained spill responders in departments ▪ The mixing room has active air extraction, that passes through filtration, when filters are replaced these are bagged for disposal
Coating operations	Particulate matter	▪ Specialised spray booth enclosure with filtration equipment. ▪ Spray booth operates at a negative pressure. ▪ If extraction fails, then the spray booth alarm operates, and spraying operation would cease. ▪ Pre-use balance checks of spray booth operation are carried out automatically. ▪ Active filtration is present in the sanding booths, dust particulates are captured and stored within the filter which are then sealed into bags. Full dust bags are sealed and placed in lidded skips. ▪ Spray booth equipment will meet particulate emission limits.
Flue gas	Nitrogen oxides	▪ Paint booths meet specific requirements.
	Carbon monoxide	▪ Paint booths meet specific requirements.
	VOC	• No techniques currently in place and the emissions will go to the environment (No RTO on site)

B2.4 Describe the proposed systems to be used in the event of unintentional releases and their consequences. This must identify, assess, and minimise the environmental risks and hazards,

provide a risk-based assessment of any likely unintentional releases, including the use of historical evidence. If no assessments have been carried out, please state.

AML has procedures for dealing with environmental incidents and emergencies including reporting, investigation, corrective actions, and records. Emergency response procedures are in place with regards to spill control, trained spill responders are in each department.
Failure of spray booth extraction / failure of negative pressure within the spray booth results in an alarm sounding, and no further spray operations can continue.
Proactive maintenance of the spray booth will be carried out annually by an external contractor.
There is an on-site maintenance team on site that can respond to maintenance requests as required, otherwise specialist contractors will be engaged.
AML has a dedicated near miss/incident reporting system (AIRS) which is used by all personnel when required. Immediate investigations would be undertaken in the event of any abnormal emissions, malfunction or breakdown, and any remedial actions necessary would be put in place. The Council would also be informed via our communication process.
Historical failure of abatement equipment on the main Gaydon site (July 2023) resulted in the spray operations being stopped, the onsite maintenance team investigated the infrastructure measures that were required, and the works were carried out promptly with a number of days. The Council was kept informed of this situation.

B2.5 Describe the proposed measures for monitoring all identified emissions including any environmental monitoring, and the frequency, measurement methodology and evaluation procedure proposed (e.g. particulate matter emissions, odour etc). Include the details of any monitoring which has been carried out which has not been requested in any other part of this application. If no monitoring is proposed for an emission, please state the reason.

An annual manual extractive test will be completed for VOCs, oxides of nitrogen, carbon monoxide and exit velocity. The remaining exhaust stacks will have an annual manual extractive test for VOCs where relevant, particulate matter and exit velocity. The total incoming VOC will be calculated monthly.
A Paint Shop Permit Site Walk Log will be completed for Unit 8 on a weekly basis. This will include the recording of the date, name of person completing the form, and comments including whether there is any offensive odour at the site boundary, any persistent visible emissions and droplets, and any visible smoke that exceeds the equivalent of Ringelmann Shade 1 as described in the British Standard BS2742:1969.

B2.6 Provide detailed procedures and policies of your proposed environmental management techniques, in relation to the installation activities described.

AML will operate the installation in accordance with an environmental management system (EMS) which is certified to ISO14001. AML is currently certified to ISO14001:2015.

Effective control of emissions to air requires the proper management, supervision and training for process operations; the proper use of equipment, effective preventative maintenance on all related plant and equipment; and ensuring related spares and consumables are adequately available so plant breakdowns can be rectified rapidly.

AML will ensure staff and contractors are competent and provide training and instruction in their duties relating to the control of emissions to air. The training will focus on the awareness of responsibilities under the permit, steps to minimise emissions during start-up and shut-down and actions to take when there are abnormal or emergency conditions that could, if not controlled, result in emissions to air.
Training will also be provided with relation to the specific Part B Permit requirements to ensure that all operators understand and have knowledge of the requirements. New starters in the relevant departments will received similar training and induction prior to works, including any spill response training as required. Training requirements will be documented and maintained, and records of training undertaken will be retained.

Effective preventative maintenance shall be employed on all plant and equipment concerned with the control of emissions to air. A written maintenance programme for air pollution control equipment will be documented and records of maintenance undertaken will be retained. AML use a dedicated maintenance software system to record all maintenance requests, breakdowns, and repairs. Should any external

contractors be required for any works, their competency is checked prior to engagement and any proof of qualifications obtained.