



**POLLUTION PREVENTION AND CONTROL ACT 1999
POLLUTION PREVENTION AND CONTROL (ENGLAND AND WALES)
REGULATIONS 2000
PERMIT OF PROCESS**

THIS IS TO CERTIFY THAT THE COATING OF WOOD

at: **ANGRAVES CANE FURNITURE LTD, BROOK STREET
THURMASTON LEICESTER LE4 8DB**

National Grid Ref: SK 611092

has been duly permitted in accordance with Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000 subject to the conditions outlined in this document.

Name of Operator: ANGRAVES CANE FURNITURE LTD
**Registered Office c/o Newby Castleman & Co, Chartered Accountants, West Walk Building,
110 Regent Road Leicester LE1 7LT**

This Permit shall apply only to the premises occupied by the applicant, as specified and described in the Application for Permit submitted to the Borough of Charnwood. This Permit, consisting of 21 pages, shall be subject to replacement, variation or amendment, as may be considered appropriate by the Borough of Charnwood at any time, according to provisions of Regulations 12, 15, and 17 of the Pollution Prevention and Control (England and Wales) Regulations 2000

The conditions contained herein shall apply from the date of the Permit unless otherwise stated.

Signed on behalf of Charnwood Borough Council

Dated...21 July 2006

Ann Green, Specialist Environmental Health Officer
(Delegated officer for the purpose)

Counter-signed Beverley Green, Specialist Environmental Health Officer

Charnwood Borough Council
Southfield Road, Loughborough LE11 2TX

Angraves Cane Furniture Ltd, Brook Street Thurmaston, Leicester**I.0 Description of Permitted Process****I.1 Purpose**

The purpose of these premises is the application of sealant onto cane furniture, followed by further surface preparation and spray application of two finishing coats. The annual quantity of solvents consumed currently exceeds 5 tonnes in any 12-month period. The coating is by spray application in one of the spray booths located within the main factory building.

The premises constitute a single LAPC installation with no SED activity.

I.2 Plant Detail

The site is situated on land west of Newark Road between Lea Close and Brook Street. The site has access from Brook Street. The location of the site is shown on the attached Plan 01/057.

The coating process is undertaken within the main factory building to the rear of the offices in the spray shop. The unit is bordered by residential properties on Brook Street and Lea Close.

There are 2 Binks Bullows spray booths at this installation both located in the main factory building, (shown in blue on figure reference 2/057). The booths are a mixture of dry and wet backed filters, and are served by 3 exhaust stacks. There is a single paint stores, situated externally to the main factory building (shown in Green on plan 2/057) and a waste storage area located in the yard to the front of the main spray shop (shown in pink on plan 2/057).

The following plant is used in the process: -

Booth No1 is a Binks Bullows Dry back booth (marked dry back on Plan 2/57), it measures 1 meters across the open face, with a total air flow of 15m³/s. The disposable paper filter consists of two sheets of heavy paper with corrugations of unequal sizes that allow the passage of air to exhaust. The booth is fitted with two exhaust stacks, and is used for sealant applications.

The two extract stacks, run vertically through the roof terminating at a height of approx 3m above the roof height. The flue is made from galvanised steel.

Filter pads are inspected on a daily basis by the supervisor and changed at least once a month. Observations and filter changes are recorded in the log book

There is no arrestment plant designed to control VOC emissions from this process. Particulate emission controls from the spray booths are via the paper filter systems of the booth.

Paint is manually applied using a high volume, low pressure pump and gun which gives a transfer efficiency of 75-80%.

Booth No 2 is a Binks Bullows “No pump” wet back booth (marked wet back on Plan 2/57) it measures 5 meters across the open face and has a total air flow of 9m³/s. Paint overspray is collected through a single water wash wall and internal scrubber. The booth is fitted with a single exhaust flue and is used for finishing coat applications.

The extract stack runs vertically through the roof terminating at a height of approx 3m above the roof height. The flue is made from galvanised steel.

To maintain the efficiency of the spray booth, prior to use the following checks are made: -

1. All scum/solids are removed from the water surface.
2. Any paint particles adhering the screen surface are removed
3. Ph levels are checked on a weekly basis with litmus paper and adjusted to the correct Ph.
4. Water levels are checked daily.

And all of the above are recorded in the log book.

Holding tanks are drained, cleaned and refilled at least once every 3 months.

There is no arrestment plant designed to control VOC emissions from this process. Particulate emission control from the spray booth is via the water wash wall of the booth. Paint is manually applied using a high volume, low pressure pump and gun which gives a transfer efficiency of 75-80%.

1.3 Plant Operation

The cane furniture is sealed and then allowed to dry in the drying area (see Plan Ref 2/57). The furniture is denibbed within the spray shop area and then two finishing coats are sprayed on.

All paint spraying operations carried out within the spray booth areas operated under negative pressure so as to prevent fugitive emissions of odour and particulate matter.

The process is a batch process, with components being painted in accordance with customer requirements. Paints and flammable solvents are stored in the paint store (shown in green on plan 02/057) and distributed to the individual spray areas as required for each particular job. No paint is stored internally, or adjacent to the work area.

Paint is held in 25 litre cans, thinners are received in 1 litre plastic screw top containers and gun wash in 15 litre metal containers. The external paint storage area is kept locked when not in use and is fully bunded and regularly inspected for leaks.

Paint is applied by HVLP guns within one of the two spray booth. Rags are only used for wiping off excessive coating and not for applying coating or cleaning agents.

Emissions to air are subject to control by local exhaust ventilation. There is a written plan for the maintenance, inspection and replacement of extract air filters and a logbook is kept detailing all filter changes.

The tools used in the application of coatings, such as spray guns, mixing vessels, etc are cleaned after use. The cleaning agents vary according to the type of stain/lacquer employed. All cleaning operations are carried out in the spray booth with the extract equipment running.

Residual paint and solvent waste are returned to the paint store for recycling.

Nominally empty paint tins are crushed and placed in an enclosed waste container situated in the yard (shown in pink on Plan 2/57) prior to removal by an authorised waste company.

1.4 VOC Compliance

In order to reduce VOC emissions from the installation, two compliance options are available, these are:

1. By Implementation of a solvent reduction scheme, to reduce emissions or,
2. By the use of compliant coatings.

The preferred option of compliance at this installation is by the reduction scheme.

2.0 Non – VOC Emissions

2.1 The following non-VOC emission limit shall apply.

| Substance | Source | Emissions Limit | Monitoring Frequency | Monitoring Method |
|--------------------|------------------------|---|----------------------|---|
| Particulate matter | All process activities | 50mg/Nm ³ as 30 minute mean for contained sources | Annual | Manual extractive testing. See paragraphs 5.23 of PG6/33 |

2.2 All pollutant concentrations shall be expressed at reference condition 273k, 101.3kpa without correction for water vapour content.

2.3 Calibration and compliance monitoring shall meet the following requirements as appropriate.

No result obtained from non-continuous monitoring of particulate matter shall exceed the emission concentration limit specified in the above table except where either:-

- a) Data is obtained over at least 5 sampling hours in increments of 30 minutes or less, or
- b) At least 20 results are obtained where sampling time increments of more than 30 minutes are involved
And in the case of a) or b)
- c) No daily mean of all 30 minutes mean emissions concentrations shall exceed the specified emission concentration limits during normal operation (excluding start-up and shut-down)
And
- d) No 30 minute mean emissions concentration shall exceed twice the specified emissions concentration limits during normal operations (excluding start-up and shut-down)

2.4 The introduction of dilution air to achieve the emissions concentration limit specified in condition 2.1 above, shall not be permitted.

2.5 The frequency of particulate testing shall be increased for example, as part of commissioning of new or substantially changed activities, or where emission levels are near to or approach the emission concentration limits given above.

- 2.6 Adequate facilities for sampling shall be provided on vents and ducts and the sampling points shall be designed to comply with British or equivalent standards

3.0 VOC Emissions – Reduction Scheme

3.1 The company shall submit to Charnwood Borough Council, no later than 31 December 2006, an emission reduction plan for the site. The plan shall have regard to the standards and compliance dates laid down in PG6/33 (04), in particular to:-

- Decrease the average solvent content of the total input; and/or
- Increase efficiency in the use of solids.

To achieve a reduction of the total emissions from the installation.

The plan shall, from the date of its approval form part of this Permit.

Reduction Scheme (No VOC Abatement)

3.2 The Target Emissions Values in the table below shall be complied with.

| |
|---|
| Target Emission Values (Consumption Below 15 Tonnes) |
| Total Mass of Solids X 1.6 |

3.3 Calculate your emissions and demonstrate compliance with the target emission detailed above. Details of this calculation and evidence of compliance must be submitted (in the format detailed in appendix 3 of this permit) to Charnwood Borough Council.

A summary of the calculation required is given below:

Compliance with the reduction scheme is achieved if the annual actual solvent emission is less than or equal to the target emission. The target emission is calculated as follows;

- a) Total mass of solids in the quantity of coatings consumed in the activity in the inventory period (12 months).
- b) The target emission over the same period is equal to: -

the result of paragraph (a) x 1.6

This is the Target emission to be achieved by 1 April 2007

(For further information, together with a spreadsheet to help record the data collected, see AQ 30(04) "Determination of compliance with Reduction Scheme" available on the Defra web site at): -

<http://www.defra.gov.uk/environment/airquality/lapc/aqnotes/index.htm>

Compliant coatings

- 3.4 When compliance is by means other than the solvent reduction scheme, coatings complying with the limits given in Table 12 of PG6/33 (04) shall be used. Namely; -

| Coating | | VOC in grams per litre of coating (less water) |
|---------|---|--|
| a | Fillers | 370 |
| b | Clear coating applied by vacuum or roller coating methods | 220 |
| c | Pigmented coatings applied by vacuum or roller coating methods | 265 |
| d | Pigmented coating applied by spray, curtain or dip techniques (except g below) | 520 |
| e | Clear coating applied by spray, curtain or dip techniques (except g below) | 475 |
| f | Clear coating applied by spray, curtain or dip techniques where all other coats are water-borne coatings containing no more than 10% by weight of VOC | 600 |
| g | Pencil end dipping lacquers | 650 |

Compliance by the “compliance coating” options shall not be used at this installation without the prior notifications and permission of an Authorised officer from Charnwood Borough Council.

Solvent Management Plan

- 3.5 A solvent management plan (SMP) shall be produced to determine the actual annual solvent Emissions; this should be in the form of a mass balance calculation of your annual actual consumption of solvents.

The SMP shall be prepared using the standard definitions and calculations in PG6/33 (04) figure 5.1 and shall be submitted on an annual basis to the local authority by the 30 April each year.

A summary of these calculations are given below:-

The actual annual solvent emission is found from the following equation.

$$\text{Actual solvent emission} = I_1 - O_6 - O_7 - O_8$$

Where:

I_1 Is the quantity of organic solvents, or their quantity in preparations purchased which are used as input into the process/activity (including organic solvents used in the cleaning of equipment, but not those used for the cleaning of the products).

O_6 Is Organic solvent contained in collected waste

O_7 Is Organic solvent contained in preparations, which are sold or are intended to be sold as commercially valuable product.

O_8 Is Organic solvent contained in preparations recovered for reuse but not as input into the process/activity, as long as not counted under O_7 .

A calculation of the purchased organic solvent Input (I_1) to the process/activity, is found by recording:

- (i) The mass of organic solvent contained in coatings, diluents and cleaners in the initial stock (IS) at the start of the accounting period; plus
- (ii) The mass of organic solvent contained in coatings, diluents and cleaners in the purchased stock (PS) during the accounting period.
- (iii) Minus the mass of organic solvent contained in coatings, diluents and cleaners in the final stock (FS) at the end of the accounting period.

Total Organic Solvent Input (I_1) = IS + PS - FS

The Solvent Management Plan should be used to design and implement a programme to monitor and record the consumption of coatings/organic solvents used, against product produced. Using this information opportunities for reducing solvent usage should be identified, assessed and where appropriate implemented. The SMP should also be used to provide information on solvent consumption, solvent emissions and compliance with the Regulations, for the Public.

The submission of the solvent management plan is in addition to the solvent inventory, however once completed it does not need to be completed again until the equipment is modified or there is a substantial change at the installation.

- 3.6 The assessment of compliance using the solvent inventory shall be undertaken a year in arrears. Any proposal, which would introduce a conventional high solvent coating system or replace a low or no solvent coating system or introduce a high solvent product into a process where it was not in use before, shall be approved by the local authority prior to installation.

Risk Phrase Materials

- 3.7 No designated risk phrase materials with risk phrases R45, R46, R49, R60 and R61 shall be introduced into this process/ activity without the prior notification and permission of an Authorised Officer from Charnwood Borough Council.

4.0 Visible and odorous emissions

- 4.1 All emissions to air, other than steam or water vapour, shall be colourless and free from persistent mist.
- 4.2 All emissions to air shall be free from persistent fume and free from droplets.
- 4.3 All emissions shall be free from offensive odour outside the process boundary as perceived by Charnwood Borough Council (marked in green on plan 02/057).
- 4.4 Emissions from combustion processes shall in normal operation be free from visible smoke and in any case shall not exceed the equivalent of Ringelmann Shade I, as described in British Standard BS 2742 : 1969.

5.0 Monitoring, investigation and recording

- 5.1 The results of all inspections, tests, monitoring (including all non-continuous monitoring and visual assessments) shall be recorded in a logbook. The log book and any continuous monitor charts or records shall be kept on site and retained by the operator for a minimum of two years and made available for examination by an authorised representative of the Borough of Charnwood.
- 5.2 The Operator shall notify Charnwood Borough Council at least 7 days before any periodic monitoring exercise to determine compliance with the particulate emission limit values. The Operator shall state the provisional time and date of monitoring, pollutants to be tested and the methods to be used.
- 5.3 Within 8 weeks of the completion of monitoring activities, the result of non-continuous emission testing shall be forwarded to Charnwood Borough Council.
- 5.4 In the event of any adverse results from any monitoring activity in relation to the limits specified in condition 2.1, the Operator shall investigate as soon as the results are obtained/received. The Operator shall:
- Identify the cause and take corrective action
 - Record as much detail as possible regarding the cause and extent of the problems
 - Record the action taken by the Operator to rectify the situation
 - Re-test to demonstrate compliance as soon as possible and
 - Notify the Regulator.
- 5.6 In the case of abnormal emissions, or malfunctions or breakdown leading to abnormal emissions the Operator shall.
- Investigate immediately and undertake corrective action
 - Adjust the process or activity to minimise those emissions and
 - Promptly record the events and actions taken
 - Notify the Regulator without delay, if the emission is likely to have an effect on the local community.
- 5.7 Visual and olfactory assessments of emissions of each stack serving the spray booths shall be made at least once per day and recorded in the log book.
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- 5.8 A written management plan or contingency arrangements shall be prepared and maintained in order to deal with plant failure, emergency or breakdown which would have an effect on emissions to atmosphere.

6.0 Control Techniques

VOC Control – handling and storage

- 6.1 All paint spraying operations shall be carried out in the spray booths (detailed on site layout plan 2/57) to prevent fugitive emissions of odour and particulate matter.
- 6.2 Spray application of coating shall be normally achieved by the use of air assisted, airless and HVLP compliant spray guns.
- 6.3 The receipt, handling and storage of organic solvents shall be carried out so as to minimise the emission of volatile organic compounds to air.
- 6.4 Spillage containment kerbs shall be provided to areas set aside for the storage of drums containing material with an organic solvent content.
- 6.5 All vessels or containers containing materials with an organic solvent content shall be lidded or enclosed when not in use.
- 6.6 All mixing, emptying and transfer of coatings or raw materials containing VOC's shall be undertaken in covered or closed mixing vessels so as to minimise the emissions of VOC's.
- 6.7 During the spraying process, all doors and shutters to the paint spraying shop shall be kept closed. Sufficient inlet ventilation shall be provided to maintain comfort conditions without the need to use doors for ventilation in order that fugitive emissions are minimised. Where items being coated cannot be contained wholly within the building due to their length without protruding from a doorway or opening, the necessary opening shall be protected by strip curtaining or other enclosure to reduce fugitive emissions.

VOC Control – cleaning (including surface cleaning)

- 6.8 The cleaning of plant and equipment (including guns and other application equipment) shall be carried out in such a way that emissions of volatile organic compounds to air are prevented or controlled to meet the requirements of conditions 4.3 of this Permit.
- 6.9 All spray gun testing and spray out, following cleaning shall be carried out in accordance with a written procedure a copy of which shall be made available to the local authority upon request. This should include a requirement that spray gun flushing following cleaning should be directed into the equipment cleaning machine with the extractor running or into a receptacle to collect the solvent, which is then

put through the spray gun. When not in use, the receptacle should be kept lidded to prevent the evaporation and fugitive emission of solvent vapour

- 6.10 The operator shall periodically review (at least once every 2 years) cleaning operations at the installation to identify opportunities for reducing VOC emissions. The results of this review, justification for the choices made together with timescales to implement any changes identified, shall be submitted to the Local Authority.
- 6.11 The application of cleaning solvents shall be from a contained device, such as a piston type dispenser. Alternatively, pre-impregnated wipes shall be used which shall be stored in an enclosed container prior to use.
- 6.12 All surface cleaning/ coating activities shall be sited away from draughts, isolated from hot surfaces and welding operations and situated in a 'no smoking' area.

VOC Control - Operational

- 6.13 Devise and implement a programme to monitor and record the consumption of coatings/organic solvents against product produced, to identify ways of minimising the use of organic solvent/coating.

VOC Control -Waste

- 6.14 All potentially odorous waste materials shall be handled in accordance with a written procedure a copy of which shall be made available to the Local authority upon request. This shall include a procedure, where waste cleaning solvents, wipes, full or partially full and nominally empty containers, which hold or have held waste which contain organic solvents are stored in either:-
 - a. a suitable enclosed containers or
 - b. In bulk storage vessels vented to suitable arrestment plant.

In addition by 31 October 2007 containers for storage of organic solvent and organic solvent contaminated materials shall be self-closing.

- 6.15 The storage of nominally empty drums, which have previously contained materials with an organic solvent content, or other odorous substances shall be effected in a manner to prevent the emission of volatile organic compounds and odours to air i.e stored with lids securely fastened to minimise the emission of residues prior to disposal.

The containers shall be clearly labelled prior to disposal, so that all that handle them are aware of their content and hazardous properties.

- 6.16 Prior to disposal, used wipes or other items contaminated with organic solvent shall be placed in a suitably labelled metal bin fitted with a self-closing lid, with the lid securely fastened at all times other than when in use.

This bin shall be emptied at least daily to prevent a fire hazard or spontaneous combustion.

For material that may undergo spontaneous combustion, special bins that allow air to circulate beneath and around them to aid cooling, may be used.

- 6.17 The location of open air storage areas for nominally empty drums and containers shall be carefully selected to meet the requirement of condition 4.3 and should include being:
- a) sited on a suitably impervious floor
 - b) away from any drains which may become contaminated with residues as a result of spillage or leakage.
 - c) away from sources of heat
 - d) with access restricted to only appropriately trained staff

VOC Control - Dust and spillage control

- 6.18 A supply of absorbent material should be held on site for use in the event of spillage of organic solvents. Such spillages should be cleaned up immediately and the collected material should be held in an enclosed container pending removal from site.
- 6.19 All arising of dry dusty materials shall be stored in closed containers and handled in a manner that avoids emissions.

7.0 Vents and Process Exhausts

- 7.1 The minimum height for process vents serving local exhaust ventilation from plant or areas of the shop associated with the permitted process shall be 3m above the roof ridge.
- 7.2 Process vents shall normally be designed for an efflux velocity of not less than 15m/sec for normal load operation when dry arrestment is used.
- 7.3 Process vents shall not be fitted with any restriction at the final opening, for example, a plate, cap or cowl.
- 7.4 Stacks and ductwork shall be cleaned regularly to prevent the accumulation of material and inspected at least once every 12 months. Details of inspections shall be recorded in the log book and be made available for examination by an authorised representative of Charnwood Borough Council upon request.
- 7.5 All chimneys and ducts shall be leak proof and insulated to minimise cooling of waste gases.
- 7.6 During spraying operations and whilst products are drying the doors to the process area, namely fire doors marked 1-5 and door 3 shown on Plan ref 2/57, shall be kept closed.

8.0 Management

- 8.1 A high standard of housekeeping shall be maintained.
- 8.2 Essential spares and consumables, particularly those subject to continual wear, shall be held on site when the supplier is not able to provide items from stock within one working day, so that spray booth breakdowns can be rectified rapidly.
- 8.3 Staff at all levels shall receive the necessary formal training and instructions in their duties relating to control of the process and emissions to air. Particular emphasis shall be given to;
- Awareness of their responsibilities under this permit in dealing with conditions likely to give rise to VOC emissions, such as in the event of spillage;
 - Minimising emission on start up and shut down
 - Action to minimise emissions during abnormal conditions
- 8.4 A statement of training requirements for each operational post and a training record shall be kept for each person whose actions may have an impact on the environment. These documents shall be kept available for inspection by representatives from Charnwood Borough Council.
- 8.5 Effective preventative maintenance shall be employed on all aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air. In particular:
- A Written maintenance, inspection and replacement programme for all aspects of the process shall be prepared, implemented and maintained and it shall be made available for inspection by representatives from Charnwood Borough Council.
 - A written record of all maintenance carried out shall be made available for the inspection by the regulator.
- 8.6 The activity shall operate in accordance with an effective management system. This shall include a commitment to achieving compliance with the permit conditions and ensuring LAPC considerations are taken account of in the day-to-day running of the process. It may include establishing objectives for improved environmental performance by setting targets, measuring progress and revising the objectives according to results. The system shall include managing risks under normal operating conditions and in accident and emergency situations.

Appendix 3

**Determination of Solvent Consumption, work sheet for
PG6/33 (04)**

| | | |
|---|---|---|
| Solvent Management Plan | | |
| Installation and address | For year (provide dates for accounting period) | Name and position of respondent |
| Consumption of organic solvent (C) Where C= I1-O8 | Note – all data should be added in kilogrammes | Contact Tel No |
| I ₁ is the total quantity of organic solvents or their quantity in preparations purchased which are used as input into the activity | | |
| a) the mass of organic solvent contained in coatings, diluents and cleaners in the initial stock (IS) at the start of the accounting period.(in Kg) | b) the mass of organic solvent contained in coatings, diluents and cleaners in the purchased stock (PS)during the accounting period. (in Kg) | c) minus the mass of organic solvent contained in coatings, diluents and cleaners in the final stock(FS) at the end of the accounting period.(in Kg) |
| | | |
| Total Organic Solvent Input (I ₁)=IS+PS-FS(in Kg) | | |
| Organic solvents contained in preparations recovered for reuse(ie. solvent taken away by recycling company)(but not as input into the process/activity) (O ₈) (in Kg) | | |
| Actual consumption of organic solvent = | | |
| Organic solvents contained in collected solid waste (ie. solvent remaining in tins/on waste rags) (O ₆) | | |
| Annual actual solvent emission = (I ₁ -O ₈ - O ₆) | | |
| Total mass of solids used (everything in the coatings except solvent and water) | | |
| Site compliant by 2007 | Is the total mass of solids x 1.6 equal to or more than the Annual actual solvent emissions | |

EXPLANATORY NOTES

These notes do not comprise part of Permit Serial No.057 but contain guidance relevant to the Permit.

1. You should note that Regulation 12(10) of the Regulations provides that in relation to any aspect of the process not regulated by conditions 2.1 to 8.6 the best available techniques ('BAT') shall be used for the purpose of preventing or, where that is not practicable, reducing emissions into the air.

Section 3(7) of the Regulations describes 'BAT' as meaning the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole.

2. This Permit is issued under the Pollution Prevention and Control (England and Wales) Regulations 2000. The responsibility you have under legislation for Health, Safety and Welfare in the workplace remains in force. In addition, the Permit does not relieve you of your obligations to obtain planning permission, hazardous substances consent, discharge consent from the Environment Agency Building Regulations approval, or a Waste Disposal Licence.
 3. Any proposed 'change in operation' in the process (within the meaning of Regulation 2(1)) shall be notified to Charnwood Borough Council as required by Section 16(1) of the Regulations.
-